

Hanze University of Applied Sciences
International Communication – Year 4
Graduation Assignment

Research Report

Recommendation for the Hanze University on an Implementation Strategy for MOOCs

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Executive Summary

This research report has the aim to examine what effects the new development of Massive Open Online Courses (abbreviated as MOOCs) are likely to have on the sector of Higher Education in general and to recommend specific ways of how the Hanze University should react to this Online Learning hype.

The research draws attention to the novelty of this new development of online learning and therefore, it is important to look at the history of how learning and technology got connected and how the use of technologies in the learning process increased rapidly in the last decade. Because of this particular development, also the learning models need to be adapted to the new style of learning, since people are nowadays more connected and networked than ever before. These learning models illustrate the huge potential of online learning and how it can increase the students' performance significantly. The strengths and weaknesses of online learning need to be considered as well, and it is the task of the educational industry to maximize the assets and minimize the drawbacks of online learning in the coming years to increase the value of learning in the future.

Further investigations reveal that MOOCs developed themselves as a recent phenomenon and need to be seen as one small part of a rich system of blended and online learning. This type of teaching is only two years old, meaning that it still needs to be developed much more and will evolve into different types of online classes in the future, also by looking at the different business models that can and will be linked to it. MOOCs have had, until now already, a massive impact on the educational industry but it is unlikely that they will be able to replace universities in the future. A more common view is that they will complement the traditional education and make it stronger and better for the students. Since it is still too early to tell where MOOCs will be going in the future, it is important for universities and educational institutions alike to experiment with it and work out a way to implement them effectively. The set up and structure of a MOOC does not differ much from traditional classes; only the way they are delivered to the students is new and innovative since it gives freedom and flexibility to the learner, which cannot be done by traditional classroom teaching. The concept of MOOCs should be seen as an opportunity for universities to improve their way of knowledge transfer and the educational institutions should embrace the possibilities they are handing to them. Researching the way learners learn with a massive group of people is a tremendous opportunity to understand the learning process better and in consequence upgrade and adjust teaching methods to these insights. The use of these resources should be maximized and benefits for future learners must be extracted carefully. MOOCs have kicked off the evolution of various eLearning techniques such as Flipped Classroom and SPOCs, which support students' achievements in the long run, early research reports. New pedagogies are likely to evolve through analyzing the rich amount of data coming from the massive group of learners participating in MOOCs and these developments should not be neglected.

MOOCs have pushed the educational market to engage more with the questions on how online learning can become a part in the traditional education scenario. These massive online courses are likely to take on different shapes and forms in the future and they have

many opportunities to upgrade and advance education. Technologies have become a part of our everyday life and therefore they should not be excluded from the educational landscape. It was only a matter of time before upcoming innovations in the technological sector would change the way of teaching and learning and the chances this development of Open Education entails need to be monitored by the organizations. Also other eLearning techniques like the Flipped Classroom concept and SPOCs are valuable innovations in the field of online learning and universities should try to experiment with them and ideally implement a few of these tools successfully into their portfolio.

This report concludes that the potential of MOOCs in the future can be limited to introduce a shift in pedagogy and online learning. It is unlikely that they will replace universities, since they are not seen as a disruptive innovation with vigorous effect. Individual ways of learning can be studied with the help of network technology, data collection and analysis tools offered through the use of MOOCs and in consequence these insights can help to shape a more flexible and learner-focused education. Also, it is likely that MOOCs will separate themselves from the institutions and stand for themselves. In this way, it would be possible for several universities to offer the same course, backed up with offline components like tutorials and labs on-site. Moreover, developing countries can take advantage of these specific types of online courses to educate their upcoming generation, given that a reliable MOOC infrastructure is in place to secure access to quality education.

The following steps are recommended:

- The Hanze University should start pilot studies to experiment with online learning material in a cost-effective way, for example engaging with the use of external video lectures, which can be implemented into existing classes by making use of the Flipped Classroom concept.
- Simultaneously, the University should develop a network with other experts in the field of eLearning, universities and institutions to be able to realize the production of online learning material in the future. Collaborating with other professionals in this field is of vital importance. Also, it is necessary to further monitor the developments in the online learning sector carefully to be able to react to them accordingly.
- As a last step, the Hanze University will be able to product related formats in the future, once a collaborating network is established and first experiments with online learning have been organized.

1 Project Context

This project consists of establishing a research report for the Hanze University Groningen on behalf of the company GO2SOCIALMEDIA to analyze the new and innovative trend of MOOCs and finding an answer to the question if it is advisable for the university to engage in this new trend. A lot of assets and drawbacks can be identified in the context of MOOCs and therefore an advice report will be formulated on if non-elite universities should adapt to the new trend of MOOCs and if yes, how that can be organized.

1.1 Problem Definition

The practical problem in this project context is that the new movement of MOOCs has not yet been analyzed enough to make an informed decision about whether or not also non-elite universities should jump onto the bandwagon or rather hold themselves back. The background to this problem is that until now, mostly elite universities mainly in the United States started to build on MOOCs as a new form of teaching but that does not imply that also institutions like the Hanze University will need to follow this trend. The pros and cons of MOOCs in general need to be counterbalanced carefully. MOOCs may be here to stay, but may also be not.

The objectives that will be reached during this project are the following:

- Illustrate the potential of the Open Education trend
- Background research on trend of MOOCs including advantages and disadvantages
- Provide information on the opportunities and current trends in the educational market

1.2 Trend of Open Education and MOOCs

The keynote of Open Education is to offer free learning materials on free accessible platforms on the Internet for everyone (Ehlers, 2011). The starting pistol was fired with the opencourseware program founded in Massachusetts in 2002, in which 200 universities and organizations took part.

Since 2011, Massive Open Online Courses (often abbreviated as MOOCs) are gaining more and more popularity as a form of online course development. In general, MOOCs should comply with some general criteria which were formulated by the project Open Education Europa (2013):

- They are massive, meaning that they have no limit of attendance.
- They are open, meaning that anyone with an Internet connection has access to them.
- They are offered for free, except the certification of completion may be charged.
- They are online.
- They are structured around defined learning goals in a specific area of study.
- They have an exact start and end date inside a specific time frame.
- They give students the possibility to interact with others through forums, social media channels, RSS feeds or blogs so that they can build a learning community.

- They offer course material (videos, readings etc.) for free by the teachers, facilitators, course designers or even students themselves (cMOOCs).
- They incorporate evaluation or assessment (self- or peer-assessment).

These courses combine traditional forms of dissemination of knowledge such as videos, reading material and presentations of problems with forums where teachers and students can communicate with each other and form communities. Together with these MOOCs, a number of non-certificate-granting programs, for example Coursera, developed themselves and are revolutionizing the international educational markets (Yuan & Powell, 2013). Despite the growing hype of MOOCs in the recent years, also critics were brought into the arena, arguing that these online courses have high dropout rates due to their lack of teacher's guidance and also display other flaws (Yuan & Powell, 2013). Therefore, it is the task of the educational industry to outrun the downsides of MOOCs and in return make use of its full potential in order to make the experience more valuable for the students. This also brings up the question of whether MOOCs are really going to last in the coming years and have the ability to change the future notion of education. It is necessary to evaluate the real potential of MOOCs to be able to determine their sustainability in the future.

2 Organization

This research will contribute to the project “Vision on Blended Learning” from the company GO2SOCIALMEDIA and provide recommendations to the Hanze University in order for them to make an informed decision on whether or not MOOCs should be implemented in their organization in the future.

2.1 Hanze University Groningen

The end product of this research will assist the Hanze University to better estimate the impact MOOCs will have in the future on the educational market. The Hanze University was established more than 215 years ago and runs various locations over the Netherlands, including Assen, Leeuwarden and Amsterdam with around 25.000 students and 2.700 staff members. With 70 Bachelor’s degrees, 17 Master’s degrees and study programs in Dutch, English and German, the university tries to follow a European perspective and encourages their students to “share [their] talent, move the world” (Hanze University, 2013). It is the university’s mission to become one of the most important learning institutions in the northern Netherlands and to promote the education of professionals with valuable practice experience. The University of Applied Sciences differentiates itself from others through the strong emphasis on internationalizing and the direct bond with the northern part of the Netherlands.

The University formulated a new vision of education in June 2013:

“The Hanze University Groningen is an educational organization where researching professionals, students, lecturers, researchers and work field partners develop themselves together in a safe and ambitious learning atmosphere and work together on important queries in the regional and (inter) national environment. (...) Through this, strong networks emerge among researchers, developers and innovative professionals who are to move the world.” (Board of Hanze University, quoted by Komans & Lenting, 2014)

2.2 Project “Vision on Blended Learning” from GO2SOCIALMEDIA

The project “Vision on Blended Learning” attends to the Hanze University’s new vision of education, which is stated above. This context provides the starting point for a project focusing on an innovative didactical education concept. The current educational concept does not yet fulfill the future goals the university so therefore, it is necessary to work towards this vision in this project about “Blended Learning”. Different pilot projects were already launched in various departments of the university during 2013. The results of different projects and initiatives contribute to the new didactical model and to come up with a strategy for Blended Learning environments. The goal is to present the vision about Blended Learning in July 2014 to the Research and Development Department together with a roadmap for the upcoming years.

Due to the novelty of MOOCs in the educational landscape it is necessary as part of this project about Blended Learning to investigate the assets and drawbacks of this new movement. Therefore, this report will assist in the formulation of a recommendation on whether or not it is advisable to follow the trend of MOOCs.

3 Theoretical Framework

The theoretical framework represents the perspective of the research that will be employed for the analysis of the research objects. The information gained from the research objects based on their thorough analysis is necessary to make recommendations to the Hanze University on whether or not to start the design of MOOCs.

The preliminary research on MOOCs and the educational market in the Netherlands and worldwide has been made in order to clarify the research objective and determine the specific research objects. The used research perspective, which was generated from the theoretical framework, includes necessary information for the background analysis derived from the theories on implementation of traditional learning, technologies and eLearning. While researching and analyzing the research objects, attention must be paid to the future development of the educational market and the objectives of the research objects in order to formulate an effective recommendation for the Hanze University.

The research perspective represents the background analysis derived from the research objects. The analysis includes the following variables:

- Implementation strategies and business models for MOOCs
- Requirements, challenges and possible problems of MOOCs
- Implementation of MOOCs in eLearning practices

The earlier formulated problem justifies the use of the theoretical domains of traditional learning, technologies and eLearning in such a way that it is necessary to get a detailed overview of the theory on learning with a link to technology in order to have the right perspective on the new development of MOOCs. A close look into the theoretical background of learning, which gets gradually linked to technology nowadays, will illuminate the advantages and disadvantages of new trends in this area. The following theories will be employed in order to build a reliable framework for the research.

Theories on traditional learning:

- Social Learning Theory (Behaviorist). This theory underlines that individuals learn to a great extent from each other through observation, modeling and imitation. This emphasis on observational learning can be used to explain a wide spectrum of behaviors (Bandura, 1971).
- Elaboration Theory (Cognitivist). A theory that suggests an instructional design for the organization of content that needs to be learned. It should be managed in a way that the content is ordered from simple to complex within a meaningful context, which allows subsequent ideas to be added as well (Reigeluth, 1983).
- Situated Learning Theory (Constructivist). Lave argues that learning is nestled within culture, context and activity, meaning that it is rather unintentional than deliberate. Authentic situations are more likely to trigger learning than most classroom learning activities (Lave & Wenger, 1991).

Theories on technology and eLearning:

- Connectivism. Siemens claims that learning in the digital age has transformed the human from an isolated person to a connected individual in a global community. He

defines learning as the process of establishing a network to other persons as well as to non-human sources. This network then becomes essential for learning since the learner always has access to it (Siemens, 2005).

- Social Construction of Technology. A theory that claims that technology does not have the power to determine human action but that rather human action defines technology. Also, it suggests that the analysis of the use of a technology cannot be made without seeing how that technology is surrounded by its social context (Pinch, 2003).
- Media Richness Theory. A theory concerning the choice of media that explains the requirements a communication medium must have. It declares that the proportional relationship between the communicated subject and the medium used for the communication is essential (Daft & Lengel, 1986).
- Cognitive Load Theory. Sweller claims that learning is linked to cognitive load and describes how learning can be facilitated or complicated. The working memory plays an important role and is responsible for solving problems and processing information (Sweller, 1988).
- Technology Acceptance Model. This model tries to explain why a person uses a specific type of technology or why not. The so-called "Attitude Toward Using" is dependent on 2 variables, the "Perceived Usefulness" and the "Perceived Ease of Use" (Davis, 1989).

4 Research Design

4.1 Research Objective

In this research project, the client's problem was clearly identified in the beginning of the assignment, which is a lack of information about the new hype of MOOCs in the educational market and whether it is advisable for non-elite universities to engage in this trend. Therefore, the intervention stage is diagnostic since the problem of the organization has already been formulated and now the goal is to examine the background and causes of the identified problem, with the aim of formulating a recommendation for the university (Verschuren & Doorewaard, 2010). The decision to use a diagnostic-oriented research arose from the fact that the overall objective of this research is to give recommendations to the organization on whether or not to follow the trend of MOOCs and the closest to this type of advise is diagnostic research.

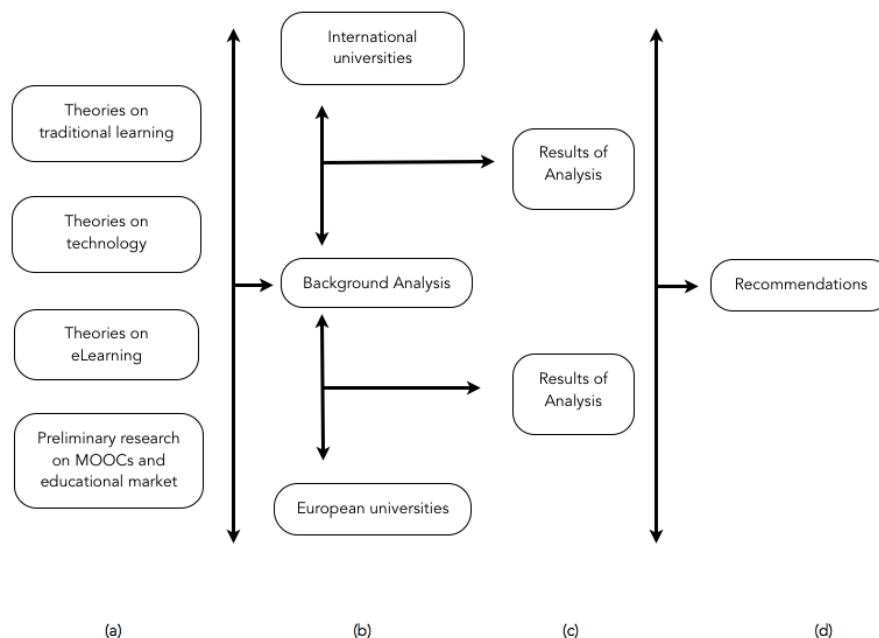
The research objective is split into two parts, A and B, which refer to the final results of the research and the methods used respectively.

A) The objective of this research project is to make recommendations to the research department of the Hanze University Groningen with regard to the new trend of MOOCs

B) by making an inventory of the assets and drawbacks of this new hype in the educational market, which implies a thorough background analysis of assets, drawbacks, challenges and possible problems of MOOCs and formulating a future prospect of eLearning practices in such a way that the university can decide whether or not it is advisable to follow this trend in the coming years.

4.2 Research Framework

a) A study on the implementation of MOOCs in the educational markets supported by learning and technology theories derived from relevant literature and preliminary research on MOOCs yields to the background analysis **b)** on the basis of which the international and European universities will be analyzed. **c)** A confrontation of the results of these two analyses concludes **d)** recommendations to the Hanze University regarding the potential of MOOCs in the future.



4.2.1 Research Objects

In order to analyze essential educational market trends worldwide and in Europe, it is necessary to study the international and domestic universities as well as the main stakeholders of MOOCs: students and teachers. The distinction has been made due to the increased implementation of MOOCs in foreign countries like the United States of America and other countries in Europe as well.

The preliminary research on the educational industry in general revealed that universities from abroad (mainly from the USA) have initiated the movement of Open Education and are therefore more advanced and experienced, especially in the field of MOOCs. Additionally, prestigious universities from abroad tend to invest in new trends and pursue the latest innovations in the educational market in order to assure a better performance in a competitive industry. Furthermore, also universities from the Netherlands and other European countries have started to undertake first steps into this new direction. Therefore, it is of high value to analyze the strategies to take part in the trend of Open Education in the European market as well.

4.3 Research Questions

CQ1: What is known from theory and preliminary research about traditional learning, technologies and online learning?

S1: What are key factors in the development of learning, teaching and technologies for universities and their stakeholders in human history?

S2: What are specific learning models in the complex technology-based learning environment of today?

S3: What are the strengths and weaknesses of the future development of online learning?

CQ2: What kind of learning and teaching methods are employed and favored by international and domestic universities and their students/teachers also with regards to future developments like MOOCs?

S1: How did MOOCs develop in recent years and what is the current state in their development?

S2: How does a SWOT Analysis of MOOCs look like and what are the business models that can be linked to them?

S3: What other trends and developments in the area of eLearning will emerge in the future and which of these techniques have the most potential?

CQ3: What are the most important aspects derived from the background analysis from international and domestic universities and student/teachers about the trend of MOOCs, the future notion of learning and technologies?

S1: How can the future potential of MOOCs be assessed in the educational market?

Advice section:

S2: What kind of recommendation can be formulated for the Hanze University in terms of the employment of MOOCs or other eLearning techniques in the future?

S3: How can the use of MOOCs or other eLearning techniques be organized at the Hanze University Groningen?

4.4 Research Strategy and Methodology

The research strategy and methodology will give a clear motivation and explanation of how the research is to be carried out. A clear description of the methods can be found as well as an explanation of how the relevant data will be gathered and how the collected data will be subsequently processed.

Based on the fact that the research objects are the “International” and the “European universities”, a breadth strategy will be employed because a large-scale approach must be adopted and the results will then be generalized (Verschuren & Doorewaard, 2010). A reason for this is the high number of universities in each market and collecting data on each one would be next to impossible due to the time frame of this project.

The collected data will be qualitative in nature where interpretations can be made in order to develop an accurate and realistic advice for the client. Furthermore, empirical and desk research will be combined, meaning that primary data will be collected through interviews and also secondary data will be retrieved from existing literature on the topic. Researched theories from the literature will give a basis for relevant topics and questions that can be posed to the professionals of the varying educational markets.

Saunders Thornhill and Lewis (2009) evaluate on five different research strategies, but the most applicable for this research project are “Survey/Interviews” and “Desk Research” as already mentioned above. Several in-depth or semi-structured interviews will be conducted with around five experts from the educational markets regarding the research questions and objectives, which were derived from theories and preliminary research. This strategy is critical for the advice for the client since it is important to understand first-hand what the different educational markets are like in order to analyze the trend of MOOCs and its future potential. Moreover, desk research is necessary so that qualitative and quantitative data can be gathered regarding theories on the traditional learning, eLearning and technologies.

During the interviews with experts on the field of education, cross-sectional data will be gathered. The experts will be found with the help of the online portal from the “Open Education Europa” initiative, where professionals in the field of new trends in learning and technology are registered. This portal also collects papers about the broad topic of eLearning, which will be studied further to locate the most fitting interview partners for this research. The interviews will be conducted within a short time frame and therefore they will be standardized (set amount of questions) to save time and gain the desired data from the sources (Verschuren & Doorewaard, 2010). This decision was made due to the tight time frame allocated to this project and to find correlations with the data from the primary sources, enabling analyses to be conducted. Furthermore, survey research is applicable for this project as the aim is to obtain knowledge regarding the research objects that are focused on breadth but also to some extent depth. The desk research will include both a literature survey and secondary research as well and their nature will be qualitative and quantitative. The motivation behind using desk research to gather data is that it allows a large amount of data to be collected quickly and a large amount of material required to answer the research questions is available.

The sources of the research based on the strategy outlined above and in regards to the research questions will be data as well as knowledge sources (Verschuren & Doorewaard, 2010). People will be one of the main sources, meaning people working or experienced with the educational industry, this could be teachers, students, developers of online

learning environments or anyone functioning as a communication person for the universities. The media will additionally be used as a source of information about recent trends and developments in the current movement of Open Education, providing preliminary research and background to the topic. Furthermore, documents will be used as sources of data from universities to find relevant statistics, for example. Ultimately, literature will be reviewed to source the research questions.

Due to the high variety of source triangulation in this research project, accurate data will be gathered in order to successfully answer the research objective and research questions.

Limitations that this research faces are entailed in the fact that most of the universities that will be studied for this assignment are mainly research institutions. This fact has to be kept in mind when generalizations are formulated about these institutions since they may not be directly applicable for the environment of a University of Applied Science, like the Hanze University.

5 Research Results

5.1 Theoretical Research Results

The theories presented in the theoretical framework will contribute to analyzing the data received from the desk research.

5.1.1 Development of Learning, Teaching and Technologies

Throughout the different stages of human history, guarding knowledge was always an important issue and the societies have developed different ways of transferring this knowledge with the help of different mechanisms and institutions. It is a well-known fact that learning was always seen as a privilege only for a few who have had the means to access these institutions. In this scenario, technology has supported a new development through altering the process of production and distribution and therefore, knowledge became more available and more easily accessible to a large group of people. Innovations like the printing press until Google books and the open courseware movement, technology can be said to have contributed enormously to the spread of learning and knowledge transfer throughout the societies.

In this development it is important to have an overview of the various key events that contributed to the adoption of technology in learning. In this context, Virtual Learning Environments (VLEs) play a significant role. Kurzman (2013) discusses a brief overview of the most important pillars in this development:

Early days (1700 – 1930): USA pioneers in distance learning

- In this time span the phrase “distance education” is used for the first time. The delivery of lessons happens with the help of postal services.
- In order to present questions and report results, mechanical instruments are developed by the University of Alberta.
- The Sidney Pressey designs the so-called “teaching machine”, which produces multiple-choice questions.

Pre-PC Era (1930 – 1960): Television and Radio support learning

- In Houston, the university delivers the first recorded college credit course ever.
- The “teaching machine” gets improved.

PC Era (1960 – 1980): Emerge of first Virtual Learning Environments

- A computer assisted instruction system, the PLATO (Programmed Logic for Automated Teaching Operations) is developed. Also online courses find their places in the curriculum of several universities.
- With the commission of the ARPANET in 1969, the Internet is created.
- The paper “Deschooling Society” by Ivan Illich first presents the concept of networked learning and learning webs.

World Wide Web (1980 – 2005): The Revolution of the Internet

- The proposition of the “web of notes with links” by Tim Berners Lee paves the way for the World Wide Web.

- Courseware Delivery Systems are loosely described by the term Learning Management Systems and with this, several LMSs develop themselves, including Moodle, which becomes the most popular open source LMS in the coming years.
- Also the eLearning courses receive a new standard that can track learner activities, the so-called SCORM.

Web 2.0 (2005 – 2010): Education gets democratized

- Almost all large organizations see the potential of LMSs and adopt them into their learning systems. Through this development, eLearning courseware develops itself into a million dollar business.
- 43Things, Elgg and other Social networking sites pioneer on the Internet and they additionally promote learning and collaboration through the use of the worldwide web.
- As opposed to LMSs, the term Personal Learning Environments (PLEs) emerges and initiates an intense debate inside the learning community on LMSs vs. PLEs.
- The Athabasca University offers the first MOOC and quickly, they get adopted across the USA with a new and innovative pedagogical approach.

Web 3.0 (2010 – today): Evolution of networked learning

- Learning Record Stores (LRS) begin to emerge. New types of tracking and data gathering are tested and employed in different styles.
- The analysis of data has the aim to serve learners better and more efficiently.
- The monetization of MOOCs becomes a new possibility.
- Networked learning through new VLEs begins to get adopted by corporate organizations.

This brief overview of the development of learning under the influence of technology demonstrates the importance of monitoring the progress in this area. Online Learning and all its accompanying features will keep on evolving more and more in the coming years and that is why it is necessary for teaching institutions to continue observing and analyzing this development together with the purposes and opportunities they may offer for higher education in the future.

5.1.2 Learning Models and Theories for the Connected, Networked Learner

The increase of interconnectedness, adaptability and information in today's world has an important impact on learning and performance, also due to the hypes of social media and mobile technologies in the 21st century (Quinton & Allen, 2014). Performance-based learning rather than knowledge-driven concepts more and more influences the learner behavior and therefore, traditional content presentation formats are being questioned increasingly. New Instructional Design models have developed themselves along with the evolution of technologies and now challenge the view of older models. These new models like the new theory of Connectivism, Pervasive Learning, Adaptive Learning, 70:20:10 and Flipped Learning all support the evolving values of increased learner control and performance support tools and will be discussed in more detail in this section.

Connectivism

This relatively young learning theory relates to learning in the digital age and was designed by the Canadian theorist George Siemens. As opposed to already existing learning theories, Connectivism sees the human not as an isolated but as a connected individual (Siemens, 2005). Through this, a network evolves to other persons as well as to non-human sources. This network is essential for the learning process because the learner always has access to it.

One of the most important aspects of this theory is the network of nodes and connections as a central metaphor for learning in general. In this metaphor, a node is everything that can be connected to another node. This can be the learner him or herself, but also other persons as well as regular sources such as books, pictures, websites or graphics. In this sense, learning is the process of adding new connections to other nodes and developing a learning network progressively (Siemens, 2005). Not all connections in this metaphor are of the same strengths; some may even be relatively weak. As a result, connectivism replaces the learning approach of “know how” and “know what” with “know where” (the comprehension of knowing where to find information when it is needed).

The principles of this theory include that learning is the process of connecting specialized nodes and information sources and the actuality of knowledge is the goal of every connected learner. The ability to make connections between fields of knowledge, ideas and concepts is a prerequisite for this theory (Siemens, 2005). Furthermore, this theory is more suitable for eLearning than older theories like behaviorism, cognitivism and constructivism because the learner’s environment has changed significantly since the world has become more connected. The global changes support connectivist eLearning, which also builds the foundation for cMOOCs in particular.

Pervasive Learning Model

Dan Pontefract is the founder of the idea that “learning [is] at the speed of need through formal, informal and social learning modalities” (2013, p. 18). According to the author, these three components are all equal in the process of learning and performance and through the omnipresence of technology anytime-anywhere access to information and expert opinions, corporations are made possible. This fact also makes learning time agnostic as well as locational independent in today’s world.

The first of the three components is formal learning, meaning a structured top-down push learning approach which can be found in online classes, traditional classroom settings, courses and modules. Informal learning, on the other hand, is seen as learning that is not structured by a curriculum and happens outside of conventional learning structures. It can emerge accidentally and is often related to problem solving in real life settings (Pontefract, 2013). Natural learning styles of the individuals are reflected in informal learning and can include listening to podcasts, reading the news feed on Social Media websites, watching videos, forum discussions and so on. Technology plays an important role in informal learning since it reinforces the individual to interact with the outside world in a constant manner. Social learning, as the last part of the Pervasive Learning Model, is backed up by the theory of Bandura (1971), who states that individuals learn to a great extent from each other through observation, modeling and imitation. The era of connectivity newly defines the meaning of modeling and observation since physical nearness is no longer required for people to learn from each other. It is now more a matter of one person’s ability to network,

connect and create personal learning environments (PLEs) in order to manage personal knowledge in a structured way. Connected workers characterize the idea of social learning and it implies that social networking platforms, access to experts and the ability to access are important parts of the learning process of nowadays (Pontefract, 2013). Individuals are globally spread and technologies as well as mobile devices are facilitators and enablers, which make it possible for the economy of individuals to connect with each other in a complex, widespread setting. Also the free division and creation of content is seen as an essential part of social learning.

70:20:10

Even though this model was derived from the observation of how high-performing managers acquire knowledge and skills, it is still relevant when looking at the education of students since it can bring new impulses to innovative teaching mechanics in educational settings of today (Jennings, 2013). The following ratio describes the percentages to which managers learn from different experiences:

- 70% from on-the-job experience, working on tasks and problems
- 20% from people's feedback (in this case supervisors)
- 10% from reading and traditional courses

This learning model takes a holistic approach similar to the Pervasive Learning Model, which both highlight the importance of effective feedback mechanisms, the creation of experiences and both have the aim to introduce a new pull strategy for learning. By offering the right interventions for the right kind of learning, new performances are triggered and more accuracy for the learner will be the quintessence. In this scenario, eLearning tools can promote the learning process with well-designed performance support tools for the on-the-job experience (Jennings, 2013). Additionally, "learning from others" can be encouraged by collaborative platforms and formal eLearning classes can back up the last 10% of the learning process. By providing different knowledge resources and other artifacts that can deal with different performance needs, an almost-perfect situation is created for the learner of today where empowerment and a range of various learning formats supports the varying needs of the individuals.

Adaptive Learning

An Adaptive Learning System (ALS) responds to pre-defined needs of the individual learner and his or her preferences and through this, learners get the possibility to choose their own learning path. This is why Adaptive Learning Systems gain more and more popularity. In definition it can be said that ALS uses specific learning models that can enhance cognition and it also supports interactivity and feedback. These parts can help the learner in determining on which part of the learning continuum he or she is located and based on that information, a learning path can be chosen accordingly (Graf & Lin, 2012). This strategy behind ALS displays a high degree of flexibility and empowerment of the learner and other essential parts are motivation, peer network, desire to achieve higher outcomes and other trends which are favored among the learner's society of today.

In order for an ALS to be able to adapt its content to the different styles of learners, different formats of the provided content must be available. Since performance goals and

preferences will differ among the learners, suitable content must be selected accordingly and for this, a certain degree of flexibility must be present. As a consequence, the learning environment gets personalized and this evidently increases the chances of valuable learning and knowledge transfer (Graf & Lin, 2012). Also, effective interventions can motivate the learner to achieve performance goals.

Flipped Learning

Due to the ongoing development of technological innovations, the educational market had to respond to these new trends in order to capture disengaged students in the traditional classroom settings (Keengwe, Onchwari & Oigara, 2014). The students of today grew up in the era of the Internet and they do not understand technology as something separated from their lives or from learning. Therefore, a more technology-based educational concept was needed and with this, the Flipped Learning Model evoked.

Also known as the Flipped Classroom, this model reverts traditional teaching methods in a way that the core material is delivered online before the class takes place and the section of homework is moved into the classroom. This form can also be labeled as blended learning which incorporates the use of technology to relocate the knowledge-delivery process from the classroom into the individual, self-paced learning environment (Keengwe, Onchwari & Oigara, 2014). In this way, students get the chance to comprehend the material at their own pace and time and the classroom time can be used to concentrate on the understanding of the information through debates, discussions and other activities which can also be realized in face-to-face scenarios. Through this development, the educator's role is transformed from being the central authority in the classroom to becoming rather a mentor or guide in the process of learning.

The Flipped Learning Model in particular takes up the Flipped Classroom concept and features links to Kolb's Experiential Learning Cycle (1975) as well as a range of learning tools, which go further than online videos for self-paced learning.

Information and concept exploration is the first part of the model where the learner receives core information and reflects upon them. In this stage, online delivered content facilitates self-paced learning. In the phases of gathering of information and exploration of concepts, the learner is flexible to choose whichever format suits him or her best: YouTube videos, podcasts, encyclopedias etc. Also online forums and chats are important in this phase since the element of shared communication is important to support peer-to-peer learning and also functions as a motivator in a self-paced learning environment.

The second part of the model is called experiential engagement. Now, the learners apply and embed core knowledge through interactive activities like simulations or role-plays. It is important that learners engage with the learned material and experience experiments, games and other creative tasks, both individually and in group-settings. This phase can be realized either in a real or a virtual classroom accompanied with the monitoring of a mentor/guide.

Demonstration and application is the third part of the Flipped Learning Model. In this phase, the application of knowledge is personalized, for example by asking people to present their ideas to their peers and or to confront the learners with situations where problem solving is necessary. Creative projects and presentations help the learners in this phase to demonstrate and apply the learned material and this can also be shared with other learners in the group.

As a last part of the model, the reflection and evaluation phase can be mentioned. Debates and thought processes which trigger the learner's potential to show evidence of thought leadership is essential in this part. The reflection of each individual on their learning through reflective posts, blogging and other encouraged forms of self-evaluation help the learner to ponder their learning process once again.

In conclusion, it can be said that due to the development of various technological innovations, the area of learning models needed to be updated accordingly since in today's world, people have adapted to a different and new kind of learning by making use of multiple applications simultaneously. The described learning models for connected, networked learners help to understand how online learning supports each individual in their process and how technology can be used to encourage a better learner's performance.

5.1.3 Strengths and weaknesses of online learning

Online learning, which is the broad term that includes all forms of learning where digital or electronic media are used for the distribution and presentation of learning material and/or for the support of human interaction and communication. Examples of online learning include the following:

- Learning Management Systems
- Blended Learning Environments
- Virtual Classrooms
- Content Sharing
- Video conferences
- MOOCs etc.

Due to the revolution of the Internet and the current digital age, online learning has developed itself rapidly and finds its way into the educational landscape progressively. Nevertheless, this new development displays certain assets as well as drawbacks and it is important to investigate this form of teaching carefully in order to understand its influencing variables and to be able to determine its future potential.

Strengths of online learning

The biggest advantage of online learning can be found in the flexibility it provides to the students. High-quality learning situations can be accessed from anywhere in the world since the only thing that is needed to participate is a computer and an Internet connection. Also, the attention should be paid to the fact that also physically challenged students as well as teachers get the chance to participate in class with more freedom (Palloff & Pratt, 2010). Online learning is set up to be very convenient for the students since distance and schedule no longer are influencing factors. The Virtual Classroom can be entered at any point in time and the variable of having to physically go to class is diminished. The flexibility of online learning also entails that the online learning material is available 24 hours a day throughout the whole week. This implies that time can be used efficiently and students as well as professionals get the freedom to arrange other responsibilities accordingly. The lectures, class discussions and course materials are always accessible and this can also trigger reflection on some material before moving on or the rereading of a lecture. This leads to

the fact that the participants can also influence the speed of a lecture due to their own individual learning habits and level of knowledge.

Online learning always offers the possibility for students and teachers to communicate with each other in forums and discuss certain aspects of the studied material again. Students can also form groups to deepen the understanding of certain topics, which furthermore supports the learning process. This formation of synergies allows a dynamic interaction between the participants and the teachers and among the students themselves. In this way, ideas and resources are shared and every participant gets the chance to contribute to the course discussions and/or comment the work of others, which can encourage the level of learning (Downes, 2012). By this means, the students is put in the center of the learning experience and synergies are created, which can be described as the most unique and vital trait of online learning.

The asynchronous discussion structure, which is employed in the forums of online learning classes, provides the opportunity for the students to reflect on comments in more depth before moving on the following item. In so doing, the articulation of responses is of much more high quality than in a normal face-to-face situation where the learner is put under pressure to immediately come up with an answer or otherwise lose the chance of participating in a discussion (Beetham & Sharpe, 2013). Comments are analyzed in much more depth and the learners have more freedom to contribute to discussion they are interested in. Also the breadth of the discussed subjects can be bigger than in traditional settings since many topics can be handled synchronously at the same time in different sections of the online learning environment.

As already mentioned before, online learning has the tendency to be student-centered, which can also be seen again in the discussion forums. In the online discussions, students can respond to comments from others or to the course material directly (lectures, readings, etc.). Since there are a lot of topics available in the discussion forums, students can choose which ones to answer to and which most clearly speak to their concerns as well. Resulting from this, smaller conversations and discussions evolve and take place at the same time within the broader scope of the group. This leads to the fact that students actively engage in the parts of the dialog that are the most relevant to them and their needs (Beetham & Sharpe, 2013). The control of the learning experience now lies again with the student and the class discussion is tailored to each individual's end. Individual contributions are therefore topped up with a unique mix of information that is relevant to each student.

Online environments display another important advantage since anonymity is guaranteed. Factors like age, gender, physical appearance, race, dress or disabilities all do not play an obvious role in this setting and through this, an almost undiscriminating environment is created for the learners. This additionally shifts the focus to the content of the discussion and the person's ability to contribute and respond thoughtfully to the given material.

The access to multiple resources from all around the world displays an additional asset to online learning. Guest experts or point of views of students from other institutions have the ability to broaden the horizons of every learner in the online environment. Resources and materials that are physically located anywhere in the world are made available to a broad audience who can benefit from this knowledge transfer (Downes, 2012). Research, extension and in-depth analysis are facilitated through the access to scholarly articles, relevant materials and institutions, which the instructor can make accessible through links.

In addition, online learning has the power to contribute to self-direction and critical thinking of the participants through the use of interactive learning environments. Many

traditional classes are still based on pure memorization of material and straight lectures whereas online learning supports the semi-autonomous and self-directed way of learning. Creative and innovative approaches are becoming the new paradigm of teaching with the help of a shift in technology, which only makes this development possible (Beetham & Sharpe, 2013). Through the transformation of courses from offline to online, teachers have to reflect upon their teaching style and make adjustments to their course objectives in the process. A successful online facilitator displays many qualities that are also highly effective in the traditional classroom setting.

Weaknesses of online learning

The success of any online learning program is directly dependent on the student's Internet access to it. Both economical and logistics reasons can lead to the fact that learners may not be able to enter the online environment and are in this way excluded from the course. Especially rural and lower socioeconomic areas may encounter this issue rather than more developed neighborhoods, nevertheless it is an important drawback for online programs (Beetham & Sharpe, 2013). Also the administrative point of view can present a problem since students must be able to afford the technology that grants them access to the platform, otherwise they cannot function as costumers. Furthermore, Internet accessibility and the involved costs are not a universal grant. There is a difference between users who pay a fixed monthly rate for their connection and others who are charged for the exact amount of time they spent on the Internet. This implies that there is no guaranteed equity between the users whose time online is limited by the amount of Internet access they can actually afford. This leads to significant limitations of online programs in today's society.

The level of computer knowledge plays an important role since both students and facilitators must have a minimum level of understanding for technology so that the online program functions successfully (Diethe & Girolami, 2013). A certain confidence from the users must be given to be able to use search engines, navigate through the Internet as well as being familiar with the use of emails and forums. If students or faculty members do not function well with the use of technology, the online learning program runs the risk of being pulled down because they will not succeed in an online environment.

The importance of a user-friendly and reliable technology is another point, which can be presented as a weakness of online learning. It is a fact that even the most advanced technology is not completely reliable because breakdowns can occur at any point along the way. Not only the server which hosts the program can crash but also the computer of the participants can go down and make it impossible for them to further follow the online class, also due to numerous problems which could limit student's access. The Internet connection is another weak point in the system, which could get bogged down with the amount of users and fail eventually. In this online learning scenario, the technology plays an important role and it has the strength to detract students from the learning experience. The Technology Acceptance Model offers another perspective on how users form their opinion on the use of a technology (Davis, 1989). The theory argues that users, who are presented with a new technology, base their decision about how and when they will use it on a number of factors. The first factor is the Perceived Usefulness, which is the "degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 20). Then there is also the Perceived Ease-Of-Use, which can be described as the "degree to which a person believes that using a particular system

would be free from effort” (Davis, 1989, p. 20). Following this theory, online learning programs must be perceived as useful and easy to use in order to be successful. When these two factors are ignored by the programmers or cannot be met in the planning phase, an online learning environment can fail to reach its goals.

The online paradigm is not universally suitable for every type of learner because it involves a certain degree of organization, self-motivation and time management skills in order to be able to follow the pace of the course. This places a greater responsibility on the student meaning that the individuals have more control and flexibility in their learning experience but at the same time this may also be an inappropriate learning environment for more dependent learners (Beetham & Sharpe, 2013). Only mature and self-disciplined students are likely to be able to cope with this highly effective alternative medium of education but for younger students (elementary or secondary school for example) this is not the case. Online learning requires the right attitude from its learners in order to be effective.

The lack of physical presence that must be compensated by the instructor or facilitator of the online learning program is another important point, which must be considered. High quality teaching staff, which successfully transfers knowledge in the traditional classroom, is not necessarily able to do the same in online learning environments. Instructors must be properly trained beforehand in online delivery and methodologies; otherwise the success of an online program is at risk. The communication in writing is an essential part of the online environment and therefore the teaching staff must be adequately prepared in order to function in the virtual classroom setting. A supportive environment must be created where students are motivated to participate and feel comfortable doing so (Diethe & Girolami, 2013). Also the instructor must be easily accessible otherwise the risk of estrangement between the instructor and the students is high. As already mentioned, the lack of physical presence at an institution can present a limiting factor in an online program even if the virtual professor is able to create a satisfying environment in which a class can interact and operate.

It is furthermore a possibility that some teaching institutions are skeptical towards change and working with technology or have the feeling that online programs cannot live up to the standards of traditional teaching. These negative opinions of administration and faculty have the power to disrupt a successful implementation of any online program and inhibit the process of implementation (Diethe & Girolami, 2013). It is important that online programs are not only seen as ways to increase revenues but rather as a means of providing high quality education to those who would otherwise not have access to it. Proper facilitator training, limitations of class size and essential staff characteristics are all important elements that influence the success of online teaching and an institution that is not open to these things can display a weakness.

The biggest potential the online environment displays is probably the synergies created through the active dialog among the students, which is a very important source of the Virtual Classroom. But in this area a problem can be diagnosed when looking at the amount of users participating in an online class, which is the case for MOOCs especially: When the number of students exceeds 20, the level of synergy starts to shift on the learning continuum. This can easily transform the class into independent study from each participant, which only accommodates the large class because dialog and interaction between the parties is limited. This leads to the fact that the potential of the online medium is not used to its full potential.

Recently, online programs experienced a great hype and boost from the educational industry. Nevertheless, the electronic medium is not yet developed enough to be the best way of instruction for all subjects. Some topic areas where hands-on experience is a necessary prerequisite should not be taught online, for example surgery, sports or public speaking, where practice and physical movement complement the learning process (Beetham & Sharpe, 2013). This subject should be taught in a traditional setting where face-to-face interaction is given. A possible solution for these specific subjects could be hybrid courses, where traditional classes are complemented with online lectures. In this way, the courses are made more accessible to a greater number of people and also other advantages of online learning could be implemented. This scenario underlines the fact that online learning does not yet have the ability to cover all educational goals and needs. Even though it may be possible to simulate a physical learning experience, it does not imply that it is the best way to school students. The theory of Situated Learning by Lave and Wenger (1991) also suggests that learning should take place in the same context in which it is applied. Knowledge needs to be transferred in authentic contexts, which are more likely to trigger learning than most classroom settings. These genuine environments should reflect situations in which the taught knowledge is normally needed and applied. In this way, unintentional rather than deliberate learning is supported which is called the process of "legitimate peripheral participation" (Lave & Wenger, 1991, p. 16). Furthermore, the theory implies that social interaction and collaboration with other learners who form a community with certain beliefs and behaviors are also important for situated learning to take place. Beginners move progressively from the edge area of the community into the center, meaning that they more actively engage with the culture and turn into experts of the field. When looking at online learning from the perspective of the Situated Learning Theory, it can be argued that online programs fail to provide an authentic learning environment for the students and are therefore less suitable to be used for teaching than traditional classroom settings where hands-on experience can be delivered. Only the part of social interaction between the learners, which can trigger the individual development of every student, is to some extent given by online learning in the form of virtual communities, which are formed in the online classroom. Nevertheless, face-to-face social interaction has more power to trigger Situated Learning than written online communication, as it is the case for distance learning programs.

In order for an online class to be successful, proper preparation is needed to adjust the curriculum to the online medium. Here, the Media Richness Theory can be employed in trying to clarify the requirements, which are imposed on the online medium when it is used for knowledge transfer in Virtual Classrooms. Daft and Lengel (1986) argue that the relationship between the delivered content and the medium that is used for their communication is important for the success of the process. The theory suggests that this relationship is proportional. This implies that the more complex and ambiguous the content is which is to be communicated, the more rich and comprehensive the chosen medium must be. Communication systems which are to depict sociologic systems have to measure up to the technical and functional requirements which this theory presents – a difficult task that can present itself as a challenge for inexperienced facilitators of online learning. Qualified professionals are needed in order to develop valuable distance learning programs. Since learning and instructional paradigms are different in online and traditional environments, teaching methodology is not easily translated from face-to-face instruction into an online program (Diethe & Girolami, 2013). Dialog among students, participation

and group interaction must all happen via written communication – a very different approach to a traditional classroom setting where the importance lies on personal communication. Traditional classroom lectures must therefore be translated and transformed in order to fit into an online format. Therefore, the development and conversion of the curriculum are important in order to issue education of the highest quality and meet the needs of the online medium.

The following table summarizes again the advantages and disadvantages of online learning and MOOCs in a clear manner:

Strengths of Online Learning	Weaknesses of Online Learning
<ul style="list-style-type: none"> • Flexibility for the learners in matters of time, place and pace • Synergies created among the community of learners • Open and high-quality dialog • Student in the center of the experience • Reduction of discriminating factors • Easy access to learning materials • New and creative approaches to teaching 	<ul style="list-style-type: none"> • Ability to access online class may not be given (no Internet connection etc.) • Certain level of computer knowledge necessary • Technology not always 100% reliable • Not all types of learners can be served with online education • Instructors may not be suitable for online teaching • Administrators may be unwilling to introduce change • Synergies can get lost in MOOCs (too many students) • Not all subjects are suitable for online learning (where hands-on experience is necessary) • Curriculum must be adjusted to online environment

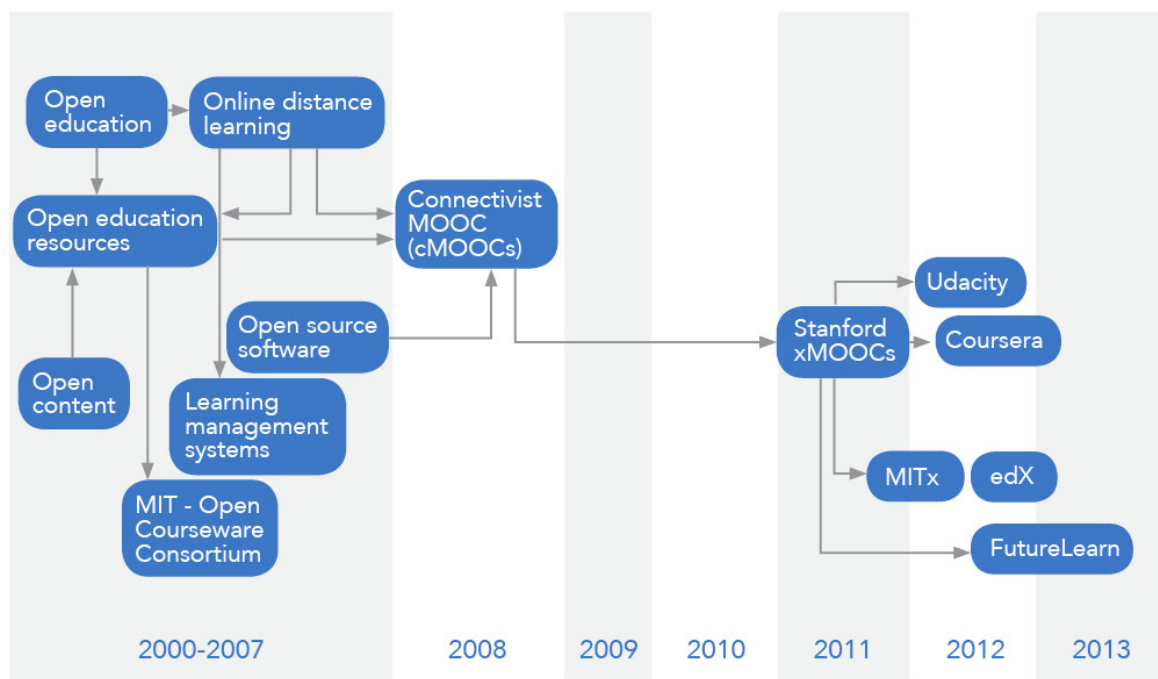
All in all, it can be said that nowadays the developments in technology and education offer new and exciting ways to expand learning opportunities and the use of various formats and modalities make it possible to deliver top quality education overcoming physical boundaries. Especially institutions of higher education see the advantages of implementing online programs into their range of courses in order to give access to the populations they wish to serve. Nevertheless, an online class will only prove to be successful when the technology, the students, the curriculum and the instructors are chosen and balanced carefully so that the full assets and strengths of this new development can be exploited and at the same time pitfalls can be eliminated that can result from the mentioned weaknesses.

5.2 Empirical Research Results

For the purpose of answering the empirical research questions, several interviews were conducted with experts in the field of MOOCs and Open Online Education. The insights that were gained in these semi-structured interviews will be presented in the following section together with further findings from secondary data, resulting from the desk research.

5.2.1 Development of MOOCs in the past and their current stand in the present

Due to its novelty, the phenomenon of MOOCs and its future evolution are hard to predict, but some scenarios are more likely than others. This section has the aim to illuminate the development of MOOCs in the past and their current stand in the present.

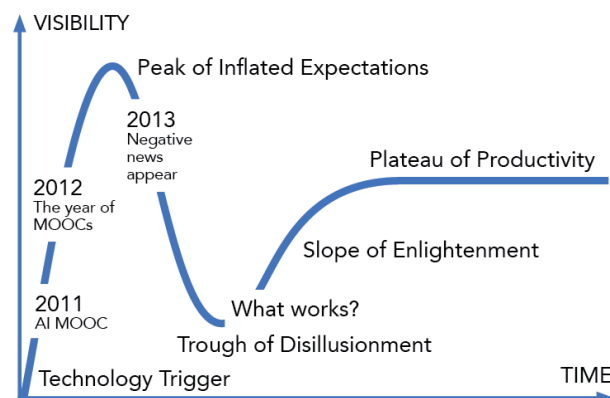


(Adapted from Yuan, L. & Powell, S. (2013). *MOOCs and Open Education: Implications for Higher Education*. White Paper, University of Bolton, UK. Retrieved May 14, 2014 from <http://publications.cetis.ac.uk/2013/667>)

In terms of the development of MOOCs in the past until today, their use has grown rapidly since 2008 especially thanks to their innovative use of cheap online technologies to facilitate the delivery of higher education knowledge to a massive group of people. Open Educational Resources have to be mentioned as the forerunners of MOOCs, since they promoted a philosophical as well as legal and technical movement in the field of education. These resources are released without proprietary licenses so that everyone is able to reuse and repurpose them freely (see Appendix, Interview #1, p.6, Question 3). This movement has led to the making of MOOCs and already the early types of MOOCs showed off the huge potential of connecting participants and helping them create a distributed peer

learning system by using varying open sources and free web resources. Three Stanford courses about “Engineering Everywhere”, which were launched in 2011, illustrated the capability of so-called xMOOCs as a cheap and at the same time high volume model of delivering online education. The courses featured the introduction to AI (Artificial Intelligence) and Machine Learning and attracted over 100,000 students per course. A conventional format of notes, assignments and recorded lectures, which were hosted before on Learning Management Systems for on-campus students, was the main basis of these courses. These experiments were followed by more strategic approaches of other institutions; still on the basis of xMOOC video lecture formats. The delivery of courses through online course platforms was more and more shaped by initiatives that incorporated contractual agreements between research-affine institutions and start-up technology firms. The MITx platform was launched in fall 2011, followed by edX, a not-for-profit platform from MIT and Harvard (see Appendix, Interview #1, p.8, Question 4). Partner institutions support the business actions of Coursera, which was established in 2012 as an independent for profit start-up and there are numerous other independent for-profit initiatives such as Udacity, who are working together with individual instructors or academics from different fields such as business and humanities. Also European platforms like FutureLearn from the UK or iversity from Germany developed themselves in the last years (see Appendix, Interview #1, p.7, Question 4).

In order to put MOOCs into their current context and judging their development as a whole, the Gartner Hype Cycle can be employed, as it paints a clear picture of where MOOCs have been and where they might be going (see Appendix, Interview #1, p.10, Question 7).



(Adapted from Yuan, L. (2013). *MOOCs and Higher Education. What is next?* Retrieved May 15, 2014, from <http://blogs.cetis.ac.uk/cetisli/2013/06/25/moocs-and-higher-education-what-is-next/>)

The technology trigger of openness and sharing resources freely in a global community (Open Educational Resources, OERs) led to the development of MOOCs and was followed by the AI MOOC from Stanford in 2011, which received a lot of attention and positive feedback in the educational landscape. In 2012, the New York Times announced the “Year of the MOOC” and with this, pushed the hype around these specific types of online courses even further and brought MOOCs to a peak of inflated expectations. With the start of 2013, also negative news appeared to circulate about MOOCs with their low completion rates of students and no accreditation systems in place. Problems were identified and the

MOOC was thought to not be able to live up to its expectations that were promoted by its developers in the beginning, like bringing education to developing countries and democratizing higher education. This caused the hype to fall into a trough of disillusionment, implying that universities are recently trying to figure out how to climb the slope of enlightenment and get onto the plateau of productivity by experimenting with MOOCs and trying to find out if they will be a part in their portfolio or not (see Appendix, Interview #1, p. 10, Question 7).

5.2.2 SWOT Analysis MOOCs

In order to get a deep and thorough understanding of the phenomenon of MOOCs, it is necessary to examine all influencing variables in this context. In this case, a SWOT analysis will be carried out so that the product “MOOC” is illuminated from all possible perspectives.

Strengths

First of all, the features of the product that give it an advantage over others will be discussed. For MOOCs, it can be said that their ability to provide everyone around the world with free education is a strong feature that gives them a valuable reputation on the educational market. Due to the fact that only an Internet connection is required for people to access virtual classrooms and online materials makes this format very attractive also for developing countries where people cannot afford university tuition fees (McClure, 2014). In this way, education gets democratized and equal opportunities are created around the world. Barriers are removed for financially unsteady students and basically everybody gets the chance to acquire new skills through online classes. This free education also provides a certain degree of flexibility to the students since the virtual classes do not obey to traditional start dates of universities (see Appendix, Interview #4, p.31, Question 2). Through this, students can choose whenever and wherever they follow the classes and can adjust this to other obligations and schedules, for example if they are already working alongside (Odom, 2013).

Weaknesses

Nevertheless, this promising new format of MOOCs also displays some flaws since this trend is still testing its boundaries during its development. The biggest drawback of MOOCs is the lack of personal interaction with fellow students and direct feedback from the professor or facilitator of the course is only available to a limited extent (see Appendix, Interview #4, p.31, Question 2). The teacher can only respond to some issues that arise in the forums due to the high amount of students enrolled in these online classes, through which the human link goes missing as well. The teacher to student ratio is maladjusted and therefore, personal feedback is not possible for the students in this context. Also, until now a system of receiving university credit for the completion of the course is not in place yet. Universities do not yet recognize the participation in MOOCs or transfer credits because they lack the needed amount of credibility (Odom, 2013). Linked to this point is also the lack of a system that controls cheating on final exams because the students can easily manipulate the final results since they are not monitored by authorities or university staff. As a last weak point of MOOCs the high dropout rates can be mentioned (see Appendix, Interview #5, p.38, Question 8). It is a given fact that only a small fraction of all enrolled

students really finish the MOOC they started due to a lack of motivation and other factors that make these online classes unattractive.

Opportunities

Due to the fact that MOOCs and online education keeps on developing itself steadily, this format displays many elements that can be exploited to its advantage in the future. First of all, several business models (also see Section 5.2.3) can be linked to the phenomenon in order to generate money. These models are very different and have various levels of potential for the future. For example, the user basis can be passed on to consumer brand companies to get revenue or the list of students names can be sold to recruitment agencies or Human Resource Departments. Another idea includes charging students for tuition, certification, and diagnostics, tutoring and peer assistance or collaborative group learning. Also colleges could demand a price for offering content to MOOC producers or the areas of advertising and recruiting analytics could be developed even further to generate profit from the design of MOOCs (McClure, 2014). Another opportunity that these online classes contain is the field of Corporate Training. Companies can make use of MOOCs from Harvard professors, for example, to teach new skills to their employees and in this way expanding the company's business portfolio. Furthermore, also social causes could be supported since MOOCs represent the next level of education for developing countries. This means that people from developing nations who do not have the financial means to afford university education can receive knowledge for free which can lead to the fact that the whole country experiences an upheaval (Dennen & Chauhan, 2013). By doing further studies, people seem to automatically contribute more to the social status of a country: they vote more often, live longer and consume fewer welfare services. Through this expansion of reach, higher education is brought to millions of students who do not have access to knowledge today and some social injustices could be corrected through the use of MOOCs (see Appendix, Interview #2, p.27, Question 10).

Threats

Apart from the mentioned opportunities for MOOCs, also some elements can be identified which could cause trouble for the whole product. First of all, the number of available MOOCs is increasing steadily, which is why it gets important to set up a system for quality control. It is important to distinguish the MOOCs from one another and to be able to tell which ones are of higher quality than others (Odom, 2013). Also, traditional universities and colleges fear that they will become less attractive as opposed to the more flexible and convenient online classes (Dennen & Chauhan, 2013). It is a given fact that the notion of education will shift in the coming ten years due to the influence of technology and the space will become more and more saturated. Additionally, universities need to carefully trade off the assets against the drawbacks of MOOCs since the educational institutions which produce the MOOCs are at a high risk as well: a bad MOOC can have reputational consequences due to its global spread and a breakeven performance is not always secured (see Appendix, Interview #5, p.40, Question 11).

SWOT Analysis Table of MOOCs

Strengths <ul style="list-style-type: none"> • Ability to provide everyone around the world with free education/democratizing education • Teach new skills to students • Barrier removal for financially unsteady students • Flexibility for students (do not obey to traditional start dates of universities) • Free education, no charge 	Weaknesses <ul style="list-style-type: none"> • No personal interaction with fellow students and feedback from professor only limited, no human link • Credibility, no course credit is offered (yet), universities do not recognize MOOCs or transfer credits • High dropout rates • No system to control cheating on final exams in place (yet)
Opportunities <ul style="list-style-type: none"> • Linking Business models to MOOCs to generate money • Use User Basis to get revenue from consumer brand companies or sell lists of student names to, for example, recruitment agencies or Human Resource Departments • Corporate Training: employees can be taught new skills etc by Harvard professors • Supporting social causes, next level of education for developing world • Lifelong learning: parents, people with jobs who like to upgrade their skills, flexibility of distance learning without costs • Expand reach: bring higher education to millions of students who do not have access today • Generate profit: charge students for certification/tutoring, or colleges for content • Diagnostics: recruiting analytics, advertising 	Threats <ul style="list-style-type: none"> • Numbers of MOOCs are increasing, important to distinguish themselves from each other, also quality control necessary • Traditional universities and colleges may become less attractive • Space becomes saturated, therefore careful assessment if MOOC will breakeven • Weak MOOC can have reputational consequences due to global spread

5.2.3 The Use of MOOCs

Due to the hype around MOOCs and making learning material accessible online for free, new developments in this area are evolving everyday. The use of MOOCs has already undergone a huge process and different business models can be linked to these online courses by now. This section reviews the various options of how MOOCs can be used in the educational setting and how they can generate money.

The following table presents a clear discussion of the different business models surrounding MOOCs.

Payers	In detail
Universities	<p>The principle of syndication, adapted from the newspaper business, can emerge increasingly in the following years. It implies that universities will establish platforms where they can make their best online classes available to other universities for a fee (see Appendix, Interview #5, p.37, Question 6 & p.40, Question 10). Probably, the set up of these courses will differ from MOOCs in that they are rather blended format courses with the need for local study groups at each partaking university (Dellarocas & Van Alstyne, 2013). This can also increase quality standards of education since only premium learning material will be shared on these platforms. Students will only benefit from these universal digital courses as opposed to their standard local teaching options.</p>
Students	<p>Different tuition models already exist where students are charged for accessing specific content. Since the interactive services with facilitators, other students and staff members of the online courses are an essential part of digital learning, piracy becomes almost irrelevant. Participation of others is necessary to work through the course by answering questions and grading assignments, for example. Each of these different functions of online classes can be seen as control points, which guarantee that the provider of the MOOC receives payment (Dellarocas & Van Alstyne, 2013). This can lead to the scenario that different classes are prized accordingly to what is offered by them.</p> <p>Another idea implies students to be charged for certification, which signals the mastering of the course content. In this case, students can access the course for free but have to pay for credentialing. Different levels can be used to first certify completion and subsequently certify obtaining of skills (see Appendix, Interview #5, p.38, Question 6).</p> <p>Due to the high amount of data that MOOC platforms gather from the students from online interaction, the providers can offer personalized diagnostic analytics to the individuals with demonstrating their strengths and weaknesses and adjusting the pace of the learning phases (see Appendix, Interview #2, p.16, Question 4). . This could be offered as fee-based services to interested students in the online classes.</p> <p>Since it is likely that students struggle with the presented learning material, faculty experts or students from previous classes can offer</p>

	<p>tutoring to them for a charge. In this way, students can be pushed to achieve more and questions can be answered more easily.</p> <p>In a collaborative group-learning model, students can form groups with which they can study together. This can help in increasing student's commitment to learning since the dropout rates of MOOCs are fairly high. Uncommitted students are pushed by the moral hazard problem of letting their peers down and in this way more people complete the course. Pricing can be designed with an up-front payment and the offer of rebates for joining study groups in the run of the course (Dellarocas & Van Alstyne, 2013).</p>
States	<p>It is already the case that some governments support education with subsidies since it is a key state function (see Appendix, Interview #2, p.15, Question 4). By graduation, people seem to automatically contribute more to the social status of a country: they vote more often, live longer and consume fewer welfare services (Dellarocas & Van Alstyne, 2013). Therefore, subsidizing education seems to become more and more relevant, also or even especially in the context of MOOCs.</p>
Employers	<p>MOOCs have the ability to improve the hiring process of companies by offering information about student's qualifications. Thus, employers get the chance to hire talented persons through making use of this recruiting service. These detailed insights into people's behaviors that online learning platforms can provide even better than transcripts are helping firms to find the right employees. Companies can recruit the best students from specific MOOCs, which can serve as a motivator for the participants as well, before frequenting the job market (see Appendix, Interview #2, p.15, Question 4).</p> <p>Another way how employers can use MOOCs is to fight the skills shortage of prospective employees. It is a given fact that there is a discrepancy between the need of companies and the product of educational institutions (Dellarocas & Van Alstyne, 2013). By customizing courses to the specific skills a company is looking for, two purposes are covered at the same time: marketing and recruiting intentions. Businesses can get the opportunity to commission MOOCs adapted to their specific requirements, promising the top students of these classes internships or even a job offer.</p> <p>Lifelong Learning and the continuation of education is another aspect how MOOCs can generate money. Existing workers can be trained new skills, which is a cheaper option than hiring new employees. The need for additional training in the workplace is already current and MOOCs can satisfy this demand accurately due to its low costs and flexible schedule (see Appendix, Interview #2, p.15, Question 3).</p>
Sponsors	<p>Due to the high number of students in online classes, MOOCs have already attracted companies who are interested in advertising. Sponsored courses, which offer education together with the brand name is a viable marketing tactic that however can distract from learning (Dellarocas & Van Alstyne, 2013). Therefore, classier mechanisms are needed. High-profile businesses can work together with MOOC</p>

	providers and in consequence the company gets access to well-trained participants.
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Next to these business models that can be linked to the product of MOOCs in the future, another aspect should be mentioned to add to the discussion of use of MOOCs. In general, it can be said that there are two possibilities to make use of MOOCs: the traditional way and in the flipped classroom way.

Traditional Method: Internal Production – External Use	Flipped Classroom Method: External Production – Internal Use
This procedure can be seen as the most common and traditional way MOOCs are being used at the moment. A university produces video lectures, quizzes and assignments and makes them available on platforms like Coursera and edX, for example, so that a large group of interested students can join the class and educate themselves further on a topic of their choosing (Daniel, 2012). In this way, the MOOC is produced internally and used on an external basis with many participants on a global scale.	This idea of using MOOCs involves integrating the material of these online courses that have already been produced by other universities in a Flipped Classroom way in local premises of small local institutions that did not yet produce their own online learning material. In this procedure, an offline course can be complemented with already existing online material in a convenient and low-cost manner by making use of video lectures explaining the theory of certain concepts and endorsing them during class. In this way, theory can be applied more frequently and classroom time can be used more effectively for discussion and hands-on experience (see Appendix, Interview #4, p.39, Question 9 and Interview #5, p.40, Question 10). The new tendency of opening up access to online learning material already suggests that this possibility will become more and more valid in the future (see Appendix, Interview #4, p.34, Question 9).

5.2.4 Trends and Developments of other eLearning techniques

Nowadays, the educational market sees a trend towards implementing eLearning into their portfolio, one way or another. MOOCs can be described as a small part of “a rich system of online and blended learning and [MOOCs] are just a flavor at the moment” (see Appendix, Interview #1, p.6, Question 2). Next to MOOCs, there are many other different ways of making use of electronic or digital media for the presentation and distribution of learning material and/or to support interpersonal communication. “Although xMOOCs dominate the news, we also look at smaller-scale eLearning partnerships involving modest institutions that are at least making money and getting students to degrees” (Daniel, 2012, p.6). Research conducted by the Educause Center for Analysis and Research reports that 57.7% of students have claimed to learn more in courses with some online component (Gaebel,

2014). This tendency suggests that universities need to investigate all the possibilities of complementing their portfolio with one or more of the various ways of online learning that are present at the moment. This section will discuss some of the most popular eLearning techniques apart from MOOCs and describes the way they bring benefit to the main stakeholders, students and teachers.

Blended Learning

The concept of Blended Learning describes the form of learning, which combines the advantages of traditional classroom teaching and eLearning. This didactical useful form of knowledge transfer strives to link the effectiveness and flexibility from eLearning with the social aspects of face-to-face communication as well as the practical studying of skills and abilities. This implies that different learning styles, mediums and learning theories are combined with each other. The aim of Blended Learning is to maximize the advantages through the combination of different mediums and methods and to minimize their disadvantages effectively. It is an important part of Blended Learning to coordinate the face-to-face interactions with the online phases in a meaningful manner. Through the unprejudiced use of the optimal medium in every step of the learning process, Blended Learning presents itself as the most universal form of learning and teaching.

(Since the Hanze University already started their research on and implementation of a Blended Learning environment, this concept will not be described in more detail. The concept of Blended Learning is just mentioned to complete the discussion on other eLearning techniques.)

Flipped Classroom

A Flipped Classroom presents itself as part of Blended Learning and describes the teaching method of switching the parts of knowledge transfer and homework with each other so that the student works on the learning content at home alone and the practice happens in the school or university, supervised by the teacher or facilitator. In the Flipped Classroom, the teacher creates learning material for the student, often video lectures, which are studied at home and the exercises are done in school (Strayer, 2007). The advantages of the Flipped Classroom concept are widespread. First of all, the students have more control over their own way of learning in terms of pace and location. With the freedom to watch the lectures whenever and how fast they want, students can pause, rewind and formulate questions when they are watching the short lectures at home and afterwards they can discuss the issues that came up with peers and the teacher. Student achievement and behavior in class can be improved because they get more time to understand the concepts and allocate enough time on reviewing material without running the risk of getting left behind in class. Assistance from the teacher and peers is given in class, which will support the students effectively. Additionally, collaborative projects and discussion in class encourage the mastering of skills. Students partake in their own learning process and furthermore teach and learn concepts from and to peers with the guidance of a teacher or facilitator. This helps to build confidence by giving students the possibility to own the knowledge they achieve during the lectures at home (Strayer, 2007). Also, the teacher can identify errors in concept application during class time and in consequence can react directly to these faults with one-on-one interaction. The content and the lessons are made more accessible to students who may be sick or unable to come to class for other reasons and in this way they

can make up lost time more easily. This implies that more flexibility is given to students as well as teachers/facilitators. In a Flipped Classroom, the class time can be used more efficiently and it gives more freedom to the students since they get the possibility to manage their own time more flexibly. Hands-on experience in the learning process is a valuable asset that can be increased through the Flipped Classroom concept and the involvement in their education is higher than usual.

SPOCs

SPOCs, Small Private Online Courses, can be seen as a part of the Flipped Classroom concept, since they can be used as the lectures the students have to study at home before coming to class. SPOCs have evolved themselves from the idea of MOOCs, with the aim to minimize drawbacks of the massive courses with being only available for a small and selected group of people and by that increasing the completion rates of these courses. Harvard has started to offer these small online courses to their former students, giving them a special value as they are only offered to selected alumni (see Appendix, Interview #1, p.6, Question 2). By using the same concept as MOOCs, that is developing online programs and video-recorded lectures and make them available online for a group of people, they have the potential to become popular also for non-elite universities (see Appendix, Interview #2, p.15, Question 4). SPOCs are more customized and personalized and can be implemented into a Flipped Classroom concept by buying existing recorded material from other universities and making these lectures available on common Learning Management Systems (Blackboard, Moodle etc.) and complementing them with face-to-face sequences in the universities (see Appendix, Interview #2, p.15, Question 4).

5.3 Analytical Research Results

In this section, the theoretical and empirical research results will be merged together to assess the possible future potential of MOOCs.

5.3.1 Future potential of MOOCs

Christensen, Johnson and Horn (2008) argue that MOOCs are a disruptive innovation for the educational market, meaning that MOOCs as a product enter the market at the bottom and relentlessly move upwards until they eventually displace established competitors. In this scenario, new entrants nearly always win whereas the more common view is that sustaining innovations nearly always win. When looking at MOOCs as a disruptive innovation, this research suggests that online courses, first of all, are no groundbreaking innovation as they were already present before the hype around MOOCs came up. Only the huge dissemination of these online courses, which was facilitated through the Open Education movement, made them more special as compared to past versions of online classes. Additionally, the drawbacks of MOOCs indicate that this trend does not necessarily have the power to displace established competitors but rather has the ability to complement traditional education to a certain degree. Human interaction is still an important and essential asset of teaching and learning and therefore, MOOCs are most likely to not outrun established universities in the near future. Nevertheless, they still have a huge potential to influence the educational landscape to a great extent in various ways, as it will be discussed below.

New learning and teaching pedagogies

Even though MOOCs display some flaws, as it was already discussed before, they still entail a huge potential to contribute to education at large. Their unique capabilities to strengthen teaching and learning must be used in a smart manner so that new pedagogies can be formulated for the connected, networked learner (see Appendix, Interview #1, p.12, Question 11). Rich and detailed data is generated by these online courses due to their massiveness in participants and this information can significantly add to the design of learning in the future. Information like IP addresses, posts in discussion forums, clickstream data, scores on homework assignments and end-of-course surveys can be analyzed to answer questions of success and failure, characteristics and abilities of students, correlations between used resources as well as persistence of the individuals. Moreover, the technological foundation of MOOCs is the unique feature of the Internet with its capability to link both people and ideas. Research shows that students are not obedient to the structure the teacher/facilitator of the course lays out but they rather find their own individual way of working through the given material with tools like hypertexts or linked videos (Gaebel, 2014). In this way, the course evolves more and more and can take on different directions as well. With this underlying technology of MOOCs, designers or creators of online classes can think about new ways to link concepts to each other with the help of different tools. In MOOC settings the teacher/facilitator also gets the chance to present similar ideas in different contexts to improve student's retention and their transfer of knowledge. It is also a possibility in the future for MOOCs to predict the optimum learning paths for students not based on the content but on their motivation for enrolling. This intelligent way of guiding students to successful completion of courses and obtainment of new skills is the potential of MOOCs in the future. Goals and motivations of

participants vary to a great extent, keeping in mind the massive number of people enrolling, and therefore adjusting the course to their individual needs can give new pedagogies their break in the coming years. Also peer support is a critical and important component of student learning and early research shows that only a few participants participate in the discussion forums (Gaebel, 2014). Therefore, creators of MOOCs should figure out more effective ways to engage and motivate students to post and comment on input given by fellow learners, perhaps in ways that copy more closely the fashion in which students communicate on-campus. By doing that, MOOCs could evolve into a more interactive experience and take advantage of the diversity of the users and their expertise, interest and motivations for participating. The interesting thing about MOOCs is that it is possible to revise and upgrade them by using the data they generate themselves. Research in the area of learning and how to best exploit the strength of a community, link ideas and take advantage of students' own motivation will provide clues on how to design the future of learning. Therefore, MOOCs display a lot of potential to have a huge impact on introducing new pedagogies in the coming years, adapted to the new style of learning and teaching in a connected world, influenced by the boost of technology.

MOOCs separated from institutions

At this point in time, the success of MOOCs is being questioned increasingly due to high dropout rates and the loss of personal interaction. Nevertheless, the advantages of these courses must be pursued further in order to not return to traditional classroom concepts. The interactive community that developed around the single MOOCs is one important advantage that cannot be underestimated. It stands for a shift in the management of learning from centrally administered services offered by universities to an unmanaged form of collaboration on the behalf of students themselves. And this development points to the most essential element in the future of MOOCs, since it is likely that they will no longer be offered by platforms like Coursera or Udacity but rather they will develop their own existence (also see Section 5.2.4 Use of MOOCs: Business Models, subitem "Universities"). This means that the courses will separate themselves from their university origin and will shape their own identity and stand for themselves alone, offered by independent platforms. In this scenario, several universities will be able to offer the same course, complemented by on-site events like tutorials and labs, for example, while the main content and activities are based inside an online environment. The current discussion around opening up access to MOOC material (recorded video lectures, additional information) and not closing them down after the set end date of the courses already leads into this direction (see Appendix, Interview #4, p.33, Question 7). Another vision of the future for MOOCs is that the importance of certificates will diminish. MOOCs rather offer a mechanism with which students can work through challenges, participate in activities related to a specific area of interest and connect to others in an online community accessible worldwide. These activities will be recognized by intelligent software and a digital profile of students can be constructed which is of interest for prospective employers. MOOCs should be seen as a way to obtain education and to establish a valuable track record and not as a course that leads to a certification. In this way, the perceived weaknesses of MOOCs can be overcome and it is likely that in the future, a range of providers will offer small and large courses, but the decision whether or not to participate will still lie within the students (Downes 2012).

Promising chance for developing countries

MOOCs present themselves as a natural progression of distance education as a wider concept. Open and distance learning, external degrees and Open Educational Resources (OER) were all forerunners to the MOOC, which constitutes the next step of advancing open access to education. Especially developing countries can benefit from MOOCs because they give access to quality education at a low cost level (Liyanagunawarden, Williams & Adams, 2013). Now considering the fact that many developing countries experience a youth bulge at the moment, these countries are in need to provide education for a lot of young people whose need for learning cannot be satisfied with conventional approaches. Africa, for example, is the most youthful continent at the moment with 65% of its population under the age of 35. This implies that alternative and cost-effective ways are wanted and with affordable technologies, MOOCs have the potential to fill this knowledge gap in developing countries. Since recently North American elite institutions largely dominate the MOOC space, institutions from Africa and India, for example, must find a way to separate the brand from the technology to exploit the strengths of these platforms and offer fitting programs. For this development to take place, more universities in these upcoming nations are needed to produce MOOCs that fit the needs of their target group and spread the knowledge throughout the population. Concrete initiatives are needed to give access to better quality content, mentoring and tutorial support. Additionally, learners from developing countries are more in need of developing skills than certifications of participation. Therefore, the MOOC model must be adapted to serve these demands, for example with OERs, which support possibilities for collaboration and support as well as greater interaction (Liyanagunawarden, Williams & Adams, 2013). Furthermore, the model of MOOCs as it is now must be revised into a blended approach with online and offline components to support the learners in the most effective way. A lack of MOOC infrastructure complicates the delivery of knowledge in developing countries recently because connectivity and access to devices are still current issues but the governments are trying to address these problems with free low-cost devices. In the developing world of today, MOOCs are not offered for primary qualifications but for continuing professional development and training since skills development is very important. The discrepancy between the qualifications people have and skills that are required in the job market can be addressed by MOOCs. The current model of these online courses is teacher-centric, institution-based and for the main part only available in English. The developing world could take on the task and turn MOOCs more learner-centric, offer material in various languages and target a niche with certain areas of expertise (Liyanagunawarden, Williams & Adams, 2013). In this way, the developing world can make the most of MOOCs' potential and help improving access to quality education.

6 Conclusion

The aim of this research is to find out how the hype of MOOCs can be put into perspective, considering all the variables that are influencing this new trend in the international educational market at the moment.

The central research questions formulated in the beginning of this research were answered satisfactorily. The theoretical sub-questions about the development of learning, teaching and technology is discussed in a clear manner and also the specific learning models, which evolved from a new understanding of learning, help to widen the knowledge about the complex technology-based learning environment of today. Furthermore, the strengths and weaknesses of online learning complete the theoretical discussion about the link of learning and technology. Two theories on traditional learning and eLearning, namely the Elaboration Theory and the Cognitive Load Theory, were not implemented into the theoretical discussion because they prove to be unsuitable in this context and would not have strengthened the discussion valuably. In this way, the theoretical part of this research presents a thorough discussion of the influences on online learning in general.

The empirical research questions address the phenomenon of MOOCs more specifically and needed to be answered with a triangulating mix of primary and secondary data, otherwise the information would have been incomplete. The difficulties of approaching spokespersons of elite universities made it necessary to fall back on secondary data about their online learning strategies and point of views. Nevertheless, the primary data was extracted from accessible experts from Europe and Northern America. The development of MOOCs and the current state in their evolution was presented as well as a SWOT analysis to illustrate all possible perspectives of MOOCs in general. Also, business models that can be linked to this new trend are discussed in detail to illustrate their future potential. Moreover, the question about other trends and developments in the area of eLearning was not discussed as in-depth as it was set out to be because it turned out that the approaches in eLearning are all very similar to each other and there are too many divisions of the same strategy. Labels like Blended Learning, Flipped Classroom and MOOCs all belong to the same set of innovative approach and therefore should not be separated from each other. Therefore, this discussion does not give too many new insights into the wider area of eLearning. Furthermore, the distinction between the international and the Dutch educational market was changed to a boarder European perspective since more valuable information could be extracted from that more general point of view. Due to the tight time frame allocated to this project, generalizations needed to be drawn from the accessible information.

The analytical research questions give a clear insight into the future potential of MOOCs and therefore rounds up the discussion of this research report in a clear and consecutive manner. Two analytical research questions still remain unanswered since they present themselves as part of recommendation section for the Hanze University.

All in all it can be said that the most important parts of the research questions were answered comprehensively. The research objective of this research was

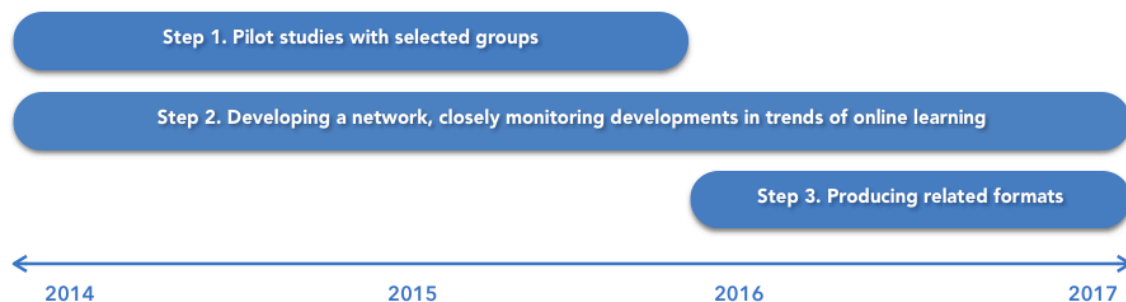
“To make recommendations to the research department of the Hanze University Groningen with regard to the new trend of MOOCs by making an inventory of the assets and drawbacks of this new hype in the educational market, which implies a thorough background analysis of assets, drawbacks, challenges and possible problems of MOOCs and formulating a future prospect of eLearning practices in such a way that the university can decide whether or not to follow this trend in the coming years”.

It can be concluded that this objective was fulfilled satisfactorily since this report clearly highlights the scope of MOOCs and their possible reach in the future. By following the recommendations given by this report, the university can make the most of this trend and at the same time does not risk investing into misleading business models.

7 Recommendations for the Hanze University

In this section, recommendations about the use of MOOCs at the Hanze University will be given. This advice will help the university to set up a plan of action concerning the trend of MOOCs and gives ideas on how this type of online learning can be implemented effectively into their curriculum.

The advice includes three different stages that overlap and should be carried out simultaneously as well. The following graph illustrates the timely order of events that this recommendation will refer to:



Step 1. Pilot studies with selected groups (starting 2014)

First of all, it is essential for the university to start experimenting with MOOCs in general to be able to determine what advantages they bring to students and teachers alike. An "Online Learning Initiative" should be set up which can trigger thinking about how to incorporate these new ideas into their teaching and learning pedagogies. At this point in time, the Hanze University does not need to produce MOOCs themselves since this trend is still at an early stage in its development and therefore, non-elite universities should try to make use of already existing material rather than producing material themselves. By setting up an initiative inside the departments, the implementation of MOOCs can be tested and piloted with selected groups, discovering their potential and finding a fit in the curriculum of the Hanze University.

The pilot studies can make use of existing material and incorporate it into their offline courses in a meaningful manner. This cost-effective way is making use of the "Flipped Classroom" concept and can significantly support student's learning. Due to the hype of MOOCs, there is much material available online which can be used by third parties as well. The trend is going into the direction of opening up access to these existing video lectures, for example, and not closing down the course after its set end date. In this way, other universities can make use of the material that was used inside a particular MOOC and incorporate them into their courses. And this is how the Hanze University can start to experiment with online learning in a simple way by using the "External Production – Internal Use" possibility described earlier (see Section 5.2.3: The Use of MOOCs, p.31).

Here is an example of how a normal offline course can be complemented with existing MOOC material:

- A normal marketing class from the “International Communication” program at the Hanze University can be used.
- A similar course can be found online on Coursera, for example. “An Introduction to Marketing” by the Wharton University of Pennsylvania.
- Their topics include Branding, Customer Centricity and Market Strategies, meaning that the video lectures available online will discuss these topics in-depth.
- Now it is possible to access the video lectures still after the course has ended, therefore, this video lectures can be downloaded and implemented by the teacher at the Hanze University for their Marketing classes by adapting to the topics of the MOOC course.
- The theoretical part of the first topic Branding of the MOOC course can be covered by the video lectures.
- Followed by that, the teacher can give the students a task, for example thinking of successful branding strategies they are familiar with.
- In class, selected students then have to present these branding strategies and discuss with fellow students what are the important attributes that made them successful, referring back to the theoretical parts of the MOOC video lectures.
- A discussion can be organized in which the students have to take stands, which are backed up by the knowledge they gained beforehand.
- In this way, a strategic Flipped Classroom concept is linked to existing MOOC material in a cost-effective manner.

This example should illustrate how easily MOOCs can be implemented into the existing structures of traditional teaching at the moment. With this experiment, teachers can try out the advantages of online learning with offline components and furthermore add new value to applying sciences in an innovative approach.

Step 2. Developing a network (starting 2014, ongoing)

At a later stage of the development of MOOCs it may become attractive for the Hanze University to produce online courses themselves. For this, partnering institutions should be found to share facilities, staff and equipment. Therefore, a network of other universities and independent researchers is a necessary requirement before the last step can be taken. With such a network the Hanze University will get the chance to discover resources in both staff and equipment and this will later on facilitate the realization of MOOCs or other related or similar formats. It is important to monitor who is doing what in the area of online learning and to be aware of forerunner universities who have visible people that can be appealing to the Hanze University with their approach and areas of interest. Personal contact is the most valuable step in order to collaborate with them later on. This task could be taken over by the before mentioned “Online Learning Initiative”, which should be set up inside the Hanze University to trigger the realization of this advice.

Collaboration could be in terms of:

- Participating in a MOOC another university is offering, working together on its realization
- Use a MOOC of another institution that is of interest to the Hanze University and implement it in the program

- Get another institution to design a MOOC for the Hanze University on a tailored topic which can fill a gap in the university's curriculum

All of these possibilities open up once a strong network is established which could be used for collaboration purposes. Not only other universities should be contacted but also organizations, which could be interested in offering a MOOC to a specific target group in order to get access to student's data and closing a knowledge gap between the product of universities and the need of companies. For this purpose, a list of experts accompanies this advice to facilitate the start of networking.

Contact Details of Experts	Related Organizations
Helene Fournier helene.fournier@nrc-cnrc.gc.ca	National Research Council, Canada Research Officer
David Cormier dave@edactive.ca	University of Prince Edward Island, Canada Manager of Web Communications
Stephen Downes stephen.downes@nrc-cnrc.gc.ca	National Research Council, Canada Senior Researcher
George Siemens gsiemens@elearnspace.org	University of Athabasca, Canada eLearning Expert
Rita Kop rkop@yorkvilleu.ca	University of Yorkville, Canada Dean of Education
Pierre Dillenbourg pierre.dillenbourg@epfl.ch	EPFL, Switzerland Professor
Darco Jansen darco.jansen@eadtu.eu	EADTU Office, The Netherlands Program Manager
Yishay Mor yishaym@gmail.com	London Knowledge Lab, United Kingdom Independent Researcher
Patrick Jermann patrick.jermann@epfl.ch	EPFL, Switzerland Researcher
Stephen Powell stephenp.powell@gmail.com	CETIS, United Kingdom Reader in Inquiry-Based Learning

The contact details of these persons were, among others, found on the "Open Education Europa Portal" online (www.openeducationeuropa.eu). It is also advisable for representatives of the Hanze University to sign up on this portal to get into contact with knowledgeable people in the broader area of Open Education to kick-start the networking process. (The interviews with some of these experts can be found in the appendix, p.5 ff.) Stephen Downes, George Siemens and David Cormier are known as the persons who coined the term MOOC (see Appendix, Interview#4, p.30, Question 1) and are therefore of high value for any network or advice in the area of Online Learning.

Additionally, it is important to monitor the developments of online learning very closely since this trend is still evolving quickly and will bring about changes, which need to be studied continuously. The trend of MOOCs is only two years old and will keep on developing in the coming years. Therefore, the "Online Learning Initiative" would also be in charge for monitoring these developments closely and adapt the university's approaches to them.

Step 3. Production of related formats (starting 2016/2017)

The last step of this advice includes that at one point in time, the Hanze University will produce their own online learning material, adapted to their own needs and demands. It is likely that this point will only come within two years of time, since the development of online learning will evolve and become more concrete in the future. Right now, MOOCs still have to test their own boundaries and more general research in this area is needed so that the advantages of these online courses can be maximized and the disadvantages can be outrun. Therefore, it is advisable for the Hanze University to postpone production of MOOCs themselves and first make use of external online material that already exists and test out the area of online learning in a low-cost manner. Afterwards, when the trend is more developed and established, the university itself can produce MOOCs or other similar video material that will have evolved by then. For this later stage, the MOOC Production information in the appendix (see Appendix, Section MOOC Production, p.45 ff) can be employed to facilitate this stage.

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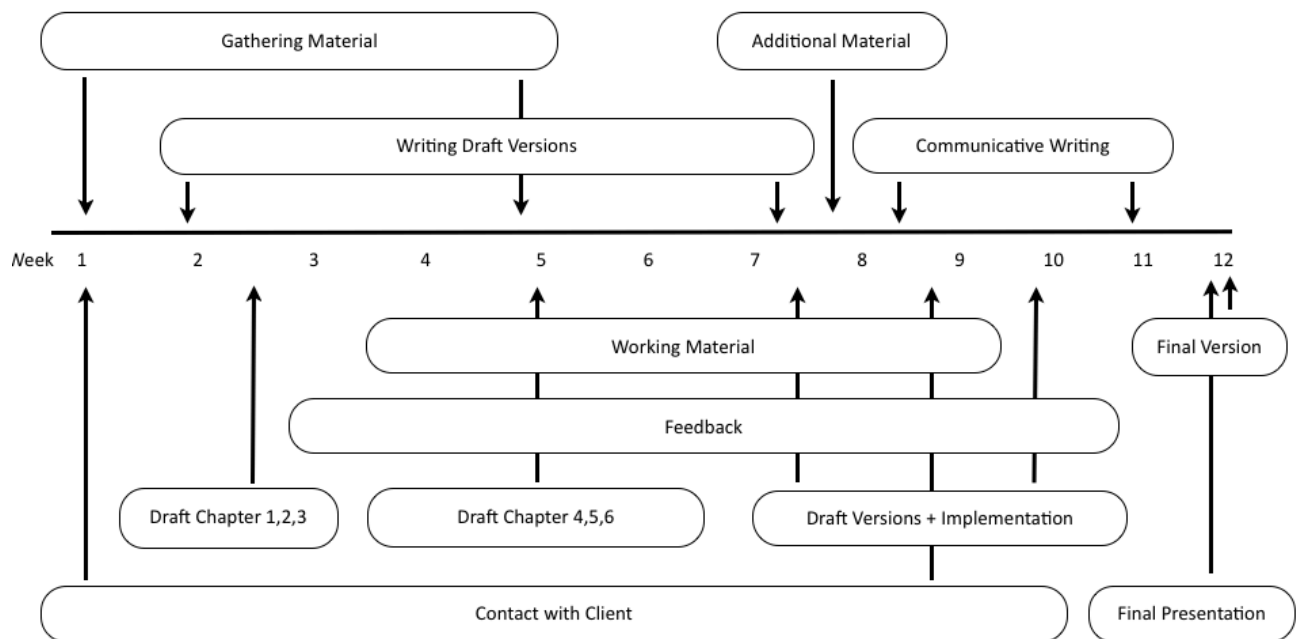
1. Research Planning and Feasibility

1.1 Activity Plan

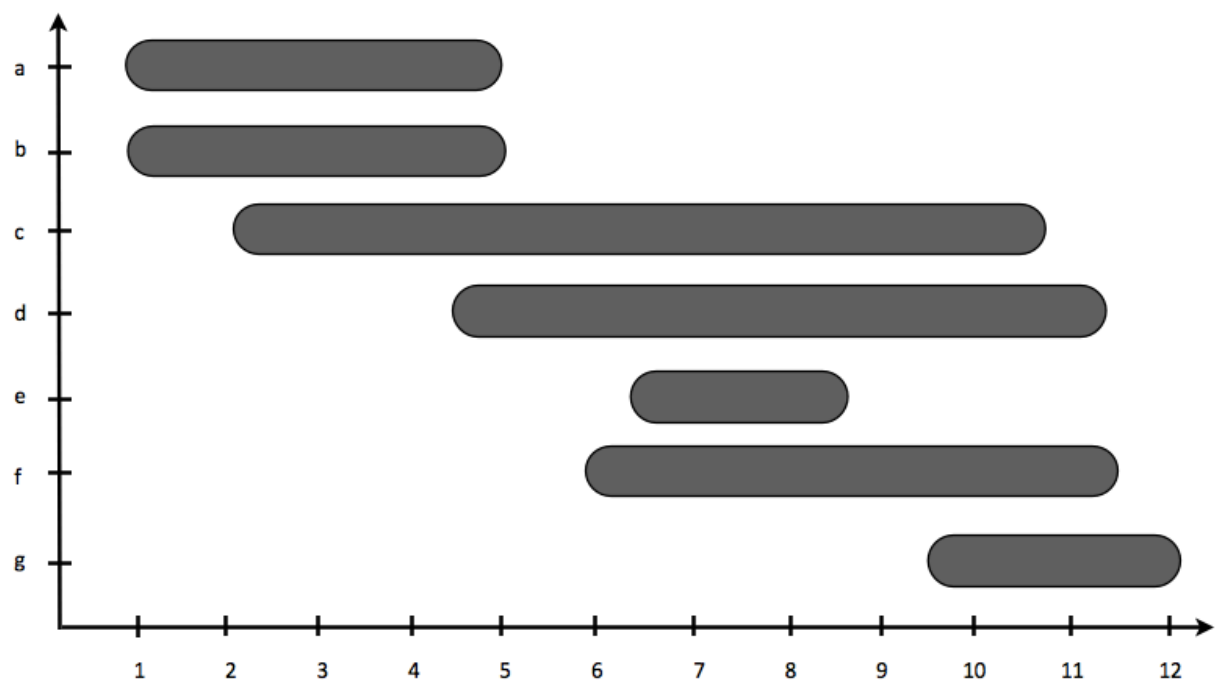
See Section 8.3 for the Histogram of the research project, which illustrates the planned conduction of the single activities and their overlapping (Verschuren & Doorewaard, 2010).

- a. Gathering research material
 - Two research strategies: desk research and interviews
 - Search for suitable literature
 - Conduct interviews with 5-8 professionals on MOOCs/educationWorking hours: 2 weeks, Turnaround time: 3 weeks
- b. Reporting and initial analysis
 - Transcription and analysis of interviews
 - Literature review to help answering Research QuestionsWorking hours: 1 week, Turnaround time: 2 weeks
- c. Feedback
 - Advice and guidance from supervisor from Hanze University
 - Feedback from clientWorking hours: on-going, Turnaround time: /
- d. Development of material
 - Examination of results of activities (e) and (f)
 - Drafts of strategic advice
 - Working on final chapters for the reportWorking hours: 3 weeks, Turnaround time: 4 weeks
- e. Additional material
 - Contingency measuresWorking hours: 1 week, Turnaround time: 2 weeks
- f. Draft chapters
 - Writing of draft versions, reviewed by supervisorWorking hours: 2 weeks, Turnaround time: 2 week
- g. Product
 - Combining several drafts
 - Clear formulation for the reader
 - Layout and printing of the final reportWorking hours: 1 week, Turnaround time: 1 week

1.2 Time Axis of Research Project



1.3 Histogram of Research Project



1.4 Table of Contents of Final Research Report

Title: Strategic Communication Advice + Recommendation for the Hanze University on the future potential of MOOCs

Sub-title: Are Massive Open Online Courses really here to stay?

Chapter 1 Project and Organizational Context

Chapter 2 Theoretical Framework

Chapter 3 Research Design

3.1 Conceptual Design

3.2 Technical Design

Chapter 4 Research Results

Chapter 5 Conclusions

Chapter 6 Advice

Chapter 7 Implementation

2. Interview Nexuses

Interview # 1	Date: 01.04.2014
Contact details interview partner	Name: S. P. Position: Former Head of Innovation at Jisc Company now: Oxford Internet Institute City, Country: Oxford, United Kingdom

1. Can you tell me about your background?

After my post graduate studies I came into looking at online learning doing some research in that area in the mid-90s, and that was when the web was sort of starting. And I think that really just caught my interest at that point, and I feel very lucky to continue in this area ever since. But sometimes my emphasis is more on supporting research then learning and teaching, although of course it's a continuum. And my first serious page I have dropped was at Oxford, the national center that no longer exists, which was supporting learning technologies. We were lucky enough at Oxford to have the textual studies, so we were looking at going around the country and encouraging academics to think about using technologies, including CDs and laser desks. Then I started to work together with academics on learning and research projects, on a range of witchcraft science through to software to teach Greek and Chinese and all sorts of lovely things. And then I went from there to work for Jisc, and so I have had quite a long career at Jisc, which is the national innovation and funding body, and I went there to lead the eLearning team in 2001, and then became Head of Innovation for 9 years and I have just recently left there after doing all kinds of wonderful things. But I have been lucky enough to land at the Oxford Internet Institute at the moment where it is lovely to get back and be doing some research for a change and to be based back in an institution for some time. I have a long-term interest in how universities adopt new systems and processes and either responding to changing circumstances or using them to initiate change, so you know, but obviously with a particular focus on technology. And when I was thinking of what research area I wanted to look at, it was obviously right in the middle of the MOOC hype bubble, but I think it is a really interesting case study of a technology that has come along that has had a huge amount of hype around it, and it is just a really interesting area to look at and see how universities are responding to the opportunities and threats of MOOCs and not just MOOCs, actually also other online learning opportunities, cause I see MOOCs as part of that whole spectrum of the digital offer. In the last time, I have been going around universities in England, Australia, New Zealand, America and interviewing them on how they integrate this new trend and MOOCs in general.

2. Can you say if you are pro MOOC or against MOOC?

I would say I am an informed observer at the moment and I think it is such early days, I think there is a huge amount we can learn from this experience and lets make sure we get some

good things from it. But I wouldn't say I was particularly in either camp and I would say also there are many different kind of MOOCs as there are days of the week and beyond actually, and that is one of the interesting things at the moment, its starting to see the different models that are emerging. But I think it is very important we don't, we see MOOCs as actually potentially very small part of a very rich system of online and blended learning and all those things and they are just a flavor at the moment. But what they do have on their side is they have captured a lot of attention in which can then translate to resources and we should be making sure that we maximize the use of those resources and do good things with them.

3. What factors encouraged the development of MOOCs in the past?

The openness thing and MOOCs, it comes from sort of a directory we have been on for quite a number of years, around openness and we are seeing that in all kinds of spheres and domains, so in open access in research, publications, open science, open government, open software, so there has been that kind of philosophical but also legal and technical movement actually that has meant that this is something people have taken seriously and wanted to engage in. And one of the real main foreruns to MOOCs has been the Open Educational Resources which have been a really powerful and important movement. They're getting a bit less press and recognition now unfortunately, I think, because of MOOCs of slightly stealing some of the thunder to be perfectly honest, but the work is still going on and there is lots of really good stuff out there so we are teaching, learning and research resources in the public domain or they have been released under an intellectual proprietary license that permits free use and repurposing by others and that's a very important part of OERs, its not just that you can use it freely, you can also reuse and repurpose it freely and a very wide range of educational resources, so it could be a full course, so it could be a MOOC, or a MOOC could be an OER, it could just be some course material, some modules, some textbooks, so OER materials can be very small or very big and I think, its interesting, the OER didn't get picked up and exploited in a way that MOOCs is doing now and I think it is partly because of this broader definition. People haven't always quite known how to engage with OER because it is flexible and wonderful and out there and you can take it and shape it in a way that you will. Its less restricted and sometimes more difficult to get your head around and think what am I going to do with this thing. When I am going to look for them I don't even know what kind of shape or size I might come back with. So, but OER was from 2002 onwards really where OER was really growing as an international movement, a very much philosophical movement as well as technical movement, I think it was incredibly important for where we are with MOOCs now and it has really shaped a lot of the infrastructure that is in place, the understanding and actually it led to the thinking that really led to the first MOOCs, so the first MOOCs developed by George Siemens, Dave Cormier, and Stephen Downes in Canada, and way back in 2008, well before this was getting in the "Times" and the "Guardian" every weekend, they ran course called "Connectivism and Connective Knowledge", which again came from very much a particular pedagogic and philosophical approach. So they were all very interested in, can we be learning through connectivism, through information and people being in a network and connecting that together and having that as a learning opportunity and learning approach. And so they were still using the web technology and open technology as a way of actually putting that into practice and they ran this course, that was running as a face-to-face course at the university, but they opened it up to some

more people to come and engage with and they were amazed of how many people actually came and were interested and so that was the first kind of thing. It's fascinating because they were just doing something that for them led naturally to Open Education and Open Educational Resources, as an experiment and then it kicked off this tsunami of poorly understood pedagogy because connectivist unleashing a force they cannot control which I love because, you know, these guys were coming from a very pure standpoint, they were trying to do something very specific with a very rigorous approach to what they were doing, very experimental, and this is what we sometimes call cMOOCs, connectivist MOOCs, but what it somehow led to is these things which are called xMOOCs which are the, they are not all about pedagogy, much more large scale, looking at potentially hundreds of thousands of learners, often quite a restricted model the way that they are taught so often quite limited in terms of the pedagogic model, much less about the learner taking control of their own learning and learning in a social way, connecting with other people. And in parallel to this open movement there was at the same time in Stanford people who have very good ambitions but also put a little bit of entrepreneurship behind it basically, so we got people to set up Coursera, which a for-profit company and I understand they are originally wanted to be not for profit, that was what they were looking for, but they couldn't get the capital and things to go fast enough if they didn't run it as a for-profit. And so we have now got Coursera which is the big MOOC platform which has 5 million users and has created this sort of mad MOOC world. So it is sort of sparked off this stream of on one hand hype where we have people writing papers for the governments around the world saying, finally we found a way to make higher education cheap and affordable and open to anyone and it will solve all the problems in the developing world and all the quality issues will be sorted. All you do it put it online on one hand and then on the other hand people saying, Oh my goodness, none of us will have jobs in the future and what is all this rubbish and you cant learn online, everybody knows it is inferior, all students want is to come face-to-face with people, that is the only way you learn. And you have got these two extremes and when you read what is being put in the press it does tend to put it this way. Its maturing now but I think through sort of 2012 we saw a lot of that.

4. What can you tell me about the platforms that are providing MOOCs, like Coursera?

So now things have been gone down a little but we say that there are three big platforms that are only two years old you can see how early it is in the evolution of these things, so we have got the big three, we have got Coursera, which came out of Stanford, edX, which came out of MIT and Harvard, and Udacity, which also came out of people from Stanford, we have got now a UK offer, which is called FutureLearn, and I think it is important to point out they also have universities on that platform from Australasia so it is not just the UK, and they have other partners as well, European platforms OpenUpEd and iversity, and then also possible thousands of others in between, so you can kind of see that's where things have developed to a certain point of maturity, and have led to certain geographical and political offer like FutureLearn, and European offers which all are growing and so on, there are also very many more of these things and I think we are in a phase where people are starting to think about consolidation and how many platforms do we really need. If we look at the main providers, it gives you an idea of the kind of global scale, so across those big three you already got 8 million people signed up, Coursera kind of got out of the starting blocks and has grown massively within two years, so they have got over 5 million students, over

500 courses, 107 partner schools, and students from 119 countries, I'm sure it is more than that now. edX still significant but smaller and Udacity, similar size and scale although Udacity is starting to move more into a kind of lifelong learning corporate training world, I think, and away from mainstream higher education that has been covered quite widely in the press just recently. But who knows what will be on next week, edX already has changed quite significantly since it started in many ways, edX is the only one at the moment that is not for profit, and that is quite interesting, and we are already seeing the, it seems it's the one of the three platforms, the one that is behaving in the most genuinely open way. So the whole openness of MOOCs is quite interesting because they may be open for anyone to come in but whether you can take that content and teach with it yourself is often, that is not always possible. So open licensing is not necessarily part of it and often that platforms are closed down and you cannot use their software, you could come in and be a partner and have your course hosted by them but you can't take the code and do things with it. edX is the exception to that because it much more controlled by Harvard and MIT so they are keeping much more their resources open and opening up that data and searching reports and analytics about their learners and who they are having and to study with them and what they are learning and how and so on and so forth, which is all incredibly rich and valuable data for educators all over the world and I think, again I mentioned earlier the benefits and to get the most value from the MOOC phenomenon, well, that is certainly in my view the things we should be doing and trying to ensure is that it is as much as possible open and shared within the boundaries of privacy rules and so on. But you can see from within two years they have become pretty significant things and literally hundreds of different courses are running out there that you can choose from. And if we look at the 12,000 plus courses that are available, interesting is to look at the range of different subject areas so it really is quite broad. Some of the early courses were very much focused in computer science and programming, probably for obvious reasons, that there were people who were creating things you understood how to go about doing it well but also, I think it is quite easy to see that it was easy to attract learners who were interested in those particular disciplines but we have now got a really broad spread of areas and quite significant numbers of humanities courses as well. And they are very good at promoting themselves, it's fascinating, so if we look at Coursera as a brand, they are putting these sort of things out and this is coming out all the time, these great infographics which explain which summarize their revolution in the area. And you can see where the Coursera institution is, where their partners are, all over the globe, and they are all offering courses in different languages, there is a site that you can go on when you are looking for MOOCs, so it is bringing together MOOCs from all over the place. But then if we look more into some of the UK offers, we are looking at FutureLearn which is working also with the University of Edinburgh, these kind of a definite element of marketing about this that we would not deny so if you happen to have a world famous professor and you can time things with the giving out of prestigious prizes, people will follow your course and complete it, and through that there will be people who will get to know the university better, come as a post graduate or perhaps encourage their children or grandchildren to come as a undergraduate or a graduate, you know, and particularly looking at reaching out to students in markets which is unfortunately the kind of language we have to talk in right now, looking at where universities maybe don't have outreach into certain parts of the world and they would like to look for really good students in these places. It is an opportunity for them to engage with that institution in a different way.

5. How do you assess the criticism about MOOCs and how true is it?

Just to talk about some of the popular MOOC myths that have emerged already from these two years of early learning, I suppose, one of my favorite is that MOOCs are only being run by the institutions in order to market themselves, well, there is a grain of truth in that but I don't think that is the whole picture at all. There are certainly not only being run by the institutions now, we are saying there are many different types of institutions that are running MOOCs and online learning, there is no doubt that marketing information is part of it but it is not the only reason, I don't think at all. Secondly, that MOOC learners are all western males over the age of 26, research that came out quite recently, I think early statistics were that that was a significant part of the population, that has partly to do with access to technology and willingness to, you know, try out things for you and all the subject areas that I described, but actually there is a much broader range of people. There are platforms that have more to do with lifelong learning and their biggest market is India and its for professionalization and it's a mix of gender balance and so on. So I think, there is a grain of truth in it but it is early days to make these generalizations. Thirdly, MOOCs will fail because the business models don't work. Well, the business models are certainly not proven and again, it is very early days for business models, I think at the moment they are not going to fail because people are willing to invest in what they see as something that will bring them benefit to their organization, but in the longer term they are serious financial issues that will need to be worked out. When it comes to running an online course and needing 10 or 20 hours of extra effort per week how are you actually going to make that happen. It can be done properly, I know of people who have done that for years, but its not the rule, it's the exception at the moment. And equally MOOCs will fail because there is no accreditation. Well, it does not seem that way, people are still signing up for MOOCs and they don't seem to care too much about accreditation. Now again, that will change and as MOOCs fragment into different types of MOOCs, you may be going for one particularly because you do get accreditation, and you may be paying for that, you might not care if you are finding the right online course that gives you what you need. But actually a large part of the MOOC consumers and learners at the moment have said that accreditation isn't an important part whether they take them or not. But if some of the facts we can see that at least there are million users worldwide, they come from a very wide range of geographical locations, they vary widely in age, and not all MOOCs are the same so demographics can vary very widely depending on the subject are and the level of study and I think for people who I have been talking to while interviewing universities, they all actually are thinking very carefully now and its actually who are we trying to target. So I think the immature stage, it was very much, hey, we can do these things and actually, we have some very good material here and some keen people we could get a course here online, that's pretty cool, they are already moving to the stage that what is it we want to achieve with this, who are we trying to target and why would our university invest in this. And there could be a number of reasons for this. And also completion rates are actually very widely and some of them, more recent research shows that can be up to 50% and again I think that does relate well to the targeting question, so if you know what kind of people you are trying to go for, and you target them very well, then they often will stay and complete because they want to. It comes back to student motivation, and there are basically four types of students who, so why are the students doing the course, and they are split across high school, undergraduate and graduate level, but they are labels at the moment, and the descriptive are students who are ordering the course, so they were sort

of testing out the, exploring the course in that way, and finding out what's in the course. Students were actually trying to complete the course, students who were disengaging, and one who were sampling, really just taking out very key resources. And obviously a lot more, you have got very large populations in MOOC learners, you can start to look in much more depth into these different groups and think about. So if we know there are at least four different categories of people, do we try to target some of those particularly, are any of these not relevant to us, do we think this is legitimate, and do we shape our courses to their needs. There are a lot of different ways you can structure things and if you are taking a learner focused approach; you can see some ways to do that.

6. Do you also know more about the new trend of SPOCs?

Yes, as I said before, MOOCs break out into all kind of different things so Harvard gets in the news for talking about SPOCs, which are Small Private Online Courses, so they are particularly targeting their alumni and saying we are going to give you access to private courses that are only open to you, they are free, they are for you guys, they are not for anybody else, and it is kind of interesting fragmentation, so now they are experimenting with limiting numbers, but I think it is less about limiting numbers, it is more about giving a particular offer to a particular group for a particular reason, which is your alumni, because you want them to be on your side.

7. Where do you see MOOCs now in their stage of development?

MOOCs on the Gartner Hype Cycle, if you are familiar with that, it starts at 2011 actually, if we look at the AI MOOC which got so much attention in 2011, 2012 was the kind of year of the MOOC, 2013 started to where we were at the peak of inflated expectations, negative news starts to appear, and then I think now we are probably in a bit of a trough of disillusionment, and people are really asking questions about what works and what doesn't and I think now it is legitimate, and its interesting to talk to the universities who are trying to climb the slope of enlightenment and get onto the plateau of productivity, because it is finding out actually, perhaps by doing 1 or 2 experiments with MOOCs, putting some real effort in there but fairly low risk intervention, try out, learn, pilot, and then go on to finding, are MOOCs going to be in your portfolio of activities or not, maybe they are not for you, maybe there is no reason to do it, maybe it's a small or a larger part.

8. What is your conclusion concerning the topic of MOOCs?

There is no single MOOC model, the content and the approaches vary and there are developing constantly, there is a very fast development in this, things are changing all the time, and we are just at the beginning of what MOOCs will offer, you know, the rate of development and growth is very fast, blended MOOCs, accredited MOOCs, varied course length, there are many other things. MOOCs could be offered in different languages by different providers, by charitable foundations, by companies, by interesting partnerships between universities and so on. And also I feel we don't know enough about what participants are really getting from MOOCs but what we do know is they have lots of different motivation and engage in different ways. We shouldn't make assumptions at the moment about that. But whether this is a disruptive innovation, which is the kind of the whole point of this really, if we look at Clayton Christensen's definition, so you know the process by which a product or service takes root initially in simple applications at the bottom of the market and then relentlessly moves up the market, eventually displacing

established competitors, so the disruptive innovations are where the new entrants nearly always win whereas the more common model where sustaining innovations nearly always win and you could certainly say that for most mainstream universities, they are the ones who nearly always win, and they do a very good job doing that, over many years, over many changed cycles and all kinds of attempts to make radical change, they have innovated, they have changed and moved on to what extent trends are likely to win. And so thinking about all entrants likely to disrupt and this whole things about whether this is incredibly radical and will it change, whether the face of higher education will be changed forever by MOOCs. I don't think it will, to be honest, I mean I would say I think there is significant potential to undermine the business models to some of the less distinctive institutions while, and if we are just looking at the UK, while we are going through such a phase of funding at the moment and with finding the potentially, they are a lot of universities that are fairly homogenous and offering similar courses, not always the costing is very clear, and they perhaps having less places or less applications for places, they could be threatened by someone who can say, actually you can offer much cheaper online and in a flexible way. But I don't think that the disruption is necessarily about MOOCs, what is being offered as an alternative, it may not necessarily be anything massive, and I would predict it probably won't be entirely open so I think we might just be in a kind of fashion at the moment of the kind of everything open. I am sure there will be some elements of open courses still offered because universities are finding there is a very good way of exposing your offer to people, strengthening your brand, showing off some of your strengths as a research and teaching institution, but whether that will be most of the investment when in fact you could instead be saying, well some of this will be open, but what we like you to do is take an accredited online distance post graduate course, I suspect the openness will be less of a feature in the future. But where I do think it is genuinely disruptive, I do think it is making significant disruption in individual institutions to think about online learning in a serious way. When I am interviewing people from a whole range of institutions, I am hearing from them that when they run an event on MOOCs, they get completely overwhelmed by academics who want to come and engage, and if you are not doing a MOOC this week how are things here that you can take back and incorporate in our own teaching, are you thinking about blended learning, possibly offering some of your course online for apart of this. All the kind of students we could be engaging with all the ways to do this, and even if it is only about universities learning about what they aren't going to do, rather than what they are going to do, I think it is making people genuinely engage with the question, so that is quite helpful.

9. What are the main motivations from universities to take part in the trend of MOOCs?

From the research I have been doing about the motivations from universities to get involved in MOOCs that has been coming out so far, most of them are saying that this is a platform for experimentation with online learning in scale, without disrupting their campus students, they don't necessarily feel comfortable about trying out too many innovations with technologies with their fee paying students but it is giving them access to many thousands of students sometimes who they can try things out with and then they can learn from that and they can bring that back to work with academics but also with learners on campus or sometimes distance learners, so there may be a combination. Secondly it is about strengthening the corporate brand, but its more nuance than just marketing, its very

much about increasing global presence in particular parts of the world, it maybe they have got particular target in performance in rankings, and they are saying this is a way to try and help to do that. Thirdly, about demonstrating their expertise in particular subject areas and especially their research strengths, which is quite interesting, so where there is a real, maybe a hidden jewel, where they have a really brilliant department of X, it's a way of getting that out there for people to find out about it. And that of course helps their branding but that actually, they often are quite specific about wanting for example more postgraduate students, and higher quality students. Fourthly and this is actually also very important, it is widening participation in a good way of public good agenda, and that's partially what we are hearing, about democratization of education, however how much you can achieve that with the level of resources needed it will be interesting to see in the future. And then working with partners, so working with maybe charities or corporate partners, to actually do something a bit new and different, so I think that is interesting as well, for even the most prestigious institutions, where they might not run along on campus, where they can actually do something online and co develop that, and market it together and they can quite a lot of students from it, and finally about expertise in distance learning and wanting to find out more about that to do it more.

10. What are the numbers of investments that are put into MOOCs until now?

If we look at the sort of level of investment that people are making, I can only talk about the UK here now, investing in MOOCs, typically, is about 30,000 Pounds per MOOC, that are the kind of figures that people are working with. Many universities are running 2-6 MOOCs at the moment, so their total start up investment is maybe 60,000-180,000 Pounds, recurrent cost on top of that are not clear and haven't been spelled out. But if we look at the total expenditure of UK HE sector in 2011-12: 26,7bn Pounds, this is a drop in the ocean really, so I would say the level of investment at the moment by mainstream institutions is not significant and although it is something that they are reacting to in a quite strong and strategic way, I am not yet hearing about people who are putting really significant investment to this and I personally doubt that will change a great deal in the future.

11. People are calling MOOCs a disruptive innovation for the educational market. What is your opinion on that?

In terms of disruptive potential, I think we can look at that and how much this can really help to disrupt and have more the focus on pedagogy and online learning and universities offering these individual different ways, so we have got MOOC participants which is a huge population of online learners, that we have never really had before, and varied disciplines, demographics, motivations and contexts, and very importantly what underlines that, again this is a timing issue to some extent, we are at a point now where we have got network technology, data collection and analysis tools and techniques that mean we can really understand a great deal more about how learners are interacting with each other and with content than we have ever been able to before. And obviously analytics and big data are kind of buzzwords, they are actually very popular in higher education at the moment in terms of looking at how learners learn but what is being done at the moment is pretty crude but there is potential to shape more inclusive, flexible and learner-focused education, we have got some real opportunities to learn more about how learning and learners work.

Interview # 2	Date: 04.04.2014
Contact details interview partner	Name: A. S. Position: Greek language professor Company: École Polytechnique Fédérale de Lausanne City, Country: Lausanne, Switzerland

1. What does your job position entail?

Now I am not working on MOOCs. My position on MOOCs was like six months ago. I was working for EPFL, for the craft lab and there is Professor Pierre Dillenbourg, and the craft lab here at EPFL is one of the first MOOC factories, because you also wanted to know more about European MOOCs. EPFL is one of the first institutions to run MOOCs and also to run MOOCs in French, so this is the big innovation and their dream here at EPFL is to make MOOCs for Francophones, not only for Europe but also mostly for the African colonies because they speak French as well and now we have like 15 MOOCs. They work with Coursera and of those 15 MOOCs 8 are in French.

I was working there and we had an experiment on cooperative MOOCs, so we had internal students of EPFL who were taking a course in a blended learning framework, so they were watching MOOCs at home with their friends or classmates, and then they also had exercise session with their professors. So we took some of those students and we put them in groups and they were watching MOOCs in a collaborative way, in groups of 5 people, they were doing their exercises together, and then they would go back to their classroom. We just wanted to compare if this collaboration in MOOCs brings educational value as compared with individual watching of MOOCs. I think that this is much more positive, not necessarily that they were more effective but the fact was that it was much more motivational for the students. Because it is a difficult thing to stay at your place and watch videos and be interactive with that sometimes you get distracted because of your parents or the TV. But if you went to a friend's place or at your university and study with your friends in the library for example, it was familiar to them because they were already studying in study groups. The research on this collaborative MOOC is done. I can send you the thesis and also the papers from my colleagues, they have gone deeper into learning analytics. For example, how people were interactive with the machines and with the iPad, because we had different conditions in the experiment. We had totally different point of views. I saw more the collaboration part but my colleagues were surveyed as computer scientists so they were more looking at the interaction of the students with the MOOC platform.

2. What advantages and disadvantages do you link to the hype of MOOCs? Do they rather entail risks or new possibilities for the universities?

First of all I think that they are high-quality videos. Professors, even if they come from elite universities, they are exposed to a global view so they have to produce something that is very good. Because the whole world is going to judge you and also colleagues from other universities, so the competition is very high. So I think that in general they have very high-quality material. Sometimes by being very interactive or interesting, sometimes not, but usually the material is of very high quality. Then another big advantage is the idea, on which MOOCs are built, is openness. That means that people who are not able to attend (elite) universities, they are able now to get access to those high-quality materials. And also what is positive is the globalization of knowledge that MOOCs bring, because now we all use the same resources, so we all have the same learning stimuli, which can also be a bit negative because maybe not everybody is watching and studying the same things but on the other hand this is what provokes collaboration and also they were this meet-ups between the learners. Students watching the same MOOCs and they created a study group to discuss questions. Sometimes it worked, also because it was a good reason to socialize. I think that the general positive points are this and especially for people who cannot go to universities.

But yet, this openness was very much connected to the equal opportunities part that people from Africa could now attend courses from EPFL, from MIT etc. I think this doesn't really bring equal opportunities, of course people can now attend a course at MIT but it is still a difference to being an internal student at MIT. And of course in a MOOC they are not really doing the job that they are doing in the premises of their school.

Regarding the disadvantages, you have this very big fear that MOOCs could become a disaster for professors because they would be replaced. That was also shown in our survey, this couldn't happen, students cannot really study only with the videos, they really need their professors. You can also really see the fear of the students, because they don't want to only have online courses. We could see some video but on the other hand they want the professors, so it is not only the content, it is the whole atmosphere, the pedagogical atmosphere that you can find in an auditory.

Although MOOCs have become a very commercialized product, maybe big unis are creating MOOCs because they want to advertize themselves, I don't think they are a big risk. As every new technological innovation, this can be bad or good based on how you use it. MOOC is a very high-quality video, and then it will be for the best of the class, but in a blended learning framework. What you also call a flipped classroom concept. But sometimes the danger is that the busy professors, having a video from MIT which they can use in their course, makes them a bit lazy, so they just use the video and do not really do work in the real courses. And that is the factor why some MOOCs in the USA failed, because they just had video courses and no face-to-face interaction with the professor. So it was not enough. No, as a general answer I don't think they are a risk; they should only be integrated in a correct way.

3. How do you assess the criticism about MOOCs and the effects this has on the future of MOOCs?

Regarding the part of equal opportunities because not everybody has Internet, that doesn't mean that we should stop producing tools or software that people can reach through Internet, for that is not an argument. I already told you why I think MOOCs do not provide equality, but they are helping people in Africa, Russia, China, Asia, southern America, so I don't know if they are going to stay. Last year when I was working on MOOCs, it was a really tremendous trend. I think that if they stop this orientation and focus only on the commercial part they are going to stay. Also the business models, which are going to use MOOCs for other reasons. So I think for elite universities, which have the power and the money to produce MOOCs, I think they will stay. Maybe the way we are using them will change will be a bit different but they will stay for some time at least. I don't know if they will evolve into something else, like SPOCs for example. But it's too early to disappear. MOOCs its just video lectures, it is not something that didn't exist before. But they were scheduled and they really felt like classes because you had to watch them regularly and with homework and everything. So they felt a bit more like a classroom atmosphere.

This year at EPFL we had the MOOCs summit, with a lot of participants, both from Europe and US who are doing MOOCs right now. So the interest in doing MOOCs is very big and they think they are good professors to they want to contribute to sociality and humanity or they want to advertise their work and become famous.

MOOCs also support Life Long Learning. And you could have everything, but if you want to get a job position and you need the specific skills and you can find MOOCs on that, then you could really use it and get the certificate to attach it to your application. This will help you. So this connection with lifelong learning is something that is going to help MOOCs stay longer.

4. What kind of business models are linked to MOOCs and which is the most profitable one for non-elite universities?

There are big companies who are using MOOCs analytics in order to recruit people. It was very interesting, they were not only interested in their final grades but also in their behavior in the forums and so on. For example if a MOOC learner was helping others a lot in the forum, this was locked by the system, so they know that someone was a very good students but was also helping other students. This profile is then sending to companies who may be interested and this is working already now, I don't know to what extent exactly but it has been working like that. So companies are looking for students with very specific skills. So maybe this kind of business model is something that is very promising for MOOCs in the future.

I guess they are also some government funding for MOOCs and certification systems, also if you get a certificate, courses are a bit different that they focus on different material or evaluation because they want to give you a certificate.

Another business model are the SPOCs, because universities that cannot develop their own MOOCs, they can buy them from big universities and just use them in their own premises, for example for Algebra and then buy a MOOC from another big university and then compare their teaching or add some kind of content and have some free time to interact with the student and solve exercises and everything. And also for countries that do not have MOOCs. I come from Greece and you can understand that they have no money to develop MOOCs so you could have MOOC centers based in the universities and professors

choose some MOOCs which could be shown to the students, either as a part of their curriculum or as a frame of lifelong learning.

We were using also these log files and learning analytics, so you could really see the interaction of students with the content and with the professor so this could work like feedback for the professor to improve their teaching or find gaps in the content where students would understand. This is probably more difficult to do because it does not bring any financial profit. But it is also something that could work as a business model. You could have research centers, which are focused on making MOOCs better. Studying data basis and log files to see what is better for MOOCs.

5. What is the main difference between the international and the European educational market in terms of MOOCs?

In the conference that we had now in Switzerland it was very interesting to see that not a lot of European students watch MOOCs. A lot of students come from Asia and Africa, Russia and also Russia had the best rates regarding the certificates and completion of the courses. So why do European countries not really attend MOOCs? I think the reason is the fact that in Europe education is taken for granted, it's not something that we really miss. We are studying all the time and we have big universities and I think that the European age of studying stops much longer than in other countries so maybe you have a lot of educational stimuli and you don't really appreciate MOOCs so much. European students did not complete their MOOCs if they were attending. I also checked this point and there was an article from the USA, and it was written that the start-ups have a very strong potential because in the US have a big disadvantage because they have a common market. In Europe we are not a common country, so I think the differentiation of languages was also prohibiting the fact of attendance. That's why many European universities took the initiative to create MOOCs in their own languages. As I told you EPFL is doing MOOCs in French, but on the other hand I also found out that Europe has a big advantage compared to the US because credit transfer is something that is considered positive. Meaning that in Europe is much more accepting the credit systems like ECTS. But in the US the credit transfer is a trouble so if MOOCs are going to work in credit, Europe is somehow prepared for that. In the US because of the big universities like MIT they have much bigger budgets to produce MOOCs. So they can do more. But in terms of credit transfer, Europe has an advantage.

6. How do professors and students judge the use of MOOCs?

There are 2 main categories: teachers who are willing to accept change, and willing to use MOOCs from others or make their own and others who are redundant to this idea. It really depends on where you work and how rich the uni is to support you with a MOOC course. And there is also the other kind who think that it is impersonal and something that is not helping in pedagogical terms and it's something that threatens professors and universities as human institutions. So I think that are the main categories. The tendency is rather going into the direction of supporting MOOCs I think. In the beginning it was something new and people were not accepting innovation so easily. They thought it would change their everyday reality. But now they see that more and more unis are experimenting with it and they are willing to do so. I am not sure if they accepted it but they see the advantages. But I guess that the younger generations of professors and academia staff, they are more willing to participate in MOOCs and work with them. You can imagine that the older

generation is not really familiar with technology and it's a bit awkward to record your lectures. And different kinds of skills are needed.

Students were accepting the concept and wanted to experiment with it. But they were really afraid that this trend would cover all their university life. But when we were telling them that they would only experiment with MOOCs and that does not mean that videos are going to be implemented everywhere, they were split again in 2 groups. But most of them were accepting it, still under the condition that it would be only used as a complement not totally. They need the professors and the classrooms with friends. Even if a MOOC is interactive, it is not that flexible. Maybe sometimes a student does not understand, so if you are in a classroom, you can ask the professors or the other students. The professor could then explain more and this cannot be done with MOOCs. And the whole pedagogical and human atmosphere of a classroom cannot be replaced by MOOCs.

7. What other e-Learning methods next to MOOCs do you like/prefer/are interested in? Flipped classrooms e.g.

SPOCs are also related to MOOCs and it is eLearning. SPOCs were a natural evolution because the massiveness of MOOCs was good but it was very difficult to handle. You cannot handle some thousand students even if you have the Internet. For example the evaluation system where you only have multiple-choice questions is hard to handle. And also nowadays you are also used to giving higher value to things that are exclusive so I think that also this idea from elite universities to give MOOCs to everybody but if somebody wants to do something more specific and you really want to see results then we create something that is more personal and more customized so SPOCs was the answer. So SPOCs work much better because they are applied in a small classroom and especially for corporate training industry and manufacturing SPOCs are a very good idea. I was reading that the SPOCs curriculum is sometimes defined by the industry meaning that IBM needs this kind of computer scientists with this kind of skills so they get in touch with the uni and tell them to create a course on this skill so that they can give it to their employees. It is again eLearning but it's in a blended learning environment. But they are much more exclusive and much more customized and personalized.

Informal learning is also a new form and it is learning from everything. From Internet, from books, from discussion and in pedagogy this is a new concept. And now there is a new model, the pervasive model. It says that people nowadays are learning from 3 modalities: formal modalities (school, university), Informal modalities (Internet, TV, conference, seminars), social learning (implement in a social way, social networks, Facebook). All of this helps you learn. So informal learning is very evident in pedagogy and they need to find ways to capture and measure results of informal learning. Gamification, not only using games for learning, but learning in a gamified way, also with MOOCs. In MOOCs you have a personal profile and for example you get credits for accomplishing tasks. An important factor is to give credit or an award to a learner to motivate him. And gamification is applied in a lot of learning platforms and content.

Then also LMS, like Moodle, you have many platforms like that. Moodle is very general and open to the public and you can customize it how you wish but for companies they have been using their own personalized platforms. So places where stuff is organized somewhere, not only for the organization but also for the visibility. Teacher can see what others are teaching. It is the social part that I was mentioning before. LMS is a build platform and is easy for everybody to use and customize it. Its for teachers to organize their

classes. Material can be uploaded and forums with students; there are exercises and their homework. Each student has his or her own profile. So this is like an electronic classroom. Everything organized in one platform. Maybe you have references and links to encyclopedias with videos. It can be very creative and differentiated. Especially in open education the universities work in Moodle, so students have to be in a virtual organized classroom and it's really similar to a normal classroom. It has many features.

8. How, in your opinion, will the notions of education shift in the coming 10 years?

My expert is now in educational technology and the integration of educational technology so I have been teaching for many years in classical pedagogy and now I started using technology in my classroom because my students were using them. In Facebook and playing games all the time and they knew a lot of stuff from the Internet. So I thought they are using them but not in a correct way. So I will teach them to use them in a correct way so make them understand that they can keep technologies in their lives but you should integrate it in the correct way and in a way that brings value. So they only play games for 15 hours and do not learn anything. So this is a necessary evil, technology is here and universities and education in general cannot really close its doors and say that they stay on there classical path and not changing anything. So this as a general opinion I think that technology will be integrated and is already integrated by some educational institutions who can afford it but as an enabler, a facilitator, you will have like 10000 of tools that may help you in your teaching but professors are always going to prevail. Maybe he will have to change his role like now he is not the absolute of authority anymore but he is going to be in the classroom at least for some time now. Self-directed learning is a strong notion because students are much more independent and they can really build their knowledge as well because they have much more stimuli and information coming but again I think that technology will be integrated but as a very strong enabler.

Interview # 3	Date: 22.04.2014
Contact details interview partner	Name: H. V. Position: PhD student in Human-Computer Interaction Company: École Polytechnique Fédérale de Lausanne City, Country: Lausanne, Switzerland

1. Can you tell me more about your research you did on MOOCs.

So basically this research that we did, it was an experiment basically, there are two PhD students in this lab, me and one of my colleagues, and A. was doing her master thesis mostly on collaborative learning aspects. And the research basically, we were trying to see what happens, because it was really not a complete research design, in a sense that we did not really have well defined research hypothesis or questions but we wanted to see what happens when students watch videos or MOOC lectures as part of a study group. So we were mostly looking at, we gave them different configurations to watch video, which might suit their individual styles like you might imagine that if a study group would like to study with MOOCs, which is basically, I mean it comes as a scenario, it fits really well with the blended learning because the students are expected to watch videos by themselves and then they go to a more informative or interactive sessions with a teacher in the university itself. And one of the things which is missing in MOOCs is the interaction missing between the teacher and the students, so why not put a study group to replace this missing interaction in the classroom and we see how they study with the MOOC. So, our research was more exploratory so we were looking at many factors, so we were not really controlling each and every aspect of our study and another thing we did was we did not really measure learning. The only good thing that we had we studied two courses and they were really courses which were offered in our university here and they were actually offered in a flipped classroom format. The students were supposed to watch videos and then they were supposed to come to class and ask questions or if there were some interactive assignments or exercises there. And so they were all engineering students and we had basically 3 conditions. The first one was a typical condition where everyone watched their own videos but they are collocated as part of a study group, so we gave them all an individual iPad and they could put on their headphones and they could control their videos, as they want. The only constraint was they were part of a study group sitting around a table in the same room. And maybe if I sent you the paper with the pictures it will be clearer how these conditions were arranged. Let me just look up where I have the paper. Now I can explain. This is a general paper that we wrote recently and we will publish it next month. And so this was the first condition, more controlled, and this was very close to how students would watch MOOCs, they would watch them individually, the lecture simultaneously, and then

they would discuss the material or solve the assignments together basically. This was more or less the individual condition, the control condition for us to compare the others to. We had the second condition where we had just one iPad on which they can play the video and we connected this to projector so everyone was watching basically the same content at the same time on one screen. And they were around the table and saw the same video content and anyone was able to pause the video and ask questions. So just for clarification here: In all the conditions that we had we asked them to be free to discuss whenever they want, to solve quizzes together, so it was kind of a collaborative assignment. And in the paper on page 6 you have the 3 images. The left one is the condition where you have one iPad and everyone sees the same content, the right is the "DD" condition, where they see their own videos at their own pace and they can discuss and solve quizzes, and then there is the condition where the students had their own mouse pointers, so it was like a television screen where everyone can pause whenever they want and can interrupt the group and ask questions. So basically we wanted to see if there is a difference between these conditions and how they interact with the videos and is there a pattern or a desired attribute, which comes out as a conclusion which is common in all the groups, what we found out is that in the condition where they had their own mouse to control the video. We found out that this was the most interactive condition. Interactive not in the sense that they were speaking but in a sense that they were really pausing the video and going back and pausing to ask questions and discussing a lot. And they also spend a lot of time so they were really into, engaged with the video and spent a lot of time solving quizzes and watching videos. So the total session time was the highest under this condition as compared to the other two. And also the CC condition which was centralized and one controlled and distributed watching, they were almost the same when it came to interacting in number of pauses and how much of the video they were playing and stuff like that. For more details you can read the paper but I can give you an overview. So they were almost the same, no significant differences but the DC condition where everyone had their own controllers the interaction was almost double as compared to the other conditions. So it was kind of a significant difference. And then we found out that the individual condition where they were watching was kind of split up into two conditions. And we found out even though we did not have many groups but that each group did like five sessions with us in a period of five weeks, so it was kind of longitudinal, we found that there was a split in the individual groups. There were groups that wanted to stay synchronized, so they started and finished the video together, and they waited for others to finish so that everybody was able to discuss. And there were others who didn't really care and basically they watched at their own pace and if they wanted to discuss, they discussed or not. And these groups which actually watched the videos in a synchronized way, also had a high amount of speech if you compare it to a controlled condition where, the centralized condition, sorry, so they also had a lot of speech there, and they basically had a lot of off-video speech, and there was a huge difference in the people that were synchronized and the groups which were not synchronized. SO this was something really interesting and even it came out in the interview that they kind of preferred being synchronized so that was considered to be a desired attribute in our study across all the three conditions. So that was more or less our result and one thing which comes with this is that people don't interact a lot with the videos so because if you interact too much with the video it means that you also want to talk within when the video is playing, so in the individual condition if you pause too much you lose the group in some way. What they were doing, they were actually watching the whole video in one go pausing

rarely only when they had big problems and then they were actually discussing, they were doing more talking to ask each other the question which was kind of a compliment to an actual classroom where you do your own stuff and if you get stuck you raise your hand and ask the question. So if you have more questions on this you can ask me but this are the two main results that we found out. One is more related to a kind of a team technology aspect where one group setting was much more optimal and interactive with the video and on the contrary, synchronization was a desired attribute which the groups wanted to go through during the study group sessions.

2. Was it a flipped classroom concept also or were they only watching the videos?

Yes, so all the groups that we recruited were from a classroom and the professor was giving a MOOC from our university, there were two professors who were giving the courses on MOOCs and they could go back to ask questions, or other exercise sessions but they were supposed to watch lectures, so we actually recruited the students from the same course. One of the course was a bachelor level course, and the other one was a master level course. In the master level course, we used this course for two reasons. First, one group because of the people that we had and second because in the flipped classroom there were also, the students went back, so there was no intrinsic motivation to learn with the videos. While in the other course we consider, the bachelor course, there they had to watch the videos by themselves and solve the quizzes and assignments and the incentive was that if they score well they get a 10% bonus from the MOOC quizzes so they had an incentive from the teacher that when the watch videos and solve all the quizzes they would have 10% extra in their oral semester grade. And the class was actually half a semester on MOOC and the other half in classrooms, so we did it in the first half we took 5 weeks out of 7 and ja, it was the last 5 weeks of this course that we had and we had 3 groups in each of the conditions, so 9 groups in total in the whole experiment. The research is now finished.

3. Are you still working with MOOCs and the moment?

Basically my field of research is more group technologies for collaboration. So I mostly look into technological aspects and not really learning. So in this fall we did another experiment where we studied the effect of priming, if you are aware of priming as a term. So the idea is that before you start watching a video if we ask you questions in a quiz, the way you ask questions, it makes you focus on that specific part of the video. And I did it as well with one of my colleague and it was mostly an eye-tracking study so we tried to see where the student is attentive and what point of the video and was there an effect of the way you ask questions like an example, so we took just two lessons of neuroscience, action potential was the context, and then in one group we gave them each one a pre experiment quiz with only actual questions whereas the other one got a quiz with more schematic questions with only figures and showing and what happening, so it was a very controlled study, we ask them the same questions but in different forms. So maybe if you ask 10 questions in a textual format they will be more attentive to the formulas in the videos, if there are any, or something similar, whereas the schematic one would be more interested in if the teacher is drawing something so we kind of wanted to study difference across this and we asked them to watch the videos and then we asked them so solve quizzes, both of them, and there is also a activity where you collaborate.

4. So in the experiment you described earlier, you also asked the students later on how their experience was with the MOOCs, right?

Yes, in the first experiment, in the second experiment not because it was really controlled, we were looking at learning and how asking them questions is, so how priming affects learning and attention so it was basically it was, really, we were looking at low level features like gaze and attention. But in the first one we really interviewed them in a semi-structured interview, and we asked them how they feel about this kind of studying and if they have a kind of appetite towards MOOC like individual way of learning, because the first two weeks they were doing it individually and the rest five weeks they did it in a group and what was the difference and we kind of transcribed these interviews and that's what A. did, looking at this collaboration cues and we also had some post-experiment questionnaires. But there were more related to our individual set ups, so was there consensus in the discussion and if they felt if there was a balance in participation and if they were satisfied and this kind of things.

4a. Do you remember how they liked the idea of MOOCs and the flipped classroom concept?

The general feeling of the MOOCs was at that time very negative I would say. So MOOC as an individual was kind of scaring the students. And one of the reasons was they thought that there would be no interaction with the teacher for most of the semester. One of the reasons for this could be that the professors do not define what are the activities specifically in the tutorial sessions. So what the students conceive was, ok, we just have to watch videos and we go after half the semester when the professor starts meeting us in the classroom, so there was no classroom activity, and they said, oh come on, we pay the fees for the university so we should see the professor and then they actually felt that there is a value, a social value, that was their initial perception of MOOCs and they kind of hated it. But, after we finished our experiment, when we asked them what they felt then, they kind of really liked it. This was because watching MOOCs in a study group was at the intersection of formal and informal learning. Because when you are in a classroom you are still hesitant sometimes to ask questions because it is really formal and the professor is giving lectures. But when you are there you basically, when you are in a study group, you are among your friends and mostly the groups we recruited knew each other beforehand. So these study groups were all a bit informal they were free to ask questions, so there were no preconceived notions that if you ask stupid questions, they just said, I didn't get this, what do you mean by this formula. So that was the reason why they liked it, like I can give a quotation from one of the students, he said "Its like pausing a professor" in a classroom because you can just pause the professor and say I didn't get it. One good thing with the video was that they could replay again things, which they could miss in the classroom. So this was the second major point because they liked watching MOOCs because in a classroom you have to be there and be attentive, because if you fall asleep and if your attention just drifts away, and you miss a class, you kind of lose everything. But in MOOCs you have the content there and you can decide, you are flexible with your time, you can meet with your study group in the evening, in a cafeteria, and then you can say ok I missed today the class but now we can meet and talk about the material. These were the two favorable points for MOOCs. And we also asked them to take notes during the MOOCs, this was really interesting and more observed finding, but surprisingly none of them did. Or only a few of them, two girls and only rarely. And we said ok, you could take notes and its

like as if you would take notes in a classroom. But then we asked why they didn't take notes and they said, why should we take notes if we have the videos. We can always watch the videos again and that would be our notes. And they said if we are preparing for exams, we will be watching these videos again individually and actually we didn't get to interview them again after their exams because that would have completed the loops. But the students were not available. We just got one group and they said it was really cool because when they preparing for the exam by watching the videos again individually they kind of remembered or recollected these discussions they had and that was a very fast recollection for them. But we did not measure learning so that was kind of a weak point of our study because we did not intend to measure learning. Then we would lose this very subtle group dynamics. So we kind of opted out of measuring learning. At the end of the overall experiment they kind of were very satisfied with the MOOCs. So, they said that if in the future they had a flipped classroom, they would prefer to study in groups rather than individually. So they took this as a lesson in their own study practices that watching videos in groups is much better. So our professor P.D. calls it social facilitation. The idea is that it is easier to run a marathon with 20 other people than to run it alone. Because learning is a painful activity and if you are together with someone, it's already some kind of motivation than when you are by yourself and you have a hard lesson because these were not easy lectures. And when they have to learn this hard stuff alone they give up after some time because it takes a lot of time and they are alone and they want to have a beer with their friends or meet them, but when they are in a group there is an inherent structure which is that they have to study together and this is the time for studying and so there is a given structure, it is a bit flexible not like in the classroom, and then being within a group there is a feeling among the group members that now they can clarify all their problems and because there is no teacher and not the whole classroom is seeing them they discuss it freely. So even when they don't have the feeling of being stupid when asking questions, that they like this idea of studying MOOCs in a group, there is something missing and this complement missing like the teacher but they have the opportunity to ask their friends.

5. Who produced the MOOCs that the students were watching?

In our lab we have, our lab is called CHILI, and one part of our lab is separate, it is the center for digital education, which is responsible for producing MOOCs. So in our university, if a professor is entrusted in giving a lecture as a MOOC, they get in touch with the center for digital education and then they record the videos and also discuss the kind of quizzes which should be there and what kind of activities. And we are the ones who are producing the MOOCs and also collecting the information, so we didn't use other MOOCs. They were our own. And the professors were from the same university, so we actually had access to all the data.

5a. Can you tell me what are the necessary requirements to create one MOOC?

That's a hard question because I don't really work with them. But I can give you an overview. I might miss a detail or two here. So I think it is really decided by the administration, like who is supposed to give a MOOC, and it basically always happens that the superstar professors are the ones who are chosen to record a MOOC and then the professor also has to agree because its first a lot of effort to create a MOOC because apart from designing the course their parallel research which is ongoing, they have to spend a lot

of effort in recording videos and that takes time because you record it multiple times and you make mistakes and then there is a team with which you have to coordinate. So who is editing the videos and making the lectures and giving it the final touches and then... So that is a lot of time and then they have to design activities like what should the quizzes be like and are there any collaborative activities along with it, like to they have to do a project work and how they going to submit it. So this comes with the recording, which is one phase of MOOCs. So when the MOOC goes online, people start watching it, so then there are forum posts, which the professor has to take care of. So there is a lot of activity because across the globe people are asking questions and if they are not answered in time, you don't want others to wait because then, what is the point in learning. So also the teaching assistance with the professor have to work around the clock to answer these questions and to mark the thread if two people are asking the same questions or to direct others so it's a lot of online activity going on and then also to evaluate like some of the quizzes are peer assessed, but there are other exams which are evaluated by the professors, some do it automatically but if there are answers which are more essay like or more descriptive they are done by the professor and their assistants. So basically this is the thing that goes on before and during the MOOC and when the course is done there is an overall survey that the university sends to all the participants. Then there is a lot of analytics going on after the end of the course like who was watching the videos at what point of time and there is a separate team in this department in this center of digital education which is basically looking at all kind of statistics like cultural differences and what time are the people watching videos and who is submitting quizzes and trying to figure out the questions like who are the students who drop out of the courses and you predict this dropouts and why do people drop out and at what point do they drop out and is it the course content or is it the design of the videos or if the slides could be arranged differently. These are the questions in general that they study from the data in post-analysis. If you are interested in these aspects I can ask our head of this department, P.J., for more information on this topic on production. P.D. is our boss, he is in charge of the research lab and the center of digital education, and he is a psychologist who did his PhD in computer supported collaborated learning. In a research lab we are basically studying 3 different things. The first one is research around MOOCs and here it kind of goes into looking into very low level attention features by gaze and eye-tracking and one of my colleagues is doing that. And the second is more looking into this kind of patterns like difficulties, when students feel difficulties, and this kind of machine learning analytics, which happens on the MOOC data like the log files. One of my other colleagues is doing that and I am more looking into collaboration and team practices. And this kind of things like what happens when they watch the videos or solve the quizzes together. If someone is taking notes collaboratively so I am looking at the group practices in not only MOOCs but also all the different kind of meetings that can happen. And then the other field of research is mostly tangible user interfaces, which are basically kind of augmented reality information, based interfaces like if you want to teach geometry to primary school students with an interactive hardware that you can see on our website. And you can go over a math book and open it and can then see interactive graphics or animations regarding the topic. Or if there are carpenters who have to study how to study like projections, because carpenters, there is a problem of translation, it's a bit brief so I think, it's a bit different from what we are supposed to talk about. So maybe you go on the website and look through the projects. And the third topic is mostly social robotics. So MOOCs is just like 1/3 of the research in the lab. And the others are more

learning activities for different scenarios like universities, schools, vocational education and there are three pillars.

6. How long does it take to create one MOOC in general?

Not really sure but I think it takes a lot of time. Before the MOOCs course goes online, I think the preparation starts 6 months before. Because sometimes the recording takes a lot of time and professors are not always available so the courses are recorded and everything is well set up like 3 months before and then in the last 3 months they design the activities like, because the courses that are offered to everyone are also offered in the university so the professors also design interactive activities which the student here could do or sometimes they are translated to the MOOC platform like if there is a group activity they can do with using their webcam when they create a paper interface they can do some kind of origami and work collaboratively just to give examples because they was a course with fluid dynamics and the students could actually play with objects in a pool, record it and submit that assignment as videos. There was a lot of assessment, which was done by the computer system and also by the teaching team. So it takes like 6 months and even when the course is online it takes a lot of time to answer queries and to correct assignments, to grade them.

7. On which platforms are the MOOCs from EPFL published?

Our university is the only one in Europe who publishes course on edX and Coursera. So mostly it is Coursera, on edX I think until now there are 1 or 2 courses, which are only internal, so we didn't really make them public. So yes, you have more details on the website, now I think there are 21 courses which are still online. Or 27, I don't really remember. And there are some courses, which are offered for the second or third time, they were recorded like three years ago. So in this case there is no recording happening but I think the group collaborates with the professors to help them design more interactive activities. Not just problem solving sessions but to come up with much more activities, which also grab the attention, and to engage the students with the MOOC. I don't know about the details like contracts with these platforms but I can ask P.J. to give you more insights into this topic. But I think that, I don't really know the contracts, but there are different contracts. One is for uploading the contents, and the other one is more for what kind of data they can provide you, for post-analysis and these kind of things.

The MOOC factory is the center of digital education. They call themselves MOOC factory.

8. How, in your opinion, will MOOCs develop in the future?

Actually, the MOOCs have changed in their format already, since they started in 2012. So now, even on edX and platform like Udacity, it was the first platform to host a MOOC and then Coursera started which made it more mainstream. So I think MOOC will not replace universities in totality, that's not going to happen, universities will stay where they are. MOOCs will be, in my opinion, a very good tool for continuing education like people who are already working and want to improve, or want to apply for a new job, so MOOCs are going to be a huge contributor to the aspect of continuing education because it has its own set of goals and course structure so, I mean if there is something which is totally free, and you don't have any restriction, you need a lot of motivation to go through it. But once you start a MOOC you kind of have some motivation to go and visit it again if you really want to

study. So that is one are where the MOOCs will stay and the second thing is the way it is changing now, its kind of a cheap version of the university, and that another good thing for people who cannot really afford education in third world countries and then they have an opportunity to get education from Stanford or Harvard, so that is going to happen. But I think the way it is going to change is that MOOCs are not going to be totally free because the really exclusive courses, or the best ones, they already start to be paid. And they call it SPOCs. And that way it will work because people wouldn't mind to pay a small amount to get an additional certificate for a course and it would be by the person who came up with the technology or who is a superstar in that field or a famous person. So I think it might go there because when the MOOCs started the biggest fear was that universities will not exist anymore. I think that is not going to happen because universities are not only for the content but also for the kind of social structure that it offers and you get to know the professor and the colleagues and it's a different kind of community building which won't happen with MOOCs because everything anonymous. Its going to replace a small part of education but I also feel that it has been the most successful way of offering education in online way. Like eLearning has been there for almost 30 years but MOOCs have kind of revolutionized it in the recent years, which were never seen before with typical eLearning.

9. Do you also know about other eLearning methods that you like/prefer?

Flipped classroom is more of a local phenomenon. So if you are aware of this website called meetup. This existed before as well, before MOOCs, and the idea was if you live in geographical proximity and if you move to a new city and want to meet new people, you can invite people to meet somewhere to do likeminded activities like reading books or hiking. Then when MOOCs came people took meetup to also meet in cafeterias every week to do courses together. So what they used to do was they did lectures by themselves and they came and discussed and solved the quizzes together. The same idea of social facilitation, it is easier to suffer in a group than to suffer alone. So this was only happening, and flipped classroom was more a university thing where it was the way to reinvent classroom or university by offering more value to on-campus students who are learning through MOOCs. Because if there are just MOOCs, like the initial reaction of our students was that they did not really like it because there was no classroom and no teacher so its kind of an incentive to attract students to much more. So we offer you more. Because they can read the books and watch the videos themselves, there is also an opportunity to do much more things. There can be projects, which they can do, labs, so that was the thing with the flipped classroom.

Now I remember, one thing I like to add, when it comes to labs. With technology and math education maybe it works. But when it comes to real labs in chemistry you do an experiment you see the color and texture, this kind of things are still missing and I think it is a setback now, unless there is something very innovative that comes up. Like when you go to a music lecture, how to play a violin, even if there is 10 people the music teacher will attend to the individual students. In MOOCs this is missing. The teacher records according to the plan, he cannot really say or accommodate the lecture during the course because the recording was done in advance. There can be supplementary material but not really, the course cannot be adapted to the students because there are too many students and it has already been done. So that is where the SPOCs will compensate these things because

they are small groups and its very costumed and its like Google hangouts happening and if there are 10 people learning you can adapt to their different learning styles.

And to come back to the previous question, I think some will go obsolete, like Moodle, or in the future they will be an integration of Moodle with MOOCs because many of the universities are already used to Moodle but its still very old and its not as dynamic as MOOC platforms. We might see a merger of MOOCs and Moodle in the future or something similar. There is a kind of project activity going on and there are small groups talking about that. We were also working on, but did not yet finish, a unified platform where you can have MOOCs and something like collaborative quizzes. For now all the quizzes are very individual so even though you solve it in a group you have to answer them individually. So the idea was to come up with collaborative quizzes when you take a MOOC as a group the platform recognizes it and when you are supposed to answer the quizzes, it asks individual responses and if they are different, they ask you to discuss, so kind of scripting this kind of discussion into quizzes, to facilitate learning. So maybe this kind of things would come in the future.

10. Would you recommend a university to make MOOCs themselves or rather using MOOCs from other universities in their curriculum?

I think when it comes to production it really is like marketing because its selling your university. It also needs a lot of resources, money, a dedicated person, videos, complicated recording equipments and everything. So I think if everyone starts producing it then there is no difference in MOOCs anymore, so there is no exclusivity in things. I am not saying that only elite universities should do MOOCs but then also there would be too many choices of courses. We are collaborating with some universities in Africa and there is always a debate like what kind of courses or MOOCs should be there for Africa. And the thing is that African universities, for example, they are even better in resources as compared to other third world universities, European universities are still far ahead of them. But the idea was that they only had university teachers for basic sciences, basic language and things like that, so they don't need MOOCs for this things but they need MOOCs for very specialized things like when it comes to learning advanced things, advanced business management for example. Things they don't really have resources for in their own premises. So also if everyone starts producing MOOCs, then there would be many choices. If you go on Coursera and say, I want to study brain neurotransmission, then there are 5 lectures and you are confused which one to choose. So this will happen a lot. So I think it would be best to kind of complement, if universities could collaborate in MOOCs, like in Europe, if unis can say ok we know that your school is good in physics so you can do the physics part and we can do this part. So it would be complementing your own individual expertise. It is true that not every uni is good in everything. And that's my opinion, that's how it should go. And when it comes to collaborating on producing, there was a uni in Finland or Norway who offered credits for a course, which was offered by EPFL. So there has been such kind of practices as well where unis do a flipped classroom, a professor teaching computer science in their own premises, there are students who take video lectures from another professor from a different uni and then its kind of a really academic challenge to make it much more interesting by doing interactive stuff or by making them come and play with machines if they are studying mechanics. So its like, they can study the theory and when they go to the professor he makes it much more interesting by doing practical stuff and giving them much more interesting things or teaching them things which were not covered

in the MOOC. So they can use a MOOC from another university and complementing it with much more practical stuff like filling in the gaps which cannot be in the MOOCs, like time in labs for example. That would be the true blended learning and it would complement the missing practical knowledge in MOOC. And the example of the Finish or Swedish university, they put on their course page that the students take the online course and then you come to have an exam in the classroom, a traditional written exam, and you can credits for this. So also universities are doing that.

11. Do you think that the idea of MOOCs will stay in the future?

It's hard to say for now because it is still very early. With any new things that comes up, any new technology, any new innovation, there is a novelty effect where everyone starts to follow it and many people are doing it so it goes up, it peaks at some point and then it saturates. And we still have to see if it is going to saturate to a stable position so that people stay with MOOCs even though there are not too many, or if MOOC is another eLearning idea, which declines in the next 5 years. So we still have to see but the idea, the thing that we see, the effort that is put in MOOCs right now, it's a lot. So I think it is not going to die anytime soon so easily. The things that is happenig now is that it evolves into much more concrete and it might also change the way professors teach because they wouldn't just go and start reading from the books, they would have to change their strategies of teaching which is kind of good because they evolve then in some way. They are learning new strategies because they know that students have an option to move, no teacher would like to lose their own audience unless the teacher is very lazy. We would see an evolution in university teaching practices and also a global awareness going on that students see when people are teaching rudimentary stuff and if I take this MOOC I saw different things so how can you explain this by using these theories. So it is going to be positive for the students and the teachers as well.

12. Do you think it will become necessary for a university to produce a MOOC to not endanger their reputation?

That's the thing I don't really agree with but some of the unis are doing it, its more like a reputation thing. But it will happen eventually. Every university wants to show their strength and it will happen, but I don't think that it is the right way. Its just my opinion but I have seen some courses which are designed as if the professor is trying to show really know everything, so the course is designed in a very hard way and it is really hard for students to keep up and then they don't want to study it anymore. So there is this kind of strength-showing like Russia and America showing off their missiles, when courses are designed like that and its unfortunate but there are other courses which are good as well and I think when everyone joins in this thing, the good thing would be that professors try to achieve like who gets more and it would be like who wants to sell more Smartphones or has the better product, and in doing so, they kind of will make it much more user centered, by making it much more easier and interactive and more quizzes. Making it more lucrative for students. There is much more marketing involved but its also more people joining MOOCs will make education much more democratized, if it's a professors point of view, other professors can put their own views and the student gets the right to choose which one. Its not like if you are in one university and you take one course you kind of mould yourself that professors mentality. That's not going to happen.

13. Can you tell me more about the difference between the American and the European educational market?

There is a clear difference and one of the reasons is the amount of money that universities charge as fees. In Europe is significantly less, in America its really high. So I think it will be, because MOOCs are free, considering their current format, I would imagine that it would be much easier adaptation in American context because the universities are very expensive and people would migrate really fast because it is something cheap and you get certificates from Stanford and MIT. Whereas in Europe I think I see it more as a democratization as its more like looking at what other options do we have. So there are two different aspects here because if we don't look at employment, because people how are working with MOOCs still have to go on the job market and have to find a job, so we still don't know what will happen then. But there is a difference if we look at learning there are different motivations in American and European students. American students where they would like to get higher education, a better quality of education for free. For European students its more like what does this professor think about this topic which I am already studying in my university. So it's more like expanding their knowledge horizons but for Americans its more like getting quality education. So there are two different, it don't even think we can compare this two. But they are still leading because all the platforms that we have are mostly American. But it is also a matter of language. EPFL produces MOOCs in French, there are some Spanish initiatives, and also I read about this German platform, Iversity. So I think language will be an issue as well.

Interview # 4	Date: 24.04.2014
Contact details interview partner	Name: H. F. Position: Research Officer Company: National Research Council Canada City, Country: Yorkville, Canada

1. What is your relation to MOOCs at the moment?

Yes, we actually started, and my colleague Rita Kop, she was, she is Dutch, she started in Holland, so if you google anything on Rita Kop, she has been involved in studying networked learning and the power of networks and online learning and putting people together so we have been researching MOOCs since 2009. And the reason why I got involved in the whole MOOC movement is that the person who coined the term MOOC, Massive Open Online Courses, is Dave Cormier. I was fortunate enough to be close to the people who actually invented the concept so Dave Cormier in talking to Stephen Downes and George Siemens, who were at the University of Manitoba at the time. So Dave was in communication with Stephen Downes and George Siemens back in 2008/2009, where he coined the term, that's a MOOC, so that is where the term originated. And from that point on Stephen Downes, who is a colleague here at the National Research Council, has been involved in the movement, has offered Open Education, open online courses, since 2009 and I was involved in doing some of the research. So we designed questionnaires to try to get at some of the factors that were important for students in following these courses, what contributed to persistence and motivation and participation levels, so that is my background. I actually have done a lot of research on online learning with adult educators or adult learners. So that is where I got involved in the research and designing questionnaires and trying to get feedback from people before they drop off of a course. And again, it is difficult in MOOCs to actually measure drop off or disengagement because people will not asked to be taken off the course or there is not like in institution's formal education where you have an "incomplete" or have to drop a course and official register that you have dropped the course, so its hard to tract that in MOOCs, that the major difference, that we don't know when people actually disengage. The only measure that we have is silence, and not participation. There are less visible in the forum discussions, they don't post, but we have noticed that they view a lot of information, so they are still engaged, they are still passive, but some people resented the fact that they were being called "lurkers" in our study, because they said, well it's a legitimate form of participation, to lurk, because I still learn something when I read, and I look at other posts but I am not actively involved and posting things. So that was one of the variables and the factors that we saw in measuring participation, there is silent participation and it is still legitimate in MOOCs and its okay, its an acceptable way to participate. The other factor again is facilitator and instructor, or whatever you want to call that, their presence and encouragement. Every time the facilitator would say something or ask something in the

course, then there would be a peak in activity levels, so people would respond and get reengaged if they were a little disengaged and silent or there wasn't a lot of activity, as soon as a facilitator would get involved, would ask a question, would direct the conversation in the forum, in the discussion, then you see activity levels rising in the MOOC. So our conclusion from that was that instructors are still very important in the mix, a lot of self-directed learners, but they still appreciate having a facilitator there and present and encouraging them to participate. So that was another factor that we found in our research.

2. What do you consider advantages and disadvantages of MOOCs?

The reason why people would be interested in MOOCs is that they have a specific topic that they are interested in and that they want to learn in-depth, you know, something more about the topic. So at first a person would register for a MOOC because they are interested in the topic, and then they see the structure, there is a range of different styles of MOOCs, the amount of a structure, and guidance that is provided and that will vary, there are no guidelines for developing MOOCs, it depends on the instructional design, the pedagogy that you want to implement, and Stephen has and George Siemens, his colleague, have tried different things and different MOOCs with more or less the same structure. They have used Moodle, it's a learning content management system, so they can manage the discussions, have a place for people to post and go to a forum and view the content. And our conversation with Dave Cormier, he is actually doing a course on Rhizomatic Learning, and this whole philosophy on Rhizomatic Learning, I can give you more here on the whole philosophy, it is different pedagogical approach, again it is more of the blended learning type, but all they had was very unstructured, they didn't provide any course content ahead of time, like we have done in this current MOOC, we are actually offering another one right now, where everything is pretty much structured, and but they have actually people use Pinterest, it's a board where people can post things that are of interest to them. If they produce something that they post it there, he only had planned six weeks in the course of meetings and synchronized discussions, but the students took over the course and developed three extra weeks on their own. So they continued with the course so I think the advantage of the MOOCs is that there is a lot of flexibility in what students can produce and how they engage, how they, you know, because we make recommendations, but students can basically come with their own suggestions and its not like a traditional face-to-face course where the curriculum is pretty much decided and fixed. The students don't really have a role, unless it is a negotiated curriculum that's another trend that's happening in traditional university type settings, its that the curriculum is negotiated but I think that the pull and the appeal of MOOCs is that everything can be negotiated, the course can take different directions. That the whole idea of the openness of these course that participants can make suggestions, suggest tools that they want to use, suggest different resources, and the course can take on a whole different nature to what was planned originally.

The drawbacks are control in terms of the instructor if you want to be able to facilitate and control things and have things more structured from the instructor's point of view it's a little bit more difficult when you have students in the thousands to give that one-on-one personal feedback, because it is difficult. You cant managed all the conversations, you cant engage with everyone, and the same would be for the participants, that they feel that they are disconnected from the instructor because they don't have that personal opportunity for

feedback, so that is a drawback, that is why certain MOOCs like Stanford and MIT, with the xMOOCs have gone for automation, that the assessments and some of the feedback is automated because they have participants in the 20.000, 30.000, so they can't manage all that. So there is part of it that has become automated but not in what we call the cMOOCs, the connectivist MOOCs, are still free flowing, tend to be non-structured, so things are developed on the fly, participants play a major role in contributing content and resources back into the course to keep it going.

3. How do you assess the criticism about MOOCs and what effect does that have on the future of MOOCs?

Yes, because Stephen had coined the, he always said that the MOOCs will only work if people, you know, find resources, aggregate, share and feed forward is one of the processes that he expects people to engage in when they register for participation in a MOOC so if the feed forwarding does not happen, if people don't share, whether it's a resource, share a conversation, and take it, reuse it and repurpose it, the MOOCs essential will not accomplish what they set up to do, designed to do. So we have experienced that in our various MOOCs that the amount of contributions, the amount of participations will go, will diminish as the weeks go on, we see that there is a peak and after a while it will just drop naturally and you are left with maybe 40, from thousands of participants, you left with maybe 30 people that will contribute to conversations and products on a regular basis which is not a lot, but it might be enough to form a community. So there is that problem that still persists and I don't think MOOCs are going to disappear but more certainly looking for certain mechanisms to sustain performance, to sustain engagement and persistence in the MOOCs and the quality of the products that are built or produced. And the big thing right now that people are arguing that MOOCs should not close after eight, nine weeks, 14 weeks, whatever the duration is, they shouldn't be a hard start point and end point, but they should continue, because all the resources that have been produced, all the videos, all the activities, should form the basis of a community of interest, people that want to go back again and use these resources, long after the course has ended, so there shouldn't be an end point to the MOOC and I think that is the movement that we see with the hybrid type courses, that the resources produced will live on and will be reused even after the course has ended.

4. Do you see a difference between the international and the European educational market when it comes to MOOCs?

Basically all our MOOCs have been open to people around the world so because of Stephen Downes' visibility, he produces a newsletter, he is known basically as an eLearning guru, so if you google his name, he is already international so when he advertises his MOOCs, automatically you have people from around the world. Currently we have people participating on a French MOOC on Open Educational Resources, and our participants are from across Europe, Africa, North America predominantly, but we have a lot of European participants so our MOOCs, because of Stephen's visibility and the openness, his efforts of offering open education to anyone, anytime, anywhere, it already has an international flavor. But the challenge is to get these people to continue, we have experts that contribute, we have again internationally from different continents, we have people producing resources from Africa, from France, all around the world, so it already has an international flavor, and people bring the particular perspectives, philosophies, their

constraints, their challenges to the courses as well so we maintain that international sensibility, to what is going on in the MOOCs just because of the nature of the MOOC and the openness and who is participating in the MOOC.

5. The MOOCs that you are offering are not granting any credits yet?

We actually had, Stephen had a dozen students from New Zealand who asked their institution for credit for the MOOC course that they were taking. I think it was a Critical Literacy course or PLENCK is another, Personal Learning and Networking Environment, PLENCK, a MOOC that Stephen was offering, so again at the individual level, students will say, I am taking this MOOC, I request from my institution that it would be credited and so there are a few students from New Zealand who actually managed to get credit for the MOOC but for the most part, it's not for credit, right now, we are actually trying to implement a system of badges where people will get recognition for the course and the time that they spent in training and online taking a MOOC. So that's the whole effort on awarding badge is something that we are looking into. So it is also a little bit gamification, part of official recognition for the courses that you have taken. The Mozilla badge system, so you have to apply but it hasn't been easy to implement and to get the experts to actually review the assignments and give a grade, so we are trying to pull that community together. There is a whole controversy of people in the Gates Foundation and projects that we funded, there that they are actually looking for peer-to-peer assessment and students getting involved and peer review so they actually had to intervene and are looking at the legal aspects of giving credits but students kind of engaging in peer assessment, assessing each others work, so there is movement but there is also controversy in the area, associated to the Gates Foundation projects.

6. Do you know more also about other eLearning methods?

There is a lot of movement, like I said, there is a move towards more from, we have gone from connectivist, open, free flowing MOOCs to xMOOCs, Stanford, MIT, kind of closed, kind of like a Learning Management System type, automated assessments and to more peer reviewed, to hybrid, where institutions are looking, offering partial MOOCs for support, for extra credit, additional resources and charring to form a community, so the network based learning and peer review. So there is movement, it's not a "one size fits all". And often you don't take a MOOC because it is individualized and customized, but these are words that, and preoccupations, that learners and participants have articulated that they want visualizations that are adapted to what they are looking for, they want to see who the most powerful person in the note is and who they should connect with, based on their preferences. So customization, personalization, is still a challenge, but they are key to sustaining people's interest and motivation.

7. Is the trend going into the direction of SPOCs? Making MOOCs smaller and only available for a few people?

Yes, again, privatization is always, there is a danger that then the costs will rise and it is a different market and the National Research Council is actually working on a project now that will offer tools for people to develop their own MOOCs, open tools, accessible kind of open source, so it is for the good of not only all Canadians but offering these tools world wide so people can kind of develop their own adaptive response to whatever the institutional needs are, the learner needs are, so if they feel the need to offer some

additional resources or MOOC type environments for learning, they can do that, and create it easily. But the whole privatization, it goes into a different market, it is maybe for profit, and there are some fees that are associated with that so there are plus and minuses.

8. How, in your opinion, can small universities take part in the trend of MOOCs as opposed to big market leaders like MIT?

First of all, you have to keep an eye on who is doing what in the area and just be aware that universities are involved, like the University of Rhode Island, where Dave Cormier, the person who coined the term, is working on MOOCs, offering MOOCs, George Siemens is at Athabasca University, you can contact these people and the people that are most visible in offering MOOCs that are appealing to your university. Personal contact is still the first and most important step you can take, contacting these people and see if you can collaborate with them in either participating in a MOOC with them, having them design something or it might be a topic that is of interest to you, and when we are offering MOOCs we actually go get our experts from around the world, so they may be working through a university, through an institution, so you get the expertise, you get people to collaborate, and then you can offer something that is interesting to your university, to your department, that's a tailored topic that you might feel that there is a gap right now in the offering at the university and you can supplement with some of the experts that are already out there participating in MOOCs. So free of charge, connect with other universities, and that's how it starts.

9. Do you also think that taking an external MOOC and incorporating it into a flipped classroom concept at a local university is a valuable option?

Yes, the only thing that shuts down when the MOOCs have ended is access to the active forum discussion but all the other resources, you don't necessarily have to be registered in the course to see some of the content, and again its opening up these resources to the public at large and have the MOOCs remain active through the resources that were created, the course content, all of this information is pretty much available online if you search for a topic and you put in MOOC you will find resources that have remained out there, that are either connected to a course or not, and again, I am sure that when you contact the organizers of the course, the contact information is always listed, and email and asked them for access to certain course content, they gladly open that up to you, even if it is to give you a temporary password or registration to get online and physically inside the course.

10. Can you also tell me about your research on Personal Learning Environments?

Actually the first MOOC was in the context of a project called "Personal Learning Environments", where we collected a lot of data on the MOOC participants and what they felt they needed to feel and to have access to in order to create a personal learning environment type situation. In the beginning, we weren't really researching the MOOC aspect but more the PLE aspect, how a MOOC lends itself to personal learning or not, so a lot of the data we collected was in a larger project under PLEs and the PLENCK course actually talked about what you need to create a Personal Learning Environment and

networked environment as well. So then the networking aspect was important and the PLE was important aspect of the MOOC as well.

11. How will the notion of education shift in the coming 10 years, in your opinion?

I think there is movement but again, from our participants, the instructors, facilitators, they shouldn't fear the MOOCs are replacing them or their importance diminishes, because we have heard from participants over and over again that sometimes the human contact, the contact with an instructor, the expert, is missing in some of these MOOCs, so the satisfaction with the MOOC, most of the time, will relate back to whether the facilitator was present, whether the expert was there to answer questions, so still the human in the loop is still very much important in these classes, and the accreditation, people will spend a certain amount of time because they are self-directed learners, but they have to get something out of it. Eventually they will say I am interested in the topic but I need to focus on my job, I need to focus on my credit courses first, as a priority, and that's why we have found that the MOOC participation diminishes after a few weeks because you have other priorities, you have people that are working, that need to get back to their jobs, and what they do for a living, whether they are students or professionals, so I think its one mode, its one interest point for people, but there is no danger of people losing their jobs over a MOOC or being replaced by a computer anytime soon. There is still the importance of humans in the loop, whether it is a peer, someone you can share ideas with, if you are not sure about an assignment, who do you talked to, the expert, the facilitator, has to be there to answer questions, otherwise the motivation will go down and people will just disengage and they have the option in a MOOC just to not connect and not check in and stop participating. But you have the pressure in a university setting, you have to go to your courses and to get the credits, otherwise you fail or you can an incomplete. So there are consequences in the institutional settings that you wouldn't have in a MOOC. But there are rewards as well.

Interview # 5	Date: 08.05.2014
Contact details interview partner	Name: S. P. Position: Reader in Inquiry-based Learning Company: University of Bolton, Jisc-Cetis (Center of Educational Technology and Interoperability Standards) City, Country: Bolton, UK

1. What is your connection to MOOCs in general?

If you go back far enough to the nineties, I was a schoolteacher, so I come from an education background; I then worked from 2000 onwards in Cetis, the Center for Educational Technology and Interoperability Standards, which a UK founded service to the Higher Education sector in the UK. So that looks, as the name suggests, at technology and standards around that and how they impact on the UK, the HE system. So, I am a reader there in inquiry-based learning, the kind of worked I have done is historically, is developing online learning, I have never really, no experience in running MOOCs or that kind of thing but I have a lot of experience developing other forms of online learning. So, part of my work is to undertake something like what you are doing really for your university but for the broader UK Higher Educations, think about MOOCs and think about how or what impact they might have at the policy level so, that kind of level, but also a practical level, operational implementation level. That's what I do at the moment.

2. What did you do in particular with MOOCs until now?

We research them really, observe them, think about them, we unity work, I don't do any teaching so we are not running MOOCs per se, I have experienced them but I have not experience at actually running them at all, no.

3. What advantages and disadvantages do you link to MOOCs?

That's a big question, isn't it? I think the short answer is that it depends upon the institution very much. So what we see happening in the sector, we see, I mean you can read widely about the background of MOOCs and the different forms, interpretations of MOOCs, the cMOOCs and the xMOOCs, that division for example, and there are a couple of papers we produced, we discussed that in some depth, but I think its so institutionally depend. So for example, universities in the UK like Edinburgh University, they have been extensively using MOOCs, one of their primary motivations is really to, as a research activity. So you find some institutions, they are using, get engaged with MOOCs as a research activity. If you look at institutions like the Open University, their primary motivation is marketing, like a marketing tools, so these are the kind of things we do at our university, how about going for free, and maybe then you buy a course later on. The third use that we observed are people using them as a way of changing the pedagogical models in their institutions, as a

kind of way of experimenting. So as you appreciate, most universities have kind of stable environments and there have been very little changes, change is very hard to bring about, but yet there is a desire for change, particular institutions wishing to explore online learning. It has been around for some 10 or 15 years, but not very successfully achieved. So some people see MOOCs as a way of running experiments with online learning and see how they can change the curriculum that way. So these are the three things I see people using MOOCs for. It depends on the institution.

4. What about the criticism you can read about at the moment as well?

You have two broad models, the xMOOCs and the cMOOCs, you have come across this terminology, have you? So you got the xMOOCs, which you can see as a training model, and I separate training out from education in that sense, it is really learning about very specific things, maybe a skill, maybe a piece of knowledge, and then you have the other kind of camp of people in the cMOOCs, who actually would say, the design they have come up with, it is about people learning together, deeper learning, people following their own interests, there is a big debate there, and also skepticism between the two different approaches. But I, you know, rather look for what do MOOCs do well. So of course, whenever we start comparing any form of online learning to face-to-face approaches, we can generate a whole list of things that online learning doesn't do very well. Fine, that is okay, but it is maybe more useful to think about the things that MOOCs are doing well, and one of the things they do do well is making content available in a structured way to people around the world. That stuff they do well. Now whether or not that suits everybody, and all learners, of course it doesn't, but I think you better look at the strengths of MOOCs and the possible things they bring rather than the disadvantages. That is just the way I kind of view it.

5. So you are pro MOOC, more or less?

Ah, no, well. Good question, though. I see that they bring some advantages, the truth is, I don't think they are that different from much of what has been happening in online learning previously. They are open, by open this means you are not going to charge for them, they are open to access, because the big challenge everyone faces is this, how is the business model around MOOCs. How do you, it's fine that you provide something for free but, because there is a cost there in providing it, in lectures time, maybe in technology or course developers, there is a cost, so a big challenge that people face is about how do you actually make these MOOCs sustainable. It is easy when you get project, like investments from various charitable trusts or the vice chancellor says, here are a half a million Euros, go make some MOOCs, but he won't do that every year, and sometime in the future, you going to have to find a way of actually making this thing pay. And I think that is for me where the big challenge is. If we are funded by projects we can do anything. But when we actually have to live in a commercial world, that is when it gets much more difficult.

6. What kind of business models do you link to MOOCs?

There are a few business models that people are playing with. Put simply, one is the kind of, a big concept in all of this, is the concept of disaggregation. It kind of underpins a lot of this. If you think of a university program, a standard university program, like the one that you are experiencing, you can break that down into different components, one of the things that you receive is tuition, you also receive access to the library, all the services

around the accreditation, the thing that gives you a degree in the end. So you can look at programs, and you can break them down into different parts, and so one way of thinking about how you can make a MOOC pay is, the people certainly starting to experiment with, is providing the MOOC for free but then thinking what services would somebody buy on top of that as an extra. So it might be that, you can run a MOOC on “X” topic and you can then say for an extra 250 Euros you can have five tutorials, or whatever it may be. So thinking about the full range of things that actually a course is, breaking it down, and thinking about the things you can then charge for is one of the ways you see institutions trying to commercialize MOOCs. So, if someone wants accreditation you can certainly charge a lot for that, if you are the right kind of institution. So it is those ideas that I think people will play with, another one that we actually have been looking at ourselves, is how you actually might partner with institutions in other countries, so we are looking at UK universities might partner with Chinese universities. So, to cut the chase now, there is a demand in Chinese universities for English speaking experience, so, there is an opportunity there for UK universities to develop MOOCs and arrange partnerships with Chinese universities, some kind of arrangement, so that they can use these MOOCs in their courses. So it is this kind of thinking outside of the box and not thinks of things in terms of running a course and charge people for it, that is the same old business model that has been around for years in our education. You got to think much more in a kind of business like way, like of a product, and how you can break it down into different components and what bits might you sell and might you charge for and what bits are for free. So, I think that is where the new business models will come from, but I don’t think it is, I am certain it is not cracked yet, these are very early days. We are just playing with these things. But the reason your institution is asking these questions is because they are worried. They see that this potential, and it is only potential, this free courses, what if they did become very high quality, what if they were widely accepted by students as a way of learning, what if some institutions start off with accreditation and qualifications, how will that threaten the existing business model that they have got. Which I guess, the existing business model is, here in the UK, that 19 year old students go to university for three years to get an undergraduate degree and it costs them a lot of money to do that. Now, if there were the opportunity to study for an undergraduate degree via some kind of approach like MOOCs or a combination of approaches, that was far cheaper, that may be very attractive for these students. So that is one of the reasons, certainly in countries where state subsidies is being removed from higher education largely, that is one of the reasons why vice chancellors and managers in universities have got excited by MOOCs, it is really a negative reason for being excited because they feel threatened by what they might bring. Not a positive reason.

7. How do you assess the threat that is coming from MOOCs? Will we all study in a distance online way one day?

The way I see it, not all the time but much of the time or some of the time yes. If you look at the stats of MOOCs, you see the minute that overwhelmingly the people that study on them actually already have first degrees, and many have Master’s degrees, so actually the people that find MOOCs attractive are the ones that already had an experience of a traditional education. So actually that is not a threat, is it, that’s simply people who want to top of their knowledge. But I think it will be attractive options to people who can’t afford to do it otherwise. If I can afford to study at a face-to-face university, and I can get into a very

good university, I will do so. But if I actually find a 40 000 € debt I have when I come out of it, you know, that is a powerful incentive if I can find a way of studying and working as well. That's is the motivation for online learning since it really came about, hasn't it, and distance forms of learning, it is the same motivation. Can you find ways of studying, getting qualification, whilst also working, and doing things in a part-time way, that is probably more common in Germany anyway that more students would study part-time and keep studying into their late twenties, whereas in the UK its far more common for people to do three, four full-time years of study and get a degree. It won't change over night but I think there is a pressure in that direction. Some universities should feel threatened, yes, but well, if you are Oxford or Cambridge it will not matter to you, the top universities around the world, it doesn't matter to them. It is more threatening to the middle ranking universities, where people look at it and say, hang on, I can do something over there far cheaper, so why shouldn't I do that. So it is not an immediate threat, but this is why this topic is interesting for your university's management, they are concerned about what this might mean in the long run. They should be aware of it and should think to itself, well MOOCs are happening, what can we do with them, how can we experiment, how might MOOCs help us develop our provision, could they set up a small scale experimentation to think about the pedagogical ways and models they have in the university, could they start thinking more business like about the university anyway, about the costs involved in delivering a course and, I think it is true that across the world, if you think of 2008 and the financial crisis, there is pressure coming on higher education to think of itself as a business, rather than just as education, does that make sense?

8. Do you also know how the use of MOOCs is judged in general?

I haven't done direct research myself but what I observe is that there are certain trends, for example high dropout rates in many MOOCs. But interestingly, some MOOCs have very high retention rates, a lot of people do finish them and there is something there about the nature of the course itself. So the quick answer is, yes you do get many negative comments but I would say that that is because of a mismatch of people with their expectations really. If you are expecting that it be like an educational experience that you have had before, you are going to be disappointed. If you sign up for a MOOC and expect something new and different and understand the model and the idea behind it, one way you have to be very self-directed and often it is a xMOOC where it is about learning something specific, there are maybe some interaction with other students but not necessarily. Provide you understand that there is going to be a difference, then I think there is a much better chance of it meeting your expectations and you will be happy with that you are getting. What you see at the moment, it is not replacing higher education, they are something different at the moment, so if you compare them, it is the wrong way to go about it. Better compare them to some online training or some other form of learning but not compare them to kind of a higher education, don't come from that mindset, you have to be in a different place when you think about them.

9. What is your opinion on reducing the number of participants on people MOOCs, making them more small-scale and private even?

The massive bit is a, it doesn't really, you know, when people read Stephen Downes, who is probably the person who coined the term MOOC, massive for him is that it hasn't have to be massive, is that it is potentially, can be massive. So he is not saying a MOOC with 10

people on it is not a MOOC, he is saying that the design must have the potential of many people to participate. Clearly if you have a MOOC with fewer people participating there is a big difference and you might be able to create a kind of community feeling or know the other participants, but I think the point here is, as people experiment they will find different models, slightly different approaches that work for different contexts. So, I think you are right in your point, you will get this differentiation, and so is it a MOOC or some kind of online learning. And that is why I ultimately, I think it is a little bit of a false division, it seems to be it is just stretching the boundaries of online learning a bit more, and we will get much more, get a more varied landscape of approaches that suit different needs and also, given different types of institutions.

10. Do you think it is valuable to use an external MOOC and implement it into a course at another university?

That is an obvious way of using value, you have this course "X" but you know there is a MOOC running so you incorporate it into your program. You don't have to take all of it, you can simply point students at parts of it or use bits of it and then it is just like using the Internet in a way, you are saying here is another resource that we can use to augment the experience that I am giving you. So I absolutely see an individual lecturer doing that, it doesn't even need to be university wide, you can simply say, whatever field it happens to be in, if you lecturer could identify an appropriate MOOC there is no reason not to use it as part of that program. And that I think will grow more and more, that seems to me like a sensible way of doing things.

11. Will a university loose their reputation in the future if they do not produce a MOOC?

No, I wouldn't go that far, I think the risk is, if you don't do it well, of course you will damage your reputation, better not doing it but don't do it poorly. If you make a poor job at running a MOOC and it's not a very compelling offering, then that would damage your reputation obviously. So I don't see the world where everyone is offering MOOCs, no, I don't see the need for that.

12. What is the difference between the international and the European educational market?

Clearly, America, USA and Canada, is far more developed and the major platforms come out of North American universities. And you say, a lot of the motivation for some of the people there is individual professors promoting themselves, their own reputation. And the business model that is being applied there is here is a MOOC but you can buy the book on Amazon if you want to study on it. It is a very, that is one sort of business model that is being applied. So, I am not really familiar enough with what is coming out of Europe in terms of non-English MOOCs, I don't know. I have seen some stuff from Spain but I mean, it is interesting but if you think about the Netherlands, if you get to smaller countries it becomes harder but the critical mass of people speaking that language becomes smaller. But you have the choice in a European country, you either can run a MOOC from Germany but you can choose is it in German or is it in English, depends on the scale of the audience you want to reach. Maybe some combination of the two is what people would do. There is that challenge, so we see at the moment overwhelmingly we are dominated by America. But again, I have been on a MOOC from New Zealand, it was an interesting one on data

mining and it worked very well, many people on it, so there are around elsewhere but because that is English as well. It is something you have to think about, your institution, if it was thinking about running a MOOC, maybe the barriers are too great, but you have to think why are they doing it and if they want to attract foreign students, you have to provide one in English. You have to think what your motivation is.

13. Are you also familiar with other eLearning techniques?

Flipped Classroom is a very popular phrase at the moment, isn't it? You read it everywhere. But I don't think that is a kind of, in effect, you know, in a way a MOOC can be used as a flipped classroom, if you view it from the point of view of an institution, the bit that you are going to do on your own is the MOOC and in the classroom we, that is the flipping bit, you can go outside and do things and come together and talk about it in the classroom. I just wouldn't separate them, I think they are false divisions being made and the truth matter is it is an ecosystem and how these things all work together is probably a better way of thinking about it. There are all approaches you can use and you choose the one thing that helps you trying to achieve your goals. I wouldn't say, you are doing a MOOC therefore you are not interested in flipped classrooms or inquiry based learning. Much of the work that has been doing lately was about inquiry based learning and actual research approaches. I mean, I think there are too many divisions and we get tight up in knots about these labels that we apply to things.

14. What would your advice be for a non-elite university in times of MOOCs and online learning?

I would try and promote the MOOCs as a way of people thinking about their own pedagogy and teaching in the classrooms. So a bit like what we were talking about earlier on, about thinking how they can incorporate MOOCs into their existing courses. I think that is where the easiest kind of opportunity lies really. So I wouldn't rush out and sign up to a MOOC platform and spend lots of money on MOOCs but I would try to encourage my staff to try them out themselves and think about how they might incorporate some of these ideas into their own teaching and learning. That's what I would do.

15. How will the notions of education shift in the future, in your opinion?

Generally speaking, how we, like long term trends, that kind of thing? Well, one thing we found when we were reading about this and writing our reports is, certainly again this is relevant to the UK, maybe less so in Holland, I don't know, but we have got a lot of, a big flow of students from India, China, those countries, into the UK to study. And they bring a lot of money in. But I think one big trend that we are going to see is a kind of reversal of that flow of people. As universities in India and China become more mature and develop reputations, there will be fewer students from those countries coming to study in the UK and I think, there will be more students from Europe going to study there, also from Holland. So, there is this concept of the world is flat, this idea, this patterns that we have come to assume, there is a sense of, I can see it being attractive for students from Europe to go and study in China. I can see that as a kind of a move and that is another threat to European institutions. One thing you need to think about when you talk to someone in your institution about these things, try and explain, get them to explain to you what their business model is. Try and understand how they generate their income, where is the money

coming from, because that is so important when thinking about how these changes will impact on an institution. Because, at the end of the day, that is fundamental. If you are not generating an income, be it from the state, be it from foreign student fees or be it from research, that may be another way how you generate income, so all these changes, you got to think of how do they impact on the business model of the institution. Because ultimately, at the end of the day, that will cause institutions to change and will force them to change or you have to do things differently, if there is a threat to their business model. And we are not good in our education, thinking about our institutions as business, we think of them as a service provider to the community. But they are just as much a business as Microsoft or Google. We don't like to think of them like that, many academics don't, it makes them uncomfortable, but I think they are doing something less dirty, something for the greater good but actually that is very important. So in thinking about your recommendations you should try to talk to someone in your institution and understand how it survives, where its money is coming from. If you get the chance, if you have time. At least make it a recommendation so they think about it in the future, which is something they need to understand. If they want to know how MOOCs are going to impact on the institution you need to know what its current business model is.

16. What is your general conclusion on the topic of MOOCs?

My general feeling is that it is a good thing they have come about. It has created a lot of debate in education and it has created a lot of space for you to think about online learning, so that is a good thing.

3. Glossary of Terms

Term	Description
Coursera	A MOOC provider that was launched in 2012 by two Stanford University professors. This platform offers over 215 courses to more than 2.5 millions students all over the world. 33 colleges and universities already partnered with Coursera to offer courses with a wide span of academic principles.
edX	A non-profit organization that offers MOOCs free of charge, which was founded by MIT and Harvard in 2012. Institutions like MITX, BerkeleyX and GeorgetownX partner with this organization. Students get the possibility to receive a certificate upon completion of a course for a small fee. Outcomes from this project are also used for other online learning research from MIT and Harvard, who have both invested \$30 million into edX. This learning platform was made available in 2013 for no costs to institutions that want to offer MOOCs to students all over the world.
Khan Academy	Since 2006, the Khan Academy offers short lectures for free via YouTube. In the videos, drawings on a white board are featured and also the first online practice systems was introduced by Khan. By now, this platform has delivered more than 4,000 lectures and taught over 240 million lessons.
Learning Management System (LMS)	A system that supports educators to distribute eLearning content and offers different tools to make it possible for them to create learning exercises. Examples for such systems are Moodle, Schoology and Adobe Connect.
MOOC	Abbreviation for Massive Open Online Courses. MOOCs are distributed online with free access for everybody, set up for large-scale participation. Interactive user forums that build a community among students and professors are to facilitate the learning experience. In the traditional sense, students cannot receive academic credit or pay a charge for attending the course. But this may change in the future.
SPOC	Abbreviation for Small Private Online Courses. SPOCs are set up like MOOCs but have a fixed amount of enrollments to limit the number of students for one course. The difference to the traditional MOOC is that SPOCs are selective, meaning that people can apply to follow the course but the access to the course is restricted to tens or hundreds in order to reduce the amount of learners. Also the abbreviation SOOC is used for these type of courses (Selective Open Online Courses).
OpenCourseWare	A project founded by MIT in 2002. It has the aim to make course materials available to users around the world for free.

	This is just a collection of course materials, no real online course with interaction, work evaluation or certification for completion. A tremendous sources for educators who get the possibility to access syllabi, lectures, readings etc.
Open Educational Resources (OER)	Openly licensed teaching materials, which are freely accessible. Lesson plans, exams, readings and videos that everybody can access for free.
Open Learning Initiative (OLI)	An initiative that was launched in 2002 by Carnegie Mellon and it offers free online courses as well as course materials. With the slogan “no instructors, no credits, no charge”, the website provides more than 13 free and open courses.
Open Source Initiative	A non-profit cooperation that set out to advocate for and educate about the advantages of open source resources.
Udacity	A MOOC provider under private ownership that offers around 30 online courses on their website. Students can receive course completion certificates for free, but recently the provider has partnered with Pearson, which made it possible to receive credit in exchange for a small fee and the passing of a final exam.

4. MOOC Production

This example was adapted from the MOOC production process at the EPFL University in Lausanne, Switzerland. The general procedure entails that professors submit a proposal that is evaluated by an editorial committee composed by representatives from all the schools (engineering, basic sciences, life sciences, computer science, architecture and environmental sciences). Once the professor gets approval, he or she receives a small grant to support course production (e.g. to hire an assistant for a few months). The video production is taken over by a professional team inside the university.

4.1 MOOC Production Time Table Example

	Time	Milestone	Duration	Work to be completed
1	D-8 months	Application		
1	D-6 months	Editorial Committee		
2	D-5 months	Course Design	1-2 weeks	<ul style="list-style-type: none"> Define the structure of one week instruction Cut the course into 7/14 weeks, each week consists of 5-6 small units of 7-12 minutes which each cover 1 concept Identify existing material to be integrated Define assignments (MCQ, peer assessment etc)
2	D-5 months	Media Training	2 hours	<ul style="list-style-type: none"> Slide Design (what happens on the screen)
3	D-4 months	Prototype Week	1 week (Prof) 1 week (team)	<ul style="list-style-type: none"> Design slides accordingly Record and edit the video Hire video assistant
3	D-4 months	Review Meeting	2 hours (Prof) 2 days (team)	<ul style="list-style-type: none"> Reflect on quality of video/feedback Define rules for video editors
4	D-3 months	Teaser	2 days (Prof) 1 week (team)	<ul style="list-style-type: none"> Prepare scenario (text + illustrations) Record in studio and edit
4	D-3 months	Landing Page	2 days	<ul style="list-style-type: none"> Describe course on platform (text + teaser) Create professor(s) page
4	D-2 months	Course Description Agreement		<ul style="list-style-type: none"> For Coursera courses, define content, copyright and period of delivery
5	D-3 months	Production weeks 2-7	3 months	<ul style="list-style-type: none"> Studio work, video editing 1 hour video = 2-4 hours studio = 20-40 hours editing
6	D-Day	Course Opening		
6		Delivery	7-14 weeks	<ul style="list-style-type: none"> Post weekly announcements Monitor forum and supervise assignments

4.2 Set up and structure of MOOCs

The set up of a MOOC does not differ too much from the set up of traditional courses. Basic features like schedule, syllabus and learning actions like assignments, exams or self-assessments and learning spaces where students can exchange ideas and enhance the common learning experience are needed for any course, both online and offline. Only the location of the course space differs to the traditional understanding of a course.

First of all, it is necessary to make the schedule, syllabus and structure of the course available in a **wiki**. Wikis offer an easy and fast way to make a course available online. In this way, facilitators as well as participants get access to the different material and different versions of what was added are available as well. The use of a wiki facilitates reading and editing of the necessary material in a convenient matter.

Another important feature of online learning is the use of **online discussion forums** where students can meet and exchange ideas about the course material. Therefore, it is important to simplify these interactions taking place inside the online environment. Online course should also be kept simple so that learners with limited online skill can also participated and engage with the material successfully. The core of any learning is the discussion of content, knowledge and new ideas that the learners like to share on the topic of the course. This leads to the set up of an online discussion group that enables easy communication for the participants where comments can be posted, commented and discussed in a convenient matter.

As a next step, the **incorporation of social media** into a MOOC is advisable since the majority of the learners taken part in online course are also habituated to use social media tools in their everyday life. This implies that using social media also during a MOOC will engage the learners more effectively and bind them to the course material more strongly. Increased participation and more conversations on the topics will be the consequence. Nevertheless, choosing the right social media tool is crucial as well so that it corresponds well to the course material and not harms or hinders the delivery of the content. As a general rule it can be said that sticking to the common social media tools is advisable since these prove to be durable in the past and participants are therefore more likely to be using these in everyday life already before taking part in the MOOC. It is important to keep in mind the goals the course wants to achieve and the type of dialogue, which is appropriate for the course when choosing the social media tool. Here are some examples:

- Social Networking: Facebook, Google+, LinkedIn
- Idea and content sharing: Twitter
- Multimedia sharing: YouTube, Vimeo
- Virtual Meetings: Skype
- Sharing presentations: Prezi, Slideshare
- Collaborative mindmapping: Mindmeister
- Blogs: Wordpress, Blogger
- Social bookmarking: Diigo

Connecting the tools to the course can be done by adding an icon with a hyperlink to the tool to the wiki and place it on the welcome-page of the course.

Another possible step when setting up a MOOC is the use of a **dashboard**. It has the benefit of offering an immediate overview of the different interactions between the

learners and the results are shown in real time, which means that participants can see the latest reactions from their peers when entering the online learning environment. Also the facilitator can through the use of a dashboard keep track of what is happening inside the course with one glance and it offers a convenient overview of the course space in general. Since more and more learning is moved into the online space, learners get used to this new type of teaching and therefore, **enabling mobile access** makes online course even more attractive nowadays. It gives the participants more freedom to enter the online environment whenever it is convenient for them. By linking the course to devices like netbooks, tablets, smartphones and eReaders can enhance the connection to the world and the diversity of learners and their needs are served in a suitable way. The use of mobile-enable social media tools is a prerequisite to connecting mobile devices to the course. Also huge graphics should be avoided so that the content stays readable also on smaller screens. By using tools, which are specifically built for mobile devices, the connection of the course is made simpler.

By setting up a MOOC, the potential of using **learning analytics** in the online course should not be underestimated. This umbrella terms stands for analyzing what is happening in a course and how learners interact with the material. Learning analytics can come in three different forms: number-driven statistics (time spent on a particular piece of content or amount of hits), social network analysis (interactions between participants/facilitators and identification of key learners) and quality analysis (quality of interactions). These analytics are important for the facilitator since they have the power to enhance the course content and optimize the structure of a course when for example content is misunderstood or difficult to comprehend. Additionally, learners who are likely to drop out of the course can be identified and supported. So, also benefits for the participants are entailed in the learning analytics since weaknesses in knowledge are revealed and guidance for correct participation can be offered.

Keeping the learner's **motivation** at a high level is the last important point, which has to be kept in mind when designing an online course. Due to the lack of face-to-face meetings, dropout rates of MOOCs are fairly high, which also have a negative effect on the peer-to-peer learning dynamics. Therefore, it is essential to motivate the learners frequently. This can be done in different ways. First of all, participants should be prepared for the overload of information they will experience in the scope of the course. Also, different options for participation should be provided so that individuals with less time can simply read/watch the materials and more active learners can participate in the discussion forums for example. Communicative facilitators who offer assistance when it is needed also help learners to stay motivated when they are stuck with a certain topic. This facilitator complements the overall coordinator of the course who should be knowledgeable and motivational. A positive learning environment where different point of views can be expressed freely is as important as weekly round-up mails providing an overview of what has happened and what will happen next. Moreover, in order to keep up learner's motivation, short breaks should be implemented when a course takes place over several weeks. In these breaks, learners have time to reflect and better understand the content.

Apart from these functional necessities for MOOCs, additional more practical recommendations can be mentioned when designing a MOOC from scratch.

First of all, the **platform** where the online course is offered must be chosen with care depending on possible existing agreements with mainstream initiatives and the target

group of participants (Alario-Hoyos et al., 2014). Some platforms are more popular in specific demographic regions than others, also depending on the native language of the targeted learners. Also, the **overall course structure** must be adapted to the different constraints of the platform, which should be researched beforehand. The workload that is necessary for the creation of the course must be taken into account and also the upload of the specific learning materials to the platform presents a time factor that must be considered. A flexible schedule, which gives latecomers the opportunity to still participate in the course, is another important feature of online classes. **Different fields of expertise** are needed in the creation of a MOOC and therefore it is advisable to entrust a team of teachers with this project since in this way the content will be enriched and the workload can be split. This leads to the fact that a more complex coordination may be needed where moderate participation and awareness is controlled by a team leader who keeps the members up to date as well. When the **learning content** is created for the MOOC, attention should be paid to the originality, ease and clarity of the video lectures explaining the material (Alario-Hoyos et al., 2014). Additional material that enhances the learning experiences and supplements with the teacher's presentation are needed for the students to study offline. Also a schedule, which organizes the dates when lecturers are uploaded, is necessary for a successful MOOC. The act of adding subtitles must be considered beforehand and planned accordingly. The learning goals of every MOOC should be formulated beforehand to facilitate the **assessment** of the MOOC (Alario-Hoyos et al., 2014). Formative and summative assessment activities are possible in online classes and also assessment policies and the calculation of final scores must be researched in advance. **Social learning** should be supported through the use of MOOCs and therefore, the degree of the facilitator's commitment to actively engage with the learners must be communicated to the community in the beginning. Additionally, the **type of certification** the participants will receive upon completion of the course must be formulated and communicated in a clear manner. As a last recommendation it can be said that the **marketing strategy** that promotes the registration for the course should be launched synchronized to the start of the MOOC since it is common that the number of enrollment still increases after the online class has already started (Alario-Hoyos et al., 2014).

The following points summarize again the most important issues which must be taken into consideration when setting up a MOOC/online class:

- Establishing a wiki the course is made available
- Setting up online discussion forums to support interaction
- Linking social media tools to the online class
- Using a dashboard to make the MOOC more clear
- Enabling mobile access to flexibilize the participation
- Implementing learning analytics to improve the content
- Keeping learner's motivation high to save group's learning dynamics
- Choosing the right platform to target the appropriate audience
- Adapting the course structure to the constraints of the platform
- Setting up a team of experts from different fields
- Creating the learning content with originality, ease and clarity
- Planning the assessment of the MOOC

- Supporting social learning through committed facilitators
- Being clear about the type of certification learners receive upon completion
- Promoting the MOOC with an effective marketing strategy beforehand

Reference:

Alario-Hoyos, C., Pérez-Sanagustín, M., Delgado-Kloos, C., Gutiérrez-Rojas, I., Leony, D. & Parada G., H. (2014). Designing your first MOOC from Scratch: Recommendations After Teaching „Digital Education of the Future“. *eLearning Papers*, 1(37). 1-7.