

Official Norwegian Reports NOU 2014:5

# MOOCs for Norway

New digital learning methods in higher education



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Report from the Commission appointed by Royal Decree on 21 June 2013.  
Submitted to The Ministry of Education and Research on 16 June 2014.

## To The Ministry of Education and Research

By Royal Decree of 21 June 2013, the Stoltenberg II Government appointed a Commission to examine the possibilities and challenges that accompany the development of MOOCs and similar offers. The Commission shall map the development, compare the information gathered, and provide Norwegian authorities and educational institutions with recommendations on how to relate to this development, while also taking advantage of the opportunities provided by modern technology. The Commission hereby submits its report.

Oslo, 16 June 2014

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## Chapter 1 Introduction

### 1.1 The Commission's mandate

The Commission was appointed by Royal Decree on 21 June 2013 and given the following mandate:

#### Box 1.1 Mandate

Recently, there has been a rapid growth in Massive Open Online Courses (MOOCs) and similar educational provisions. MOOCs are free courses supplied through the Internet via streaming video from higher education institutions and from companies that collaborate with such institutions. Large, renowned institutions such as Harvard, Stanford and MIT have fronted the development, and an increasing number of institutions across the globe are now offering MOOCs. In principle, anyone may now attend courses taught by the world's leading academics. The only requirement is Internet access. Millions of people across the world are taking advantage of this opportunity.

The Commission shall investigate which possibilities and challenges accompany the development of MOOCs and similar offers. The Commission shall map the development, compare the information gathered, and provide Norwegian authorities and educational institutions with recommendations on how to relate to this development, while also taking advantage of the opportunities provided by modern technology. Due to rapid developments in this field, the Commission is preparing for a two-step process:

1. The Commission will present its first report by the end of 2013. This report shall contain an overview of the development, along with some principal recommendations based on the following issues:
  - What is the scope and development of MOOCs and who are the actors – both nationally and internationally?
  - What are the driving forces behind their development and which players and offers are likely to succeed?
  - Which professional support networks are being established in connection with these educational services?
  - What impact will this development have on Norway from a broad societal perspective?

2. In the summer of 2014, the Commission will present a more detailed report, including proposals on how Norway should respond to these developments.

In both step 1 and step 2, the Commission is required to specifically consider which possibilities and challenges the development of MOOCs and similar offers may create in the following areas:

- Higher education, for example
  - Educational grants and loans
  - Financing of study programmes
  - Accreditation and quality assurance
  - Quality in higher education and research-based education
  - Strategic use of MOOCs
  - Cooperation, division of labour and concentration (SAK)
  - Image-building
  - International cooperation
  - Universal design
- Lifelong learning/continuing and further education, for example
  - Skills upgrades in working life, including small and medium-sized businesses (SMBs)
  - Regional collaboration between commerce and industry, working life and educational institutions, including development of tailored programmes for continuing and further education in cooperation with social partners in working life.

The Commission shall consider and quantify administrative and economic consequences of the actions proposed. The Commission shall consider at least one proposal that can be accomplished without expanding the use of resources within the higher education sector.

## 1.2 The Commission's members and secretariat

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The Commission was appointed with the following members:

- Berit Kjeldstad, Professor of Physics and Pro-Rector for Education at Norwegian University of Science and Technology (chair)
- Harald Alvestrand, Software Engineer, Google
- Mathis Bongo, Assistant Professor of Education/Pedagogy, Sámi University College
- June Breivik, Chief Developer of BI Learninglab and e-learning
- Endre Olsvik Elvestad, Student, Norwegian University of Science and Technology
- Ola Erstad, Professor of Education, University of Oslo
- Eva Gjerdrum, Director General, Norway Opening Universities
- Trond Ingebretsen, Director of the Norwegian Centre for ICT in Education
- Arne Krokan, Professor of Sociology, Norwegian University of Science and Technology
- Bergljot Landstad, Head of Regional and Economic Development, Møre og Romsdal County Authority
- Ingrid Melve, CTO of UNINETT (develops and operates the Norwegian national research and education network – transl. note)

The Commission's secretariat has consisted of:

- Berit Johnsen, Deputy Director General (chair of the secretariat)
- Bjørn Tore Bertheussen, Senior Advisor
- Simen Rommetveit Halvorsen, Senior Advisor
- Frode Hauge, Senior Advisor
- André Løvik, Head of Section

## 1.3 The Commission's work

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The Commission held its first meeting on 22 August 2013 at the Ministry of Education and Research (KD). The meeting was opened by Rolf L. Larsen, Deputy Director General and Deputy Head of KD's Department of Higher Education, and Eivind Heder, Director-General of the Department of Policy Analysis, Lifelong Learning and International Affairs, with a presentation on the background of the mandate and Commission's appointment. Reference was e.g. made to the fact that the MOOC Commission's mandate must be viewed in the context of other commission work and ongoing processes within higher education.

The Commission is asked to provide an assessment of what challenges and opportunities are expected to accompany the emergence of MOOCs and similar provisions as regards higher education. In the context of this report, when the Commission mentions higher education in Norway, this also includes higher education in, about and using the Sámi language. In the context of this report, when the Commission mentions working life, this includes both the public and private sectors.

The Commission held four committee meetings in Oslo during the autumn of 2013: 22 August, 18 September, 17 October and 20 November. During the spring of 2014, the Commission held four committee meetings, one in Lausanne, Switzerland on 10 February and three in Oslo: 12 March, 9 April and 30 April. The meeting in Lausanne was held in connection with the Commission's participation in the conference "European MOOCs Stakeholders Summit 2014".

At the commission meeting on 18 September, Paul Chaffey, former CEO of NHO's (the Confederation of Norwegian Enterprise's) Business Association for Norwegian knowledge and technology-based enterprises (Abelia), was invited to speak about upgrading skills in business and the labour market. Deputy Director General Anne Line Wold and Senior Advisor Øystein Holmedal-Hagen from KD were invited to inform the Commission about the financing system in higher education and student fee rules, respectively.

At the commission meeting on 17 October, Senior Advisor Toril Måseide and Senior Advisor Tone Flood Strøm from KD were invited to speak about the educational support system and system for quality assurance, accreditation and recognition in higher education, respectively.

The Commission has established its own Facebook page, as well as a website for the MOOC Commission on [regjeringen.no](http://regjeringen.no). On Facebook the Commission has invited input during the progress of their work.

In order to get the best possible knowledge basis, the Commission has ordered more external input. Most of the commission members have also contributed memos on various issues.

The following external persons and organisations have provided written contributions:

- Vice president Frode Arntsen and Head of Product Centre Arve Olaussen, BIBSYS
- Advisor Nora Clark, University of Agder
- Senior Advisor Märtha Felton and Advisor Maren Jegersberg, University Center for



- Information Technology (USIT), University of Oslo (UiO)
- Senior Advisor Helge Halvorsen, the Confederation of Norwegian Enterprise
  - Assistant Professor Gisle Hannemyr, UiO
  - Senior Advisor Bent Kure, USIT, UiO
  - Section Manager Jon Lanestedt, USIT, UiO
  - Vice president Torhild Slåtto, Flexible Education Norway
  - Director of study and research Jan Atle Toska, University of Nordland
  - Secretary General Gard Titlestad, International Council for Open and Distance Education
  - Professor Olav Torvund, Norwegian Research Center for Computers and Law, UiO
  - Project team for evaluation of MOOC platforms for UiO, consisting of Jesper Kjellemyr Havrevold, Tomm Eriksen, Tore Bredeli Jørgensen, Svein Harald Kleivane, Bent Kure and Hans Magnus Mikaelson Nedreberg, USIT, UiO
  - Norwegian Association of Local and Regional Authorities (KS)
  - Norwegian Confederation of Trade Unions (LO)
  - The National Coordinator of Accessibility of Higher Education (Universell)
  - Norwegian Agency for Quality Assurance in Education (NOKUT)
  - National Union of Students in Norway
  - Norwegian Centre for International Cooperation in Education (SIU)
  - Unio (trade union confederation – transl. note)
  - The Norwegian Association of Higher Education Institutions
  - Confederation of Vocational Unions

The unions Akademikerne and Spekter were also invited to provide input.

The Ministry of Education and Research and the Norwegian Centre for ICT in Education have provided a secretariat and have also contributed materials and input beyond this. Senior Advisor Borghild Abusland in KD has made a special contribution, e.g. by proofreading.

The mandate tasked the Commission with submitting an interim report by the end of 2013. The Commission submitted the interim report “Tid for MOOC” (Time for MOOCs) to the Ministry of Education and Research on 13 December 2013. The content of the interim report has been developed further and has been incorporated as part of the Commission's final recommendation.

The interim report has been translated into English.<sup>1</sup>

## 1.4 The structure of the report

The report is divided into the following chapters:

- Chap. 1: Introduction
- Chap. 2: The Commission's definition of MOOCs
- Chap. 3: The Commission's recommendations
- Chap. 4: MOOCs in a social perspective
- Chap. 5: From flexible education to MOOCs
- Chap. 6: The emergence of MOOCs
- Chap. 7: Participants in MOOCs
- Chap. 8: Documentation of competence achieved
- Chap. 9: MOOCs in Norwegian higher education
- Chap. 10: Quality and learning outcomes
- Chap. 11: How to offer MOOCs?
- Chap. 12: Copyrights and open access
- Chap. 13: Cooperation, specialisation and competition
- Chap. 14: Skills needed in working life
- Chap. 15: Accelerated education and open admission to MOOCs
- Chap. 16: The principle of free education and student fees
- Chap. 17: Education support
- Chap. 18: Economic and administrative consequences of the Commission's recommendations
- Appendix 1: Copyrights related to traditional education and to MOOCs
- Appendix 2: Handling of copyrights and licensing of course materials in connection with MOOCs

Chapter 1 gives an account of the Commission's mandate, the members of the Commission and the secretariat, the Commission's work and the structure of the report. Chapter 2 describes the characteristics of MOOCs, as well as the Commission's definition of the terms “MOOC” and “similar provisions”. Chapter 3 gives an overall presentation of the Commission's recommendations in the report.

In Chapter 4, the development of MOOCs is put in a wider social perspective, nationally and globally, emphasising how web-based courses such as MOOCs may contribute to a knowledge-based society and, in turn, growth and prosperity. Chapter 5 gives an account of the development of

<sup>1</sup> The MOOC Commission (2013) *Time for MOOCs. The MOOC Commission's interim report of 13 December 2013*. Also available in English at: <http://www.regjeringen.no/nb/dep/kd/dep/styret-rad-og-utvalg/utvalg-om-hoyere-utdanningstilbud-pa-net.html?id=732679> (Retrieved: 5 May 2014).

flexible education and technological infrastructure in higher education in Norway.

Chapters 6–8 describe various aspects of the emergence of MOOCs. In chapters 9–17, the Commission considers MOOCs against different topics, and gives recommendations on how Nor-

wegian authorities, educational institutions and players in working life shall deal with the development and utilise the opportunities offered by the technological development. Chapter 18 gives an account of the economic and administrative consequences of the Commission's recommendations.

## Chapter 2

# The Commission's definition of MOOCs

### 2.1 Characteristics of MOOCs

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*Massive Open Online Courses* (MOOCs) are offered via the Internet. They are provided free of charge to a large number of people and are accessed by the user logging into a website and signing up.

MOOCs differ from traditional university studies, firstly by their open access. Basically, the only prerequisite for participation is access to the Internet. Secondly, MOOCs are characterised by scalability; the courses are organised in such a way that they can easily be scaled in line with the number of participants.

The courses are likely to use brief video teaching sequences, quizzes, variants of peer review and machine-graded *multiple choice* exams. The courses may also utilise user-generated learning and the course participants may be able to network amongst themselves, most likely by using various digital services for sharing and interaction.

The first provisions called MOOCs started in 2008. The literature is characterised by a debate of what distinguishing features a course must have to be called a MOOC, cf. Chapter 6. Broadly speaking, the debate revolves around the content assigned to the various parts in the MOOC acronym. The debate also concerns the desire to assume ownership of the term and the phenomenon.

There are different opinions of what it means for a MOOC to be *massive*. Some emphasise that the course must have a very high number of participants, others emphasise the growth potential due to the courses' scalability.

The fact that a MOOC is *open* may be understood to mean that the offer is free or accessible to all without requiring formal qualifications. Many also link the openness criterion to learning resources, i.e. whether the MOOC uses open academic content.

*The course concept* is also ambiguous. Certain people believe that there must be set start and

end points. Others emphasise that the course leader role is given a certain content or that course participants must complete a concluding test and thus document what they have learned.

### 2.2 The Commission's definition

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The Commission has chosen to base their definition of MOOCs on the following characteristics:

- offers that are web-based
- offers that are scalable as regards the number of participants
- offers that are open.

The mandate tasked the Commission with considering MOOCs and similar offers.

The field is undergoing rapid development, where new offers, course models, players and business models are continuously evolving. The didactics used in MOOCs are continuously developing. The MOOC offers, such as they appeared in 2008, are vastly different from the majority of MOOCs offered in 2014.

Today we can already see various types of evolved MOOCs. These offers have some of the characteristics mentioned above, but not necessarily all of them. Internationally, several MOOCs have been developed with exams and credits that may be included as part of a degree in higher education. There are also examples of entire degrees being offered as MOOCs, e.g., a MOOC-based master's degree programme in computer science at Georgia Institute of Technology in the USA. Such provisions have both a course fee and qualification requirements for admission. Small Private Online Courses (SPOCs) are another example of evolved MOOCs, with restrictions on the number of participants. This could e.g. be courses offered to a company for internal skills development. Courses are also developed where the main focus is on experimenting with contents and pedagogy, with the object of developing more efficient digital learning methods. Some offers emphasise a

higher degree of social interaction as a learning tool, while other offers facilitate individualised, tailor-made learning processes through adaptive learning. Adaptive learning entails using systems that check what a participant knows about a subject, retrieves relevant learning objects from a database, tests goal achievement and demonstrates learning progress over time.

In recent years there has been a rapid development in the use of technology for learning purposes. The Commission is of the opinion that MOOCs are part of this development, which will continue with unabated strength in the coming years.

The mandate tasked the Commission with investigating which opportunities and challenges result from the development of MOOCs and similar provisions. By “similar provisions” the Commission means courses which have evolved from MOOCs and that share the characteristics of the original courses. In order to include “similar provisions” in their definition of MOOCs, the Commission applies the following clarifications of the three characteristics mentioned above:

- The Commission has chosen to include courses with varying degrees of transparency. This means that the Commission will include courses both with and without course fees, qualification requirements for participation and use of open learning resources.
- The Commission operates with a wide course concept. This means that the Commission includes both continuing and further education, as well as credit-awarding degree programmes lasting several years with the characteristics mentioned above.

The Commission believes that the recommendations in the report will be more useful with a defi-

nition describing a changing phenomenon, e.g. a definition emphasising the overall common features of MOOCs. Consequently, when the Commission in this report refers to MOOCs, this also includes “similar provisions” as described above. Where it is necessary to distinguish between different types of MOOCs, for example with and without exams and credits, this will be emphasised in the Commission’s considerations and recommendations.

The Commission is of the opinion that MOOCs should be seen as part of a development which ultimately relates to the educational opportunities brought about by new technology. The Commission feels that technology has the potential to change educational practice, and ensure better and more effective learning. How MOOCs may contribute to increasing the quality of higher education is, in the Commission’s opinion, a very important aspect of the development of MOOCs.

The scalability of offers makes it possible to gather a great number of students in digital networks. This creates new premises for web-based learning. An integrated use of different types of technology, such as video formats, social media and new learning platforms, provides new prerequisites for use of digital media in education.

MOOCs are increasingly being applied as part of campus education. This shows that technology facilitates other ways of organising educational progress and the contents thereof, making it possible to combine the best from campus education with new types of web-based courses (blended learning). The evolution of MOOCs is therefore also a question of how MOOCs can be combined with other learning activities.

## Chapter 3

# The Commission's recommendations

The technological development creates opportunities and challenges for Norway. This also applies to the educational sector, e.g. through the development of new education technology and digital services, the development of innovative forms of learning and other methods for distributing knowledge and education.

Internationally we see increased competition for students and a strong need for promotion among higher education institutions. Employers, students and the authorities have high expectations to the quality of the education being offered. In countries with highly strained budgets, the educational sector is also faced with demands for more cost effectiveness. The growth in skills-based trade and industry increases the need for access to higher education, and working life's need for expertise development is increasing.

The MOOC development creates new opportunities and challenges. One possibility is to make high-quality education easily available for an increasing number of groups in the population. At the same time, MOOCs could be a policy instrument for Norwegian institutions for international image-building and collaboration. One challenge would be that Norwegian institutions will encounter increased competition for students from international institutions. The competition for students will also increase among the Norwegian education institutions.

If Norwegian institutions are to stand out in the increased competition, they must have the innovative ability and capacity to utilise the opportunities provided by MOOCs. The Commission believes that MOOCs should lead to changes in how the institutions organise their education, thus contributing to increased quality and relevance in their offers.

The Norwegian Government has appointed a commission to consider the opportunities and challenges resulting from the development of MOOCs, to map the development, gather knowledge and give recommendations as to how Norwegian authorities and institutions shall relate to

the development, and use the opportunities offered by the technological development. This provides some strategic advantages for the further development of MOOCs in Norway. However, if the opportunities of MOOCs are to be exploited, this requires a will to reorganise and make a serious effort on the part of the authorities and the institutions themselves.

The MOOC Commission is proposing several specific measures. The measures, which are proposed funded by the authorities through special initiatives, will amount to annual investments of NOK 130–380 million.

### 3.1 Recommendations to the authorities

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#### 3.1.1 National initiative with budgetary consequences

The Commission is of the opinion that digitalisation of higher education in Norway has not progressed quickly enough, and that the institutions' ability to deliver has been too weak.<sup>1</sup> If the responsibility is placed solely on the institutions, the Commission feels that the development will not proceed quickly enough. Consequently, the Commission is of the opinion that national authorities must facilitate increased digitalisation of higher education through national initiatives to support the institutions' work in developing MOOCs. The national initiative should take place over a five-year period. The need for further initiatives beyond this period should be considered. The Commission proposes a national initiative amounting to an annual total of NOK 130–380 million.

The national initiative consists of six recommendations directed at the authorities:

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<sup>1</sup> Ørnes et al. (2011) *Digital tilstand 2011 – Norgesuniversitetets monitor* (Digital status 2011 – Norway Opening Universities' monitor). Norgesuniversitetet skriftserie 1/2011 (Norway Opening Universities' publications 1/2011).

- The Commission recommends that preparations be made to give Norwegian institutions access to one or more MOOC platforms adapted to Norwegian and Sámi languages, as well as to the profile of Norwegian institutions (Chapter 11).
- The Commission recommends that preparations be made to allow the institutions to use a central support function in the development of MOOCs. A primary objective for this support function is to assist in the development of relevant educational and technological skills at higher educational institutions (Chapter 11).  
*Total amount: NOK 40 million.*
- The Commission recommends systematic emphasis on research-based knowledge development regarding the use of technology in higher education (Chapter 10).  
*Total amount: NOK 15 million.*
- The Commission recommends establishing a community for research-based knowledge development, development work and knowledge sharing related to learning analytics (Chapter 10).  
*Total amount: NOK 15 million.*
- The Commission recommends granting public funds for a major public initiative relating to expertise development using MOOCs, which will require collaboration between the authorities and the social partners. The funds can be distributed in various ways, and this must be considered in more detail by the public authorities (Chapter 14).  
*Total amount: NOK 50–300 million.*
- The Commission recommends that preparations be made to allow more pupils in Primary and Secondary Education and Training to take accelerated education as MOOCs (Chapter 15).  
*Total amount: NOK 10 million.*

### 3.1.2 Recommendations to the authorities within the current budget framework

In addition, the Commission recommends a number of national initiatives supporting the main initiatives mentioned above, and which may be funded within the current financial framework:

#### Brand building

- The Commission recommends uniting and promoting Norwegian MOOCs through a dedicated national portal (Chapter 11).

- The Commission recommends that Norway initiate a Nordic cooperation with the objective of a joint initiative to promote Nordic MOOCs internationally (Chapter 11).

#### Open digital learning resources

- The Commission recommends establishing an overview of available open digital learning resources for higher education (Chapter 12).
- The Commission is of the opinion that Norwegian authorities should work actively, both domestically and internationally, to promote the principle of open digital learning resources and open access in higher education (Chapter 12).

#### Admission

- The Commission is of the opinion that Norwegian MOOCs shall, in principle, be free of charge (Chapter 16).
- The Commission recommends trials with admission to MOOCs with credits for applicants who do not fulfil applicable requirements for admission to higher education (Chapter 15).

#### Crediting

- MOOCs with exams and credits, both from Norwegian and foreign institutions, can be included in the current degree system. Consequently, the Commission does not see the need for changing the Norwegian regulations for accreditation and recognition of subjects (Chapter 9).

### 3.1.3 Recommendations to the authorities regarding further studies

In this recommendation the Commission has assessed how the MOOC development affects a number of areas within higher education. In the following areas the Commission sees a need for more detailed study and consideration than the Commission has been able to provide:

#### Quality

- The Commission believes that there is a need for stronger incentives for increased quality in teaching, as well as for more innovative forms of learning. The Commission therefore recommends a review of the general range of policy

instruments and incentive schemes for the education area at the individual, institution and national level (Chapter 10).

- The Commission believes that it is necessary to strengthen the digital skills of employees in the higher education sector. However, the scope of this must be mapped in more detail. The Commission recommends that funds be granted to strengthen digital skills (Chapter 10).

#### *Infrastructure and rights*

- The Commission recommends that questions regarding the handling of personal information in MOOCs be included in the review regarding digital assessments and exams (Chapter 10).
- The Commission recommends that the questions relating to copyrights and licensing be considered more closely in order to make it easier to develop open MOOCs (Chapter 12).

#### *Recognition*

- The Commission recommends a national review of how to improve the institutions' practice as regards recognising subjects (Chapter 9).
- The MOOC Commission recommends having the Ministry-appointed commission tasked with assessing skills outside the formal education system also assess skills developed through MOOCs without exams and credits (Chapter 9).

#### *Funding*

- The Commission recommends that the Ministry evaluate the regulations for student fees in order to clarify the institutions' leeway as regards payment for MOOCs (Chapter 16).
- The Commission recommends examining whether educational support should be granted to participants in MOOCs and other web-based programmes with a flexible student work load and duration (Chapter 17).
- The Commission recommends examining whether educational support should be granted to students taking MOOCs and other web-based courses, both inside and outside the EU/EEA (Chapter 17).
- The Commission recommends that financial consequences relating to foreign students be included in the reviews of changes to the edu-

cational support scheme proposed by the Commission (Chapter 17).

The Commission recommends that the Ministry of Education and Research, in partnership with relevant stakeholders, initiate the different studies mentioned above. The Commission believes that the studies can be executed within the framework of the Ministry of Education and Research or by already appointed commissions.

#### **3.1.4 Recommendations to the funding committee**

A committee has been appointed to review and evaluate the funding scheme for higher education. The MOOC Commission has made two recommendations to this committee:

- The Commission recommends that incentives and policy instruments supporting cooperation, division of labour and specialisation between the institutions are considered by the committee that will review and evaluate the funding system for the Norwegian higher education sector (Chapter 13).
- The Commission recommends that cooperation between universities and university colleges and working life be used as an incentive in the funding system for higher education (Chapter 14).

#### **3.2 Recommendations to universities and university colleges**

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The Commission believes that digitalisation of higher education is a good instrument for the institutions' work on quality. In Norway, MOOCs play only a modest part in universities and university colleges' overall strategies. Higher education institutions have extensive authority to make their own priorities and choices when it comes to use of resources. In the opinion of the Commission, the institutions have greater opportunities to develop and test MOOCs than what has been done so far. MOOCs must be seen as an instrument for educational development, and should be prioritised and implemented in the same way as the institutions otherwise carry out quality development of education programmes within their allocated resources. Several of the Commission's proposals are therefore directed at the institutions:

### *Quality*

- The Commission recommends that experience and knowledge from the work on quality in flexible and web-based education be applied in the development of MOOCs (Chapter 10).
- The Commission recommends that the institutions further develop employee skills in the use of technology in education (Chapter 10).
- The Commission recommends that the institutions take responsibility for further development of students' digital skills (Chapter 10).
- The Commission assumes that the institutions base their development of MOOCs on the principles of universal design (Chapter 10).
- The Commission recommends that the institutions test new types of educational assessment and exams (Chapter 10).

### *Infrastructure and rights*

- The Commission recommends that, in developing MOOCs, the educational institutions clarify appropriate agreements for the students' and employees' rights to their own intellectual property (Chapter 12).
- The Commission recommends that the institutions stimulate production of open digital learning resources, and that all learning resources are labelled with conditions for use (Chapter 12).
- The Commission recommends that the consideration of universal design be safeguarded when selecting the platform (Chapter 11).

### *Recognition*

- The Commission believes that the institutions must facilitate a more streamlined practice for recognising subjects across Norwegian institutions (Chapter 9).
- The Commission is of the opinion that the institutions must develop good schemes for assessing the overall qualifications of persons who have completed MOOCs (Chapter 9).

### *Cooperation*

- The Commission encourages Norwegian institutions to utilise the opportunities provided by MOOCs for professional cooperation, division of labour, specialisation and efficient exploitation of resources (Chapter 13).
- The Commission recommends Norwegian institutions that want international cooperation on MOOCs to take advantage of the opportunities for European cooperation presented by the EU's Erasmus+ education programme (Chapter 13).
- The Commission recommends that the education institutions and social partners strengthen their cooperation relating to continuing and further education, and that MOOCs be used as a policy instrument in this work (Chapter 14).



## Chapter 4

# MOOCs in a social perspective

### 4.1 Prime movers behind the development of MOOCs

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Many voices have claimed that new technology could radically change higher education. In recent years, new technology has enabled extensive evolution in web-based education. The emergence of MOOCs is the most evident example of this development. It is an innovation that introduces something entirely new in higher education: cheaper and more accessible services, both in time and space. Clayton M. Christensen, Kim B. Clark Professor of Business Administration at Harvard, has studied why major, leading companies within an industry may fail in their encounter with new and ground-breaking innovations – so-called disruptive innovations.<sup>1</sup> Christensen analysed several industries and discovered the same pattern: the established and largest companies in an industry failed as they encountered the disruptive innovation. New offers evolve, initially often with a lower quality than established offers, and gradually change the market over time. The previously dominant players adapt to the new market, but do not change their basic business model, and end up on the losing end of the competition. In 2008, Christensen and others felt that web-based education would reach a critical limit in 2012 and become a disruptive innovation with major consequences for higher education.<sup>2</sup>

Another important driving force behind the emergence of MOOCs is the students' own desires. In an article in the New York Times in November 2013, Clayton M. Christensen and Michael B. Horn argue that students will embrace these new offers.<sup>3</sup> The growth in the number of participants in MOOCs may indicate that this is just the case.

Another driving force behind the development seems to be a desire to contribute to development and democratisation. Education is crucial for economic and sustainable development, and there is a rising global demand for access to higher education. Simpler and more reasonable access to knowledge would provide large, new groups with access to higher education.

Resource efficiency is another important driving force. Economic crises have put considerable strain on cost efficiency in welfare services. Higher education is no exception. There is an expectation that MOOCs may contribute both to increased quality and cost efficiency in higher education. Such expectations have perhaps been most notable in the US, but they also assert themselves in European countries, for example in Spain and France.<sup>4</sup>

MOOCs give higher education institutions excellent opportunities to market their educational programmes, not just to their traditional target groups, but also on a global scale. In that respect, positioning in a competitive market is also an important driving force behind the development. This is clear both in the US and in Europe. European initiatives may be seen as an answer to the MOOC development in the US.<sup>5</sup> Many European institutions develop MOOCs as a strategic policy instrument in the international competition for students. Both the British FutureLearn and the French MOOC portal FUN have, for example, been presented as instruments for ensuring global visibility and competitiveness. In April 2014, the "European Multiple MOOC Aggre-

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<sup>1</sup> Christensen, Clayton M. (1997) *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Harvard Business Press.

<sup>2</sup> Christensen, Clayton M. et al. (2008) *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns*. McGraw-Hill, 1. edition.

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<sup>3</sup> Christensen, Clayton M. & Horn, Michael B. (2013) *Innovative Imperative: Change Everything. Online Education as an Agent of Transformation*. Available from: <http://www.nytimes.com/2013/11/03/education/edlife/online-education-as-an-agent-of-transformation.html>? (Retrieved: 10 December 2013).

<sup>4</sup> European University Association (2014) *MOOCs. Massive Open Online Courses. An update on EUA's first paper (January 2013)*. EUA Occasional Papers.

<sup>5</sup> *ibid.*

gator” (EMMA) was launched. EMMA is funded by the EU, and the purpose is to stimulate innovative learning through MOOCs in multiple languages from different European universities. This will contribute to preserving Europe’s education, languages and cultural heritage, and support learning across cultures and languages.<sup>6</sup>

The European Commission’s “Opening Up Education Communication” shows that another important driving force in Europe is the desire for openness in higher education, including digital learning resources and research results. Use of technology in higher education is also seen as a policy instrument for more cooperation with trade and industry.<sup>7</sup>

When the above mentioned driving forces coincide with new and ground-breaking technological opportunities, the potential for change is considerable. According to Christensen and Horn, the consequence will be that a number of today’s education institutions, approx. 25 %, will not be able to adapt, and will consequently disappear or be forced to merge with others.<sup>8</sup>

However, many are sceptical to the idea that MOOCs will lead to such radical changes in higher education. In particular, such scepticism seems to manifest itself in countries where there is a long tradition in offering web-based higher education. Examples include Germany and other Northern European countries. Here the discussions are mainly related to how web-based education in general, not just MOOCs, may strengthen higher education. This may be a contributing explanation to why so few MOOCs have been developed in Northern Europe so far.<sup>9</sup>

## 4.2 MOOCs in a global perspective

MOOCs provide a hope of covering the individual’s need for lifelong learning, as well as society’s

needs for skills at a far lower cost than before. Even countries with weak economic development and limited access to digital equipment and broadband capacity, expect the development of a growing number of open learning resources to provide educational opportunities for individuals and groups that have not previously had such access.<sup>10</sup> As such, the digital development represents a democratisation of education at a global level, in a totally different way than campus education has been able to.

The US and Europe have been the largest and first to offer MOOCs. The new opportunities for mass education have gradually been adopted by countries all over the world. This happens both by applying available online education resources from providers in other countries, and by the country’s own education institutions developing their own MOOCs. MOOCs are not necessarily seen as a solution per se. The vast majority envisions web-based education resources as primarily being integrated with classroom education, or integrated in organised or voluntary learning in groups. The potential for mass education increases with the development of new software, and by tailoring the educational programmes for technology which is more easily available. The development of educational programmes via mobile phones has opened access to education for new groups, which is particularly popular in many areas in Africa and Asia with expensive and poor-quality broadband and lack of computers.<sup>11</sup>

One example of this development is Kepler – a university programme designed for developing countries. In 2013, Kepler opened its first campus in Rwanda. This pilot project combines MOOCs supplied by international platforms such as edX and Coursera with local campus education. The objective is to develop a global network of universities that can provide high-quality education and career opportunities at a price everyone can afford – about USD 1000 per year.<sup>12</sup>

Another example is the partnership between the intergovernmental organisation Commonwealth of Learning (COL) and the Indian Institute of Technology Kanpur (IIT Kanpur) in India. IIT Kanpur is e.g. known as a pioneer in the use of mobile technology for development in rural areas

<sup>6</sup> European Multiple MOOC Aggregator (2014). Available from: <http://europeanmoocs.eu/blog/project/> (Retrieved: 5 May 2014).

<sup>7</sup> European Commission (2013) *Opening Up Education: Innovative teaching and learning for all through new Technologies and Open Educational Resources*. Communication from the Commission.

<sup>8</sup> Christensen, Clayton M. & Horn, Michael B. (2013) *Innovative Imperative: Change Everything. Online Education as an Agent of Transformation*. Available from: <http://www.nytimes.com/2013/11/03/education/edlife/online-education-as-an-agent-of-transformation.html> (Retrieved: 10 December 2013).

<sup>9</sup> European University Association (2014) *MOOCs. Massive Open Online Courses. An update on EUA’s first paper (January 2013)*. EUA Occasional Papers.

<sup>10</sup> Børsheim, Astrid (2013) *MOOCs – sett fra Kina (MOOCs – as seen from China)*. Article written in connection with ICDE’s world conference in Rianjin, China, in October 2013.

<sup>11</sup> *ibid.*

<sup>12</sup> Kepler (2013). Available from: [www.kepler.org](http://www.kepler.org) (Retrieved: 10 December 2013).

in India. In the autumn of 2013, COL and IIT Kam-pur launched a six-week MOOC in “Mobiles for Development”. The programme had 2 255 participants from 115 countries, of which 25 % were women. Countries with the most attendees included India, Mauritius, Nepal, South Africa, Ghana, Tanzania and Nigeria. All learning resources were open and free of charge, and those completing the course received a certificate proving the level of competence achieved.<sup>13</sup>

The demand for access to higher education is increasing all over the world. In India alone, 40 million additional students are expected to enrol by 2025.<sup>14</sup> Whether or not MOOCs can be the solution to this increasing demand, is an ongoing and complex discussion.<sup>15</sup> However, it seems clear that MOOCs have the potential to help make higher education more accessible for new groups.

### 4.3 MOOCs in a Norwegian context

Education is crucial for ensuring a knowledge-based working life. The education and research sector must satisfy the needs of working and social life for knowledge and skills. Working life is becoming increasingly knowledge-intensive and the extensive interaction with other countries requires different types of knowledge and skills than before. A high-quality education sector is therefore one of the most important preconditions for further growth and for taking on global and national challenges.

A well-developed higher education sector, free higher education and good schemes for educational support contribute to extensive access to higher education in Norway. At the same time, it is important to have opportunities for learning throughout life. An important part of the societal role of universities and university colleges is therefore to facilitate lifelong learning, regardless of age, place of residence and life situation. Similar to many other Northern European countries, Norway has a long tradition for web-based higher educa-

tion. In 2013, approximately 16 500 students utilised various forms of flexible education, an increase of 38 % from 2006.<sup>16</sup> In 2013, this amounted to about seven per cent of students in Norway.

The ways in which MOOCs will change higher education in Norway is an open question. The development in Norway will probably take place based on other preconditions than what the case has been in the US. Norwegian higher education distinguishes itself from many other countries, insofar as it is mainly funded by the government and is free of charge for the students. A desire on the part of the students for lower prices on higher education will therefore not be a driving force for cost effectiveness in Norway. However, demands from the authorities for cost effectiveness could also be applicable in Norway.

Equally relevant for Norway is the development in Europe as regards the focus on MOOCs. In Europe, large countries such as France and Germany are establishing national MOOC portals. The European Commission funds the portal “OpenupEd”, a MOOC portal for higher education institutions in the EU, and EMMA has been launched as a pilot. The emphasis on MOOCs in Europe is driven, e.g., by the desire to utilise technology for educational purposes, the need for better accessibility to higher education programmes, better quality of higher education and an increased level of education for EU citizens. These important objectives are shared by the Norwegian education authorities as well.

MOOCs provide access to a variety of programmes that are openly available, also from internationally recognised universities. The Commission is of the opinion that Norwegian institutions will encounter increased competition for students from international institutions. At the same time, Norwegian institutions offering MOOCs would be able to reach a greater share of the population throughout the country. The competition for students will therefore also increase among the Norwegian education institutions. Simpler access to both Norwegian and international programmes could therefore have an impact on the Norwegian students’ preferences when choosing a place of study.

The Commission feels that increased competition from abroad and more competition amongst Norwegian institutions could lead to quality development in Norwegian higher education. At the same time, internationally recognised Norwegian

<sup>13</sup> Commonwealth of Learning (2013) *Connections*, Learning for Development, Vol. 18, no. 3.

<sup>14</sup> Everitt, Richard (2013) *The new education laboratory: 10 things you need to know about MOOC*. Available from: <http://usa.britishcouncil.org/blog-mooc> (Retrieved: 10 December 2013).

<sup>15</sup> Department for Business, Innovation and Skills (2013) *The Maturing of the MOOC*. BIS Research Paper number 130. Available from: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/240193/13-1173-maturing-of-the-mooc.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/240193/13-1173-maturing-of-the-mooc.pdf) (Retrieved: 10 December 2013).

<sup>16</sup> Database for statistics on higher education (DBH). Available from: <http://dbh.nma.uib.no/> (Retrieved: 13 May 2014).

institutions would be able to provide MOOCs for the international education market. Thus, MOOCs could be a policy instrument for Norwegian institutions as regards international image-building and collaboration.

If Norwegian institutions are to stand out in the increased competition, they must have the innovative ability and capacity to utilise the opportunities provided by MOOCs. The Commission believes that MOOCs could lead to changes in how the institutions are organising their own education. National and international MOOCs could, e.g., be used in dedicated programmes and teaching plans. The Commission feels that MOOCs should lead to better utilisation of resources between the institutions, by dividing the offers amongst themselves. The leading national fields of expertise in an area may provide specialised study schemes for several institutions. This will allow the institutions to free up academic resources for specialisation and in-depth studies. Mutual exchange of expertise would serve as specialisation and efficiency improvement, as each individual institution could then concentrate their own efforts within areas where they have special advantages. MOOCs should also lead to more internal academic cooperation in the institutions. The technology used to deliver MOOCs enables a more collaborative organisation of education and counselling. The Commission therefore believes that the MOOC development requires a strengthening of instruments for increased cooperation, sharing of work and specialisation in the higher education sector.

Furthermore, the Commission feels that the use of MOOCs should lead to increased cooperation between universities and university colleges and working life. New technology opens up new opportunities for cooperation, and increased cooperation could contribute to educational programmes that are more relevant for trade and industry.

The Commission is of the opinion that MOOCs will contribute to evolution in the Norwegian knowledge society. MOOCs will contribute to strengthening the access to and quality of higher education, and could be a good instrument for developing skills in working life, as well as for life-long learning. The Commission believes that Norwegian authorities and higher education institutions must seize the opportunity resulting from the MOOC development. This requires a capacity for strategic management both on the part of the authorities and institutions, and requires a will to adapt and commit. If these opportunities are

seized, the Commission believes that MOOCs would help Norway meet the competence requirements faced by Norwegian working life both now and in the future.

#### 4.4 Inclusion, accessibility and universal design

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MOOCs may be of interest to various groups, e.g. campus students, people who are curious and interested in learning something new, as well as people who want continuing and further education.

MOOCs could become particularly important for persons who do not have the opportunity or desire to take traditional campus studies. This e.g. applies to applicants who, for various reasons, do not have the opportunity to travel to an education institution, as well as persons who are already working and need basic education or a refill of new and more specialised skills.

In its input to the MOOC Commission, Universell<sup>17</sup> points out that persons with impaired functional ability could benefit significantly from digitised education and learning. MOOCs have the potential to strengthen both the access to and quality of higher education for persons with impaired functional ability, thus making it possible for them to choose higher education. This assumes, however, that the potential inherent in MOOCs is utilised in the right way, and that student diversity is taken into account in the further development of the programmes. A prerequisite for the ability of MOOCs to make education more accessible to everybody, is, according to Universell, high-quality technology and contents and adherence to the principles of universal design:

Universal design means designing products, surroundings, programmes and services in such a way that they can be used by all people, to the extent possible, without the need for adaptation and special design. Universal design shall not preclude aids for certain groups of people with impaired functional ability when required.

Universell points out that universal design will result in better quality for all students.

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<sup>17</sup> Universell is a national coordinator for an inclusive learning environment, universal design and the education institutions' learning environment. Universell's (2014) website. Available from: <http://universell.no> (Retrieved: 28 April 2014).

## Chapter 5

# From flexible education to MOOCs

### 5.1 Development of flexible education in Norway

In the early 1990s, the higher education institutions started using information and communication technology (ICT) in earnest in their ordinary distance education programmes. The most important education models during this period were models where distance education was included as a smaller or larger part of a comprehensive scheme (blended learning). The programmes often entailed self-tuition using, for example, specially developed electronic or paper-based course materials, as well as physical meetings. The independent distance education institutions have broad experience with these types of teaching models.

The term distance education did not adequately include the diversity of methods and organisational structures that external and decentralised education would eventually consist of. The term flexible learning was introduced as a unifying term, signifying the types of education or parts of the education where there is a distance in time and/or space between the teacher and the student, and where two-way communication and use of technology had been established.<sup>1</sup>

There were two vital factors in the 1990s that contributed to the development of flexible education. One was the breakthrough of the Internet, and the other was the resurgent interest in skills development for the adult population, well stimulated by the Competence Reform.<sup>2</sup> With the Internet came the purely web-based education pro-

grammes, which initially were almost like electronic correspondence courses.

The web-based education programmes contributed to increased flexibility, and further strengthened the accessibility of higher education.

The Competence Reform demonstrated the opportunities to adapt the flexible education to the needs of working life, and to develop educational models where for example practice in the workplace could be included as part of the mixed and flexible education models.

In 1997, the Confederation of Norwegian Enterprise (NHO) proposed the establishment of a separate open university with focus on distance education and flexible education.<sup>3</sup> As opposed to countries like the United Kingdom, Germany and the Netherlands, an open university was never established in Norway. The initiative was regarded as somewhat unrealistic, both from a financial and competence point of view. The alternative to an open university in Norway was to encourage the existing education institutions to include the development and communication of flexible education in their areas of responsibility. Another initiative was the realisation of an electronic knowledge web through the establishment of Sentralorganet for fleksibel læring i høyere utdanning (National agency for flexible education in higher education) (SOFF) in 1990. SOFF aimed to stimulate the development of more flexible education programmes at the education institutions. Norway Opening Universities was also established later. It was intended as a meeting place between the education institutions and the social partners with a view toward developing flexible education programmes for relevant skills development for working life. This meeting place gradually developed into a database of flexible courses and studies.

<sup>1</sup> Grepperud, G. (2005) *Fleksibel utdanning på universitets- og høghskolenivå; forventninger, praksis og utfordringer (Flexible education at university and university college level; expectations, practice and challenges)*. Part 1; Bakgrunn, begrep og utviklingstrekk. (Background, Terms and Development Trends.) Ph.D. thesis. The University of Tromsø 2005.

<sup>2</sup> The Ministry of Education and Research (1998), Report No. 42 to the Storting (1997–1998) *Kompetansereformen (The competence reform)*.

<sup>3</sup> NHO (1997) *Åpent universitet – norsk kompetanse i grenseløs konkurranse (Open university – Norwegian skills in borderless competition)*. Næringslivets forlag A/S.

In 2004, SOFF and Norway Opening Universities were merged to the new Norway Opening Universities. Today, Norway Opening Universities has the following task:<sup>4</sup>

Norway Opening Universities shall stimulate development and use of technology for learning and flexible education in higher education, and promote education-related cooperation between higher education institutions and working life through the use of learning technology.

Norway Opening Universities allocates funds each year for development projects for flexible and web-based education in higher education. They contribute to knowledge development through their monitor survey Digital tilstand (Digital status), as well as to communication of knowledge to promote the use of learning technology in higher education. This is e.g. done through the web-based copyright counselling service, DelRett, in cooperation with the Norwegian Centre for ICT in Education, and through development and communication of knowledge relating to quality and quality criteria in flexible and web-based education.

In the late 1990s, the development of learning technology in the educational sector took a new turn with the development of digital learning platforms (LMSs) which assembled various learning tools through integrated and uniform user interfaces. The introduction of LMS has had a major impact on the digitisation of higher education and the opportunities of universities and university colleges to make their education flexible and available off-campus, in whole or in part.<sup>5</sup>

A prerequisite for the introduction of the LMSs was, among other things, the development of basic ICT infrastructure. All students and teachers in higher education had access to the Internet and they were proficient in using the web and sending and receiving e-mails. The LMSs gave students and teachers access to tools for content distribution, debate groups and parts of student administration. This happened without the educational institutions having to restructure or change the way they organised their teaching. The LMS model was and still is based on the model of

courses, lectures, distribution of syllabi and assignments. The use of LMS is still deeply rooted in higher education in Norway. The functionality of the LMSs has been expanded over the years. The use at the institutions is, however, still highly traditional.<sup>6</sup>

Over the last few years, the volume has increased considerably as regards the use of solutions that e.g. facilitate admission, communication and storing of lectures/*podcasts*. These are also some of the most important technologies that UNINETT and eCampus have pursued during the 2010–2013 period. Educational science, educational resources and teaching methods are challenged through the new use of technology. Even if the purely web-based programmes increase in volume, it is still a fact that the institutions to a large extent choose mixed solutions in their flexible educational schemes.

The development of flexible education methods at universities and university colleges is about to become more closely integrated with the development of a more extensive use of technology in campus education. Gradually, it will be difficult to separate the various education programmes from each other. Findings from Norwegian Opening Universities' monitor study "Digital status 2011", indicate that students see advantages in flexibility and use of digital tools and media in a larger context, and not just in those studies which are defined as more traditionally flexible or distance education.<sup>7</sup> The students appreciate the general flexibility provided by the technology to vary education methods and place of study.

Furthermore, the study shows that both students and academic employees use digital tools and media in increasingly varied ways compared with the results from the same type of study carried out in 2008–2009.<sup>8</sup> Still, the use supports the

<sup>4</sup> The Ministry of Education and Research (2013) *Prop 1 S (2013–2014)* (draft resolution).

<sup>5</sup> Li, J. and Toska, J.A. (2007) *Læringsteknologi i norsk høyere utdanning (Learning technology in higher education in Norway)*. Norgesuniversitetet skriftserie 1/2007 (Norway Opening Universities' publications 1/2007).

<sup>6</sup> Netteland, G. and Nordkvelle, Y. (2013) "LMS – en arena for kvalitetsutvikling" (LMS – an arena for quality development), in Fossland, T. et al. (ed.) *Ulike forståelser av kvalitet i norsk fleksibel høyere utdanning – teknologi og læring på og utenfor campus* (Different notions of quality in Norwegian flexible higher education – technology and learning on and off campus). Norgesuniversitetet skriftserie 1/2013 (Norway Opening Universities' publications 1/2013).

<sup>7</sup> Ørnes et al. (2011) *Digital tilstand i høyere utdanning – Norgesuniversitetets monitor (Digital status in higher education – Norway Opening Universities' monitor)*. Norgesuniversitetet skriftserie 1/2011 (Norway Opening Universities' publications 1/2011).

<sup>8</sup> Wilhelmssen et al. (2009) *Digitale utfordringer i høyere utdanning. Norgesuniversitetet IT-monitor (Digital challenges in higher education. Norway Opening Universities' IT monitor)*. Norgesuniversitetet skriftserie 1/2009 (Norway Opening Universities' publications 1/2009).

traditional education to a large extent. The potential for utilising the opportunities offered by technology is still vast. There are significant variations between the institutions' and the academic communities' use of technological tools in education.

The study shows that the students expect more flexible facilitation of the education and more variety. The students themselves take the initiative to use technology that promotes collaboration and interaction. The expectations and wishes of the students are only partly obliged. Nearly all students participating in the study use LMS in their education in 2011. Functionality related to communication of information, publication of subject matter from the academic employees and downloading subject matter for students are the most commonly used. The learning platforms' potential for interaction, collaboration and student-active learning methods are only minimally exploited.

## 5.2 Technological infrastructure development in the Norwegian higher education sector

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Norwegian universities were early adopters as regards using the Internet. The first joint tests of technology and solutions were initiated as early as 1976. Starting in 1987, there was a larger, more systematic effort through the UNINETT project. The Norwegian Universities and Colleges Admission Service was digitised in 1992. The digitisation entailed that all state university colleges in the country were connected to the Internet.<sup>9</sup> Since 1993, UNINETT has been the national research network working for joint solutions. Through NORDUnet (Nordic Infrastructure for Research & Education), the higher education sector has secured good network capacity vis-à-vis the US and Europe, and eventually to the rest of the world.

### *The eCampus programme*

The eCampus programme is the Ministry of Education and Research's national signature programme that combines national services within video and collaboration with digital skills for flexible education. The programme aims to help ensure that state university colleges and universi-

ties establish good practices and apply solutions for flexible education.

The purpose of eCampus is to build infrastructure with a joint overall architecture that facilitates different kinds of organisations, learning methods and collaborative solutions. Another objective for eCampus is to implement simple, good ICT solutions that support large-scale learning. It is also an objective to promote user-driven innovation through good examples, and by making education available on the Internet on a large scale. During the project phase, (2012–2016), UNINETT has overall responsibility for the technical development, while the institutions have the academic and educational responsibility.

Local eCampus projects at university colleges and universities are important partners in this effort. Several pilot projects have been implemented, and a considerable amount of knowledge has been gathered about how web-based flexible education should be carried out. The challenge is to go from small pilot projects to the use of web-based tools both for campus education and purely web-based education on a large scale. It is important for eCampus to contribute toward making ICT ubiquitous in learning. The objective is to use the programme to promote the use of tools, putting them in a context and have them interact with educational and organisational processes. It is therefore important to contribute to the development of digital proficiency in management and in professional circles, as well as contribute to good practice for the use of ICT in education and research. ICT skills must be linked to ICT architecture throughout. Consequently, having a connection between national solutions and local ICT support is a focus area for eCampus. The eCampus initiative has e.g. resulted in the development of cloud services and joint purchasing on behalf of the higher education sector in accordance with Norwegian regulations.

## 5.3 New technology, new opportunities

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### *A culture for sharing and social interaction*

The Internet's transition from a research network to a mass medium took place in the mid-1990s with free browsers supporting hyperlinks and pictures in the text. Examples of such browsers include Mosaic from 1993 and Netscape from 1994. The World Wide Web enabled users to read websites and click on to websites on other servers unhindered by different IT equipment. E-mail,

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<sup>9</sup> Ness, Bjørn (2013) *Tilkoblet – en fortelling om Internett og Forskningsnettet i Norge* (Connected – a story of the Internet and the Research Network in Norway).

and later chat, made the exchange of messages from person to person quick and easy.

The creator of the World Wide Web, Tim Berners-Lee, had a vision that scientists should be able to exchange information regardless of what kind of computer equipment and types of computers they used.<sup>10</sup> He wanted the Internet to be a medium where users were able to read and write on websites, allowing for word processing to take place directly on the websites. However, in 1994, the first browsers dropped the support for word processing, hence the name browser. For a period of 5–10 years, it was considerably more difficult to publish than to read online. This led to the Internet being dominated by one-way communication modelled after the traditional mass media, where a message is sent from one to many. This phase and form of communication has later been defined by the retronym web 1.0.

In the next phase, improvements in user friendliness and technology made it easier to publish content online, thus finally fulfilling the original intention of the web as a medium for sharing, group collaboration and two-way communication. The period between the dotcom boom in 2001 and the financial crisis in 2008 saw the breakthrough of websites and technology for sharing and co-writing: wikis and Wikipedia from 2001, photo sharing (Flickr from 2005), blogging became a mass phenomenon and Facebook reached Norway in earnest in 2007. This lowered the threshold for sharing content online. In 2009–2010, websites that facilitated discussion and personal communication were given the moniker social media. Examples of such online resources include Facebook, Twitter, Google+, blogs, wikis, video sharing services such as YouTube and Vimeo and mashups.<sup>11</sup> Websites that utilised technology beyond the capabilities of static websites have been called web 2.0.

#### *New opportunities for use of technology in learning*

MOOCs use web 2.0 elements to a great extent, which enables a partial shift of the social dimen-

sion from campus to the web. A number of important technology trends have bolstered this. The technology required for production of course materials of good quality has become significantly more available. Good-quality video cameras, and PCs and mobile phones with video cameras and HD quality are commonly available at a far lower price than before. The necessary online resources have gone from being very costly to easily available and reasonably priced. The development in online video distribution in particular has caused massive development of networks, including mobile networks, at a speed where each individual now has the capacity to run media-heavy services such as MOOCs. Today, sufficient network resources are ubiquitous.

Norwegian students gained access to the Internet in the 1990s, but at first only from PC rooms at higher education institutions. Later, the Internet also became available in student housing. The transition to laptops made the Internet more accessible to the students. Today, broadband coverage in Norway exceeds 99%.<sup>12</sup> Tablet computers lower the user threshold, and the price of PCs has been considerably reduced. Smartphones use the same infrastructure that was developed for portable equipment, in addition to benefiting from Norway's extensive cellular network coverage. Consequently, Norwegian students today have access to a wide selection of technological equipment which they can apply in their studies.

The new technological development trends and the availability of technology make it possible to apply technology in learning situations in other forms and at a different scale than before. One opportunity is in the scaling of the schemes, both national and global, and how the access to technology and number of users in digital networks have increased considerably in recent years. Another opportunity is in the integration of various types of technology, such as video formats, social media and new learning platforms. MOOCs are a phenomenon that has intercepted these opportunities, and which is instrumental in illustrating the opportunities available for evolution of the use of technology for the purpose of education.

<sup>10</sup> Berners-Lee, Tim (2000) *Weaving the Web: The Original Design and Ultimate Destiny of the World Wide Web*.

<sup>11</sup> Web application integrating data from different sources and presenting them on a joint site. Wikipedia (2013) *Mashup (web application hybrid)*. Available from: [http://en.wikipedia.org/wiki/Mashup\\_\(web\\_application\\_hybrid\)](http://en.wikipedia.org/wiki/Mashup_(web_application_hybrid)) (Retrieved: 10 December 2013).

<sup>12</sup> Nexia (2013) *Dekningsundersøkelsen 2012 (Coverage survey 2012)*. Available from: [http://www.regjeringen.no/upload/FAD/Vedlegg/IKT-politikk/Bredbandsdekning\\_2012.pdf](http://www.regjeringen.no/upload/FAD/Vedlegg/IKT-politikk/Bredbandsdekning_2012.pdf) (Retrieved: 29 November 2013).



## Chapter 6

# The emergence of MOOCs

The term MOOC was first used in 2008 to describe an open online course at the University of Manitoba in Canada. The course was taken by 25 paying students from the university, in addition to 2 300 participants who took the course free of the charge over the Internet. The course yielded credits for the university students. All course content was available through RSS feeds, and the participants themselves had considerable freedom in choosing which platforms they wanted to use to participate, for example Facebook groups, wiki pages, blogs and forums. Over the following years, a number of others copied and modified this course structure, and several MOOCs were launched.<sup>1</sup>

These first courses have subsequently been named cMOOCs in order to distinguish them from so-called xMOOCs. The main difference between the two is in the educational approach to the courses. xMOOCs are largely an extension of the traditional campus education. The main component of such courses is videos of lecturers communicating their subject matters, but they may also include more student-active types of learning such as quizzes and different forms of testing. In short, cMOOCs are based on the idea that the best learning takes place within the networks created between active participants. The learning frameworks are, in other words, quite open. In such courses technology is used as an instrument to develop networks and learning processes suitable for the participants' wishes and needs. The major attention in recent years surrounding MOOCs is primarily linked to the development and emergence of xMOOCs.

### 6.1 Learning theories and MOOCs

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In a university education context, there are three main learning theories; behaviouristic, cognitive and sociocultural. A number of theories sort under each of these which extrapolate and develop key terms and perspectives. All three learning theories have been a part of the MOOC development.

Behaviouristic learning theory presumes that knowledge is transferred from the lecturer and a pre-determined curriculum to students, where assessment is primarily characterised by reproducing knowledge. As mentioned previously, the majority of xMOOCs with video lectures and communication of content share these characteristics: from one teacher to many students who receive and eventually reproduce knowledge in an exam.

Cognitive learning theory presumes that learning takes place inside the individual. As opposed to behaviourism, the individual is here participating more actively in his/her own learning, and is characterised by individual problem and task solving. As regards the development of MOOCs, this means that students are actively engaged in task solving facilitated by teachers.

Sociocultural learning theory presumes that learning takes place through interaction between lecturers and students, and between students, and where the assessment forms are characterised by group work, R&D projects and portfolio assessment.

In recent years, MOOCs have also increased their emphasis on collaborative learning through the use of social media, developing communities of practice and knowledge production. Technology and societal development change our perspectives of learning and challenge traditional work methods, assessment forms, new theoretical approaches and organisational practice. To a larger extent, learning takes place in a context characterised by complexity and social environments saturated with technology.

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<sup>1</sup> Daniel, Sir John (2012) "Making Sense of MOOCs: Musings in a Maze of Myth, Paradox and Possibility", *Journal of Interactive Media in Education*. Available from: <http://jime.open.ac.uk/article/2012-18/pdf> (Retrieved: 10 December 2013).

For the purpose of MOOCs, and in particular in relation to cMOOCs, we often talk of connectivism. Here the student is the centre of the learning process and digital services constitute vital resources in the learning basis. A central point in connectivism is that the persons learning will create their own personal learning network. As mentioned, cMOOCs are characterised to a larger extent by the participants contributing to find and develop content for the learning processes than what is the case with xMOOCs, which to a larger extent are based on behavioural theory and cognitive traditions.

## 6.2 MOOCs from 2008 to 2014: A three-stage development

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Cathy Sandeen of the American Council on Education (ACE) has summarised the development of MOOCs since the initial courses in 2008, and believes she can identify three different stages.<sup>2</sup> The stage Sandeen refers to as MOOC 1.0 appears with the first Canadian courses and evolves with similar courses being established in the US. MOOC 1.0 is synonymous with the emergence of cMOOCs: connectivistic, open courses where the participants themselves have a lot of responsibility for the learning process.

MOOC 2.0 describes the phase where MOOCs evolve into more standardised courses focusing on scalability. This is the phase where major platforms such as Coursera, Udacity and edX are established and collaboration is set up at elite institutions in the US. Courses developed under MOOC 2.0 often have no admission requirements, are often provided free of charge, course participants have little contact with academic employees at the institution providing the course and the courses normally yield no credits. The majority of course participants are in, or have completed, higher education, and primarily join out of curiosity or interest. In MOOC 2.0, the platforms also experiment with models for offering credits for completed courses.

Sandeen believes that, over the last year, the field has moved into a preliminary final phase, MOOC 3.0. One key characteristic of this phase is that MOOCs are increasingly imported into the

institutions, normally not as complete courses, but as elements used in the institution's own programmes of study. Such integration of external, digital resources in campus education is not a new phenomenon. Sandeen believes, however, that the distinctive characteristic of MOOC 3.0 is that MOOCs are used in the traditional campus education, for example integrated in various models of flipped classrooms. Flipped classroom may entail that students are watching online lectures from home and using their time at the institution to continue working on the subject matter together with a teacher and/or fellow students. The literature seems to be in relative agreement with Sandeen in the description of the two initial phases of the MOOC development. However, there is more disagreement associated with Sandeen's third phase, i.e. the question of MOOCs' status at present and where the development is headed in the near future.

## 6.3 Establishing the major platforms

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In the autumn of 2011, Stanford University launched three new MOOCs. All contributed to really putting MOOCs on the agenda both in the world of education and in society at large. Stanford professors Sebastian Thrun and Peter Norvig were the first to decide to offer their course "Introduction to Artificial Intelligence" free of charge over the Internet. Their course was designed to mimic a traditional classroom setting. The objective was to provide high-quality teaching and academic content to those who so desire. More than 160 000 participants from more than 190 countries registered for the course, which made this the first course to actually reach out to a large audience. Just a few weeks later, two additional courses were launched from Stanford University, this time by Andrew Ng and Jennifer Widom. As a result of the overwhelming response to the courses, Thrun later established the company Udacity. Andrew Ng established Coursera in collaboration with Daphne Koller.<sup>3</sup>

In the autumn of 2011, Massachusetts Institute of Technology (MIT) established the platform MITx. The background was a concern that the emergence of MOOCs would contribute to a strong commercialisation of higher education on

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<sup>2</sup> Sandeen, Cathy, (2013): "From Hype to Nuanced Promise: American Higher Education and the MOOC 3.0 Era", *Huffington Post*. Available from: [http://www.huffingtonpost.com/cathy-sandeen/from-hype-to-nuanced-prom\\_b\\_3618496.html](http://www.huffingtonpost.com/cathy-sandeen/from-hype-to-nuanced-prom_b_3618496.html) (Retrieved: 11 December 2013).

<sup>3</sup> Marques, Juliana (2013) *A Short History of MOOCs and Distance Learning*. Available from: <http://mooconlineandreviews.com/a-short-history-of-moocs-and-distance-learning/> (Retrieved: 11 December 2013).

	Coursera	edX
<b>Background</b>	Originated from Stanford University. Launched in April 2012.	Originated from Harvard and MIT. First edX course launched in October 2012.
<b>Portfolio (as of 30 April 2014)</b>	643 courses. 88 partners. More than 7 million registered course participants	176 courses. 47 partners. Reached 1 million registered users in June 2013.
<b>Strategy</b>	<p>Focused on rapid growth, both internationally and by providing courses in a number of different disciplines.</p> <p>Partnerships with elite and research-heavy institutions, institutions that are members of the Association of American Universities.</p> <p>Less centralised quality-assurance process, but right to remove content that does not satisfy their quality standard.</p>	<p>Lower pace in course and partnership development.</p> <p>Focus on high-ranking and research-heavy institutions.</p> <p>Partner institutions operate their own sub-platforms, but share the x suffix.</p> <p>Centralised quality-assurance process. Stronger focus on innovation in learning and teaching and integration in campus activity.</p>
<b>Business model</b>	<p>Commercial company. Financed by venture capital and certain partner universities.</p> <p>No advance costs for institutions, but the institutions can pay Coursera to manage content on the platforms.</p> <p>Depending on how long the courses are available on the platform, between 6 and 15 per cent of the earnings generated by Coursera go to the institutions, as well as 20 per cent of gross profits from all courses the institution offers through Coursera.</p>	<p>Non-profit company owned and financed by MIT and Harvard, with partial financing (philanthropic) from private entities.</p> <p>Two payment models.</p> <ul style="list-style-type: none"> <li>The institutions pay \$250 000 to publish courses on the platform, and receive 70 per cent of gross profits.</li> <li>The institutions use the platform, but retain responsibility themselves (self-service model). The first \$50 000 goes to edX, then profits are split up to 50/50.</li> </ul> <p>The course platform is available as open source code (Open edX).</p>
<b>Certificates</b>	<p>Course certificates issued by Coursera.</p> <p>Uses an exam system where students take an online exam, monitored by an impartial third party (<i>proctored examinations</i>), in collaboration with Pearson VUE.</p> <p>Online validation systems are under development.</p>	<p>Course certificates issued by sub-platform.</p> <p>Uses an exam system where students take an online exam, monitored by an impartial third party (<i>proctored examinations</i>), in collaboration with Pearson VUE.</p>
	FutureLearn	
<b>Background</b>	Platform primarily owned by UK-based Open University. Founded in December 2012.	Originated from Stanford University. Founded in June 2011.
<b>Portfolio (as of 2 October 2013)</b>	33 ongoing courses. 29 partners, including three that are not universities (British Museum, British Council, British Library).	28 courses, mostly within computer science and related technology subjects.
<b>Strategy</b>	Build on experience and expertise in Open University to provide quality education on a global scale.	Collaborate with individual academics and technology companies, including Google and Microsoft. Planning to maintain focus on technology subjects.
<b>Business model</b>	<p>Owned and financed by Open University.</p> <p>No advance payment from institutions. Financial contributions from partner institutions to develop courses.</p>	Commercial company. Partially financed by venture capital.
<b>Certificates</b>	Certificates from FutureLearn.	<p>Certificates from Udacity.</p> <p>Uses an exam system where students take an online exam, monitored by an impartial third party (<i>proctored examinations</i>), in collaboration with Pearson VUE.</p> <p>Online validation systems are under development.</p>

Figure 6.1 Characteristics of four key MOOC providers<sup>1</sup>

<sup>1</sup> Based on Universities UK (2013) *Massive Open Online Courses: Higher Education's Digital Moment?* Available from: <http://www.universitiesuk.ac.uk/highereducation/Documents/2013/MassiveOpenOnlineCourses.pdf> (Retrieved: 11 December 2013).

the Internet. Harvard University later joined the venture, and the platform was renamed edX. Later, the University of California, Berkeley, the University of Texas System, Wellesley College and Georgetown University also joined. Udacity and Coursera are independent, commercial initiatives, while edX is a strategic, non-profit initiative from the institutions in order to exploit the opportunities offered by MOOCs.<sup>4</sup>

Several of the major American universities were quick to report that they would invest large sums of money on technology. For example, Harvard has established Harvardx, which is tasked with "... supporting faculty innovation in the use of technology in testing and research on campus, online and beyond".<sup>5</sup> Over the next five years, Harvard will invest close to NOK 30 billion in developing its programmes of study.

December 2012 saw the establishment of FutureLearn, the fourth major MOOC platform. FutureLearn is the first British platform, and the controlling owner is UK's Open University. Whereas the three other platforms have partnered with the university sector, FutureLearn has also entered into a partnership with other players such as British Museum, British Council and British Library. An important part of the company's strategy is to build on experience and competence already in existence in the Open University; an institution which has long been a key player in the market for flexible education.

#### 6.4 Other platforms and new types of collaboration

ALISON (Advance Learning Interactive Systems Online) was established in 2007, and some literature regards it as the first MOOC provider. ALISON's main focus is to offer free courses that will make it easy to acquire basic education and skills that are relevant for working life. ALISON distinguishes itself from the previously mentioned MOOC providers by not having a connection to university partners.<sup>6</sup>

In November 2012, the education technology company Instructure launched the Canvas Network platform. Canvas Network distinguishes itself from the majority of MOOC platforms by putting greater emphasis on the opportunity to experiment with the courses' educational structure, and with new ways to use multimedia elements.<sup>7</sup> Canvas is an example of what many people would consider to be "the next generation learning systems". These are systems which are more similar to publication systems (Content Management System) than traditional LMSs, insofar as the content elements are mainly built around html pages rather than documents included in a digital classroom.

In June 2013, the European Association of Distance Teaching Universities (EADTU) launched the portal OpenupEd in cooperation with university partners in 11 countries. OpenupEd was launched with support from the European Commission, and has been characterised as a European response to the strong American dominance among major MOOC platforms. The platform was launched with a vision of helping to open up education to more people, and to contribute toward having the institutions use more innovative and flexible teaching methods. Certain courses available through OpenUpEd yield certificates or badges, but there is increasing focus on courses that yield credits (ECTS credits).<sup>8</sup>

The German MOOC provider iversity was launched in October 2013. iversity was initially in a partnership with five universities, four of which are European. Three of 24 schemes yielded credits (ECTS-credits). In these courses, the students sit for traditional campus exams at the institutions that are responsible for the MOOCs.<sup>9</sup>

In the autumn of 2013, edX announced that MIT, through its MITx sub-platform, would start offering course packages consisting of individual courses that collectively cover a larger subject. These packages can be viewed as an attempt to create MOOCs that mimic degree modules at the traditional institutions, and thus as an attempt to test a business model that provides a larger education module without depending on the courses

<sup>4</sup> Universities UK (2013) *Massive Open Online Courses: Higher Education's Digital Moment?* Available from: <http://www.universitiesuk.ac.uk/highereducation/Documents/2013/MassiveOpenOnlineCourses.pdf> (Retrieved: 11 December 2013).

<sup>5</sup> Harvardx (2013). Available from: <http://harvardx.harvard.edu/> (Retrieved: 11 December 2013).

<sup>6</sup> ALISON (2013). Available from: <http://alison.com/> (Retrieved: 11 December 2013).

<sup>7</sup> Nagel, David (2012) *Instructure Creates Free 'Canvas Network' for Online Courses*. Available from: <http://campustechnology.com/articles/2012/11/01/instructure-creates-free-canvas-network-for-online-courses.aspx> (Retrieved: 11 December 2013).

<sup>8</sup> OpenupEd (2013). Available from: <http://www.openuped.eu/> (Retrieved: 11 December 2013).

<sup>9</sup> iversity (2013). Available from: <https://iversity.org/> (Retrieved: 11 December 2013).

yielding credits in the formal education system. The courses are free of charge, but students pay a fee of USD 100 per course to verify their identity. Many saw this business model as a response to Coursera's announcement a few weeks earlier that they had made USD 1 million in 2013 by selling verified tests to course participants.<sup>10</sup>

In October 2013, edX entered into an agreement with China and France for these countries to use Open edX for their own, national MOOC portals. Open edX was launched the month before as a collaboration between edX and Google, where the platform would be made publicly available through a joint open portal called mooc.org. This was also interpreted as another attempt to explore different business models. The countries pay a fee to edX for technical support and advice on how to best use the portal.<sup>11</sup>

In February 2014, edX entered into a partnership with Facebook and Rwandan authorities to launch SocialEDU, a pilot service to give students in Rwanda free access to a social learning platform via mobile phones.<sup>12</sup>

In late October 2013, Learning Hubs was launched by Coursera in cooperation with a number of partners, of which the US Department of State was the largest. Learning Hubs has 24 physical locations around the world, where users have access to the Internet, Coursera's course catalogue and support from local facilitators. Coursera's ambition is to increase the number of new Learning Hubs.<sup>13</sup> In March 2014, the company appointed Rick Levin as president. Levin has

<sup>10</sup> Meyer, Robinson (2013) *The Next Step on the Path to an Online-Only Education?* Available from: <http://www.theatlantic.com/technology/archive/2013/09/the-next-step-on-the-path-to-an-online-only-education/279799/> (Retrieved: 11 December 2013).

<sup>11</sup> Meyer, Robinson (2013) *Harvard and MIT's Online Education Startup Has a New Way to Make Money.* Available from: <http://www.theatlantic.com/technology/archive/2013/10/harvard-and-mits-online-education-startup-has-a-new-way-to-make-money/280700/> (Retrieved: 11 December 2013).

<sup>12</sup> Boston.com (2014) *edX, Facebook to partner to create free social education mobile app for students in Rwanda.* Available from: [http://www.boston.com/yourcampus/news/harvard/2014/02/edx\\_facebook\\_to\\_partner\\_to\\_create\\_free\\_social\\_education\\_mobile\\_app\\_for\\_students\\_in\\_rwanda.html](http://www.boston.com/yourcampus/news/harvard/2014/02/edx_facebook_to_partner_to_create_free_social_education_mobile_app_for_students_in_rwanda.html) (Retrieved: 24 April 2014).

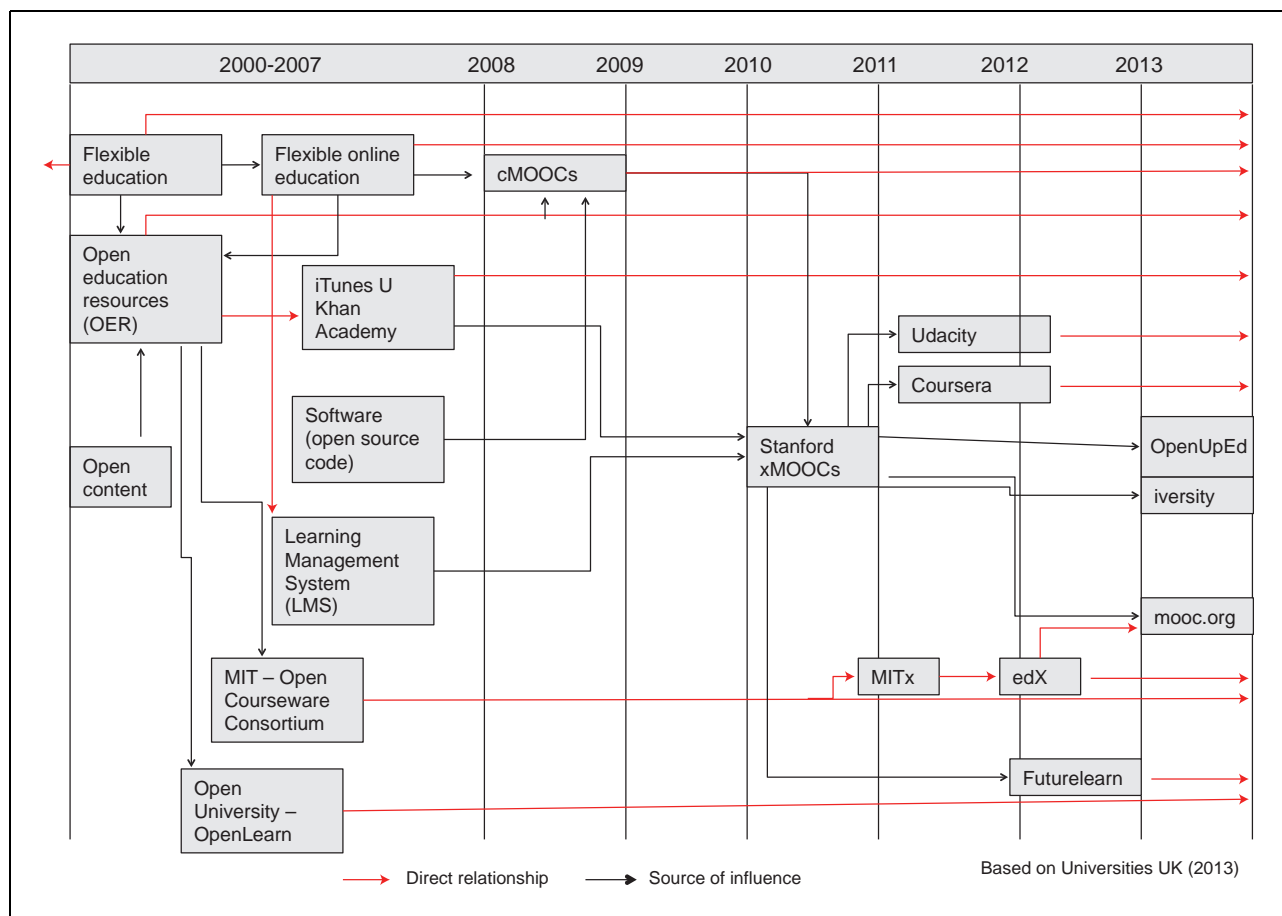


Figure 6.2 Important milestones in the emergence of MOOCs

broad experience from the American university sector, including as President of Yale University in the US for more than 20 years. Coursera stated that the appointment was an important strategic move to develop the educational science on which the company's products are based, to strengthen its partnerships with the university sector, as well as their ability to analyse how the education sector will develop in the years to come.<sup>14</sup>

In April 2014, 12 European universities and companies in 8 European countries launched the EMMA project. EMMA will provide access to free, open courses in European languages from several European universities. An important objective for the project is to contribute to preserving European languages, cultures and educational traditions.<sup>15</sup>

Figure 6.2 shows important events and players in the emergence and development of MOOCs and the connection between them. This method of summarising the development of MOOCs is common in most literature: the strong connection toward OpenCourseWare (OCW) and Open Educational Resources (OER), the first courses with a connectivistic approach, before the major platforms are established and the xMOOC format becomes dominant.

## 6.5 Scope and propagation

Following the launch of the above-mentioned MOOCs in the autumn of 2011 and the establishment of Coursera, Udacity, edX and other providers, the scope of and interest in MOOCs grew very rapidly. Whereas in April 2012, four US institutions had partnered with one of the major MOOC providers, this number had grown exponentially by December of the same year. In August 2013, the number had again grown by leaps and bounds, and institutions across most of the globe had partnered with a MOOC supplier.

The growth of Coursera, the largest and most celebrated of the MOOC providers, aptly illustrates the development that has taken place over

the last few years. When the company was established in April 2012, Coursera cooperated with four US universities. In July of the same year, it partnered with 12 additional institutions, and in September it added another 17. In a blog post on 9 August 2012, Coursera wrote that the company had reached a million course participants from 196 countries four months after the launch date.<sup>16</sup> At this time, Coursera could offer 116 different courses. In October 2013, approximately one year later, Coursera offered 452 courses from 88 different institutions. The number of participants exceeded five million, which means that the company on an average gained almost 9 000 new course participants per day during this period.<sup>17</sup> In February 2014, the number of participants reached seven million, it provided 600 courses and had 108 partnerships.

In the first quarter of 2014, global growth in the number of MOOCs exceeded 60 %, up from 1 369 courses in January to 2 230 courses in April.<sup>18</sup>

## 6.6 The crisis in American higher education

There are many driving forces behind the powerful emergence of MOOCs in recent years. One important driving force is the early signs of a crisis in higher education in the US.<sup>19</sup> This is often highlighted as a partial explanation as to why US stakeholders have taken a particularly strong position in the MOOC development.

Many Americans who start higher education never finish a degree. There is a 57 % probability that an American student starting a four-year degree study completes within six years, which is considerably lower than for countries such as the UK and Australia.<sup>20</sup> US authorities estimate that

<sup>13</sup> Coursera Blog (2013) *Introducing Coursera Learning Hubs*. Available from: <http://blog.coursera.org/post/65596539008/introducing-coursera-learning-hubs-global> (Retrieved: 11 December 2013).

<sup>14</sup> Coursera Blog (2014) *Welcome Rick Levin as CEO of Coursera*. Available from: <http://blog.coursera.org/post/80601201906/welcome-rick-levin-as-ceo-of-coursera> (Retrieved: 24 April 2014).

<sup>15</sup> EMMA (2014). Available from: <http://europeanmoocs.eu/blog/about/> (Retrieved: 5 May 2014).

<sup>16</sup> Coursera Blog (2013) *Coursera hits 1 million students across 196 countries*. Available from: <http://blog.coursera.org/post/29062736760/coursera-hits-1-million-students-across-196-countries> (Retrieved: 11 December 2013).

<sup>17</sup> Coursera (2013). Available from: <https://www.coursera.org> (Retrieved: 11 December 2013).

<sup>18</sup> Open Education Europa (2014). Available from: [http://www.openeducationeuropa.eu/en/european\\_scoreboard\\_moocs](http://www.openeducationeuropa.eu/en/european_scoreboard_moocs) (Retrieved: 30 April 2014).

<sup>19</sup> The Economist (2012) *Higher education: Not what it used to be*. Available from: <http://www.economist.com/news/united-states/21567373-american-universities-represent-declining-value-money-their-students-not-what-it> (Retrieved: 11 December 2013).

<sup>20</sup> *ibid.*

36 million Americans have started higher education without completing a degree.<sup>21</sup>

Another warning sign is the significant cost growth in higher education. Since 1983, the individual student's tuition expenses have grown nearly five times the rate of inflation, which has made higher education accessible to fewer people and has increased the burden of debt considerably for those who start higher education. Over the last 15 years, the average student loan debt per student has doubled, and the overall student loan debt in the US has been estimated at USD 1 000 billion. At the same time, the financial aid per student has dropped to the lowest level in 25 years.<sup>22</sup>

There have also been signs to indicate that people with higher education are faring worse in the labour market than before. In 2011, nearly 10 % of student loan recipients who graduated two years earlier have defaulted on their student loan. Lower wages for new graduates over the last ten years (16 % for women and 19 % for men), combined with a larger debt burden, cause many young people to reconsider enrolling in higher education, in spite of research showing that those with higher education fare better over the course of their lifetime than those without.<sup>23</sup>

A survey showed that half of the academic employees at American universities felt that higher education was moving in the wrong direction, and that higher education in the US will be considerably worse in ten years than today.<sup>24</sup>

The emergence of MOOCs in the US, and particularly xMOOCs with video-based courses that can easily be scaled up, is often mentioned as a response to this development. First and foremost as a way of providing higher education to more people at lower cost, but also to create innovation in the university sector. The crisis in US higher education has piqued the interest of companies

and investors that see opportunities in a new market. The market for higher education in the US is vast. In total, approx. USD 400 billion is spent annually on US universities, more than the annual income of Amazon, Apple, Facebook, Google, Microsoft and Twitter combined.<sup>25</sup> The trend is now to invest in new education models and new technology to improve higher education. In 2011, investments in education technology reached one billion dollars, nearly seven times the level five years before. During the 2010–2012 period alone, *venture* investments in education technology increased from USD 82 million to 189 million.

## 6.7 The emergence of MOOCs outside North America

In the spring of 2013, Enterasys, an international network provider, conducted a global survey of MOOC trends in higher education. The survey found that 13 % of the polled institutions offer MOOCs, 43 % are planning to offer MOOCs within three years, while 44 % have no such plans.<sup>26</sup>

In October 2013, the International Council for Open and Distance Education (ICDE) conducted a survey aimed at the administrations of their member institutions in order to gain an overview of MOOCs. They found that 37 % of the respondents claimed to have one or more MOOCs, 44 % planned to launch one over the next six to twelve months, while 18.6 % had no plans. The survey also shows that, in a three-to-five-year perspective, 20.5 % of the respondents believe that MOOCs will have a transformative effect on higher education, 75 % believe MOOCs will find their place as part of online education and 4.6 % believe MOOCs will not be viable in education.

### 6.7.1 Asia

The Chinese authorities have developed a proactive strategy for the use of ICT in its country's further development, and the education authorities have also put ICT at the top of their agenda. Internet access will be provided via broadband to all schools, digital course materials in all classes and

<sup>21</sup> Australian Trade Commission (Austrade) (2013) *More than MOOCs: Opportunities arising from disruptive technologies in education*. Available from: <http://www.austrade.gov.au/Education/News/Reports/More-than-MOOCs--Oppor-tunities-arising-from-disruptive-technologies-in-education> (Retrieved: 11 December 2013).

<sup>22</sup> *ibid.*

<sup>23</sup> The Economist (2012) *Higher education: Not what it used to be*. Available from: <http://www.economist.com/news/united-states/21567373-american-universities-represent-declining-value-money-their-students-not-what-it> (Retrieved: 11 December 2013).

<sup>24</sup> Maguire Associates & The Chronicle of Higher Education (2013) *What Presidents Think: A 2013 Survey of Four-Year College Presidents*. Available from: <http://www.maguireassoc.com/wp-content/uploads/Chronicle-Presidents-Survey-for-Education-Counsel.pdf> (Retrieved: 24 April 2014).

<sup>25</sup> Fast Company (2013) *Udacity's Sebastian Thrun, Godfather of Free Online Education, Changes Course*. Available from: <http://www.fastcompany.com/3021473/udacity-sebastian-thrun-uphill-climb> (Retrieved: 30 April 2014).

<sup>26</sup> Nilson, Robert, Enterasys (2013) *Trends in Massive Open Online Courses*. Available from: <http://blogs.enterasys.com/trends-in-massive-open-online-courses-infographic/> (Retrieved: 11 December 2013).

web-based learning for all. Education will be facilitated through a national public platform for digital education resources and a platform for management of education information. Higher education institutions, along with the Ministry, will organise a MOOC initiative. The education institutions will be given financial support for this, and courses will be made available free of charge to all citizens.

A group of Chinese universities have, in cooperation with the authorities, partnered with edX. Several universities are launching courses through Coursera. It seems, however, as if the development is temporarily at a standstill, while the authorities are clarifying their policy regarding MOOCs. The Open University of China, which is the headquarters of 47 autonomous universities, has also started working on MOOCs.

In the rest of Asia, several individual institutions have started producing MOOCs. Australia was an early adopter, and Open Universities Australia has launched its own portal, Open2Study, which offers both free and accredited courses. Schoo, a platform dubbed the Japanese version of Coursera, was launched in Japan. Several MOOC initiatives have been launched in India, for example Educateme360.com and Educart.<sup>27</sup>

### 6.7.2 South America and Africa

The Veduca portal has been launched in Brazil. Veduca offers courses in Portuguese from a number of universities around the world. The African Management Initiative (AMI) has been established as a joint venture between the Association of African Business Schools and several collaborating parties. AMI offers business-related courses on a platform that is available for free.

Kepler, the university programme for developing countries, opened its first campus in Rwanda in 2013. This pilot project combines MOOCs provided by international platforms such as edX and Coursera with local campus education. Its objective is to be able to offer high-quality education at a low price.<sup>28</sup>

As mentioned previously, edX entered into a partnership with Facebook and Rwandan authorities to launch SocialEDU, a pilot service to give students in Rwanda free access to a social learning platform via mobile phones.<sup>29</sup>

<sup>27</sup> Based on input to the MOOC Commission from Gard Titlestad, International Council for Open and Distance Education (ICDE), November 2013.

<sup>28</sup> Kepler (2013) Available from: [www.kepler.org](http://www.kepler.org) (Retrieved: 5 May 2014).

### 6.7.3 Europe

Apart from North America, MOOC developments appear to be most mature in Europe. The propagation of MOOCs in Europe is aptly illustrated by the European MOOCs Scoreboard. The overview shows European MOOCs by country and by subject and as a ratio of all registered MOOCs, regardless of MOOC platform.

As previously mentioned, several European MOOC platforms have been established. The UK's FutureLearn, the EU initiative OpenUpEd and German iversity are the most familiar. Other platforms include the Spanish Miranda X, as well as OpenHPI and Opencourseworld in Germany.

In the autumn 2013, France received considerable attention when the country presented an 18-point plan for digitising learning and education. The plan aims to motivate more higher education institutions to develop more web-based services for students and teaching personnel. The plan will also help French universities and colleges assert themselves in the international competition for the students. The goal is for all French students to have access to web-based courses within the next few years, and to be able to receive a diploma or a type of certification through a MOOC within five years. Increased use of web-based education shall result in more students completing their university education, particularly at the bachelor level, and to more people taking higher education. One of the most important measures in the plan is the establishment of a joint web portal for universities that provide web-based services or MOOCs. The new web portal, France Université Numérique (FUN), will, as previously mentioned, use the edX platform.<sup>30</sup>

Over the course of 2013, Russian higher education institutions have been discussing how to deal with MOOCs; whether to ignore the trend, use existing MOOC platforms or develop their own. In October, three Russian universities confirmed that they have joined the Coursera platform and are the first Russian institutions on the map of global web-based education. The three are the Moscow Institute of Physics and Technology

<sup>29</sup> Boston.com (2014) *edX, Facebook to partner to create free social education mobile app for students in Rwanda*. Available from: [http://www.boston.com/yourcampus/news/harvard/2014/02/edx\\_facebook\\_to\\_partner\\_to\\_create\\_free\\_social\\_education\\_mobile\\_app\\_for\\_students\\_in\\_rwanda.html](http://www.boston.com/yourcampus/news/harvard/2014/02/edx_facebook_to_partner_to_create_free_social_education_mobile_app_for_students_in_rwanda.html) (Retrieved: 24 April 2014).

<sup>30</sup> France Université Numérique (2013). Available from: <http://www.france-universite-numerique.fr/> (Retrieved: 11 December 2013).



(MFTI), St. Petersburg State University (SPbGU) and the Higher School of Economics (VSE). According to the plan, VSE will offer twelve MOOCs in 2014, primarily within economics. The courses are offered in both English and Russian.<sup>31</sup>

A report from the European University Association points out that the European institutions' motivation for developing MOOCs is instrumental in distinguishing the development of MOOCs in Europe from the development in the US.

The development of MOOCs in North America has been driven by risk capital, and the institutions have primarily been represented by elite universities that use MOOCs to promote their own brand. Both the above mentioned development trends seem to be a result of the need to lower the cost of higher education. The driving forces in Europe are somewhat more nuanced. The report points out that many European institutions indeed develop MOOCs to promote themselves internationally, particularly in the UK and the Netherlands. However, one important motivation for several European institutions is also the belief that MOOCs may contribute to raising the quality of higher education by forcing changes in existing learning and teaching practices. European institutions also to a larger degree see MOOCs as an opportunity for better cooperation between higher education and working life, i.e. by offering high-quality education to students who are not on campus.<sup>32</sup>

#### 6.7.4 The Nordic countries

Developments in the Nordic countries have much in common with the development in Norway. At the moment there are no centrally governed initiatives, but there is some activity at the institution level. Institutions in both Sweden and Denmark offer courses through the large US platforms. Karolinska Institutet offers MOOCs through edX. In Denmark, several universities offer courses through Coursera. In Finland, the University of Helsinki has the most experience, and has worked on MOOCs since 2010. Coursera also placed one of its first 30 "Learning Hubs" in Helsinki.<sup>33</sup> In Finland, former Nokia developers have estab-

lished the company Eliademy and have stated that they will develop a MOOC platform.<sup>34</sup>

In Sweden, the Swedish Agency for Growth Policy Analysis has studied the development of MOOCs on commission from the Swedish Ministry of Education. The analysis has focused on the development in the UK, USA, China and India. The purpose of the analysis was, in addition to studying the development as such, to discuss the potential importance of MOOCs for higher education, as well as discussing some of the challenges related to this form of education. Examples of such challenges are issues related to quality and the possibility of earning credits. The analysis was carried out during the autumn and winter of 2013–2014 and was published in February 2014.<sup>35</sup>

The Nordic Council of Ministers has initiated a mapping of international education providers in the Nordic countries. The mapping e.g. includes a compilation of how the Nordic governments handle international education providers, including MOOC providers, in connection with allocation of resources, approval issues and student grants. According to the plan, the mapping will be published in June 2014.<sup>36</sup>

The Swedish government has initiated a study to describe the development and composition of educational programmes in the university colleges over the last 20 years, both on a national and institutional level. The study shall consider whether the programmes are balanced in terms of quality requirements, student demand and the labour market's needs. The study shall also consider whether it will be necessary to change the education schemes to better meet future needs. The study's mandate also includes a special evaluation of summer courses and flexible education, and the possibilities for increased Swedish use of MOOCs. The assignment will be concluded no later than 15 October 2015.<sup>37</sup>

<sup>31</sup> Edutainme (2013). Available from: <http://www.edutainme.ru/post/na-coursera-poyavilis-kursy-rossiyskikh-vuzov/> (Retrieved: 11 December 2013).  
<sup>32</sup> Gaebel, Michael (2014) *MOOCs: Massive Open Online Courses*. EUA Occasional Papers. Available from: [http://www.eua.be/Libraries/Publication/MOOCs\\_Update\\_January\\_2014.sflb.ashx](http://www.eua.be/Libraries/Publication/MOOCs_Update_January_2014.sflb.ashx) (Retrieved: 28 April 2014).

<sup>33</sup> Coursera (2013). Available from: <https://www.coursera.org/about/programs> (Retrieved: 11 December 2013).

<sup>34</sup> Eliademy (2014). Available from: <https://eliademy.com/about> (Retrieved: 28 April 2014).

<sup>35</sup> Tillväxtanalys (2014) *Massive Open Online Courses – a study of the development in four countries. PM 2014-08*. Available from: <http://www.tillvaxtanalys.se/en/home/publications/pm/pm/2014-04-07-massive-open-online-courses—a-study-of-the-development-in-four-countries.html> (Retrieved: 6 May 2014).

<sup>36</sup> Nordic Council of Ministers (2013) *Mandat for kortlægning af udenlandske uddannelsesudbydere i Norden (Mandate for mapping foreign education providers in the Nordic countries)*, Memo.

## 6.8 MOOCs in Norway

The first Norwegian MOOCs were produced in 2013. The Commission has learned that several institutions are in the process of establishing MOOCs, and a number of institutions are considering the possibility of producing such courses. A few examples illustrate the development and status of MOOCs in Norway.

Norway's first MOOC was started in September 2013 at NTNU. The course "Teknologiendring og samfunnsutvikling" (technology change and societal development – transl. note) is offered in four different variants, from the free version without an exam (MOOC) to an ordinary continuing education course with physical meetings for students. About 900 students followed the course, which makes this the largest further education course NTNU has ever had. The course used the Canvas learning platform.<sup>38</sup> NTNU is also developing a MOOC in Smart learning, digital skills for teachers and employees in the education sector. A version of this which yields 7.5 credits is also offered for those who choose to take an exam.

Work is under way at the University of Bergen to develop a purely web-based course in natural resource management. The "Natural Resources Management" course was first offered in the spring of 2013 and uses video lectures, a lot of graphics, animation, simulations and games to help students learn. The ambition is to shepherd the students forward, similar to a video game. The course is aimed at international, as well as Norwegian students.<sup>39</sup>

At Lillehammer University College, teaching personnel are involved in the MOOC "Open Online Experience".<sup>40</sup> The course is aimed at teachers and teaching personnel at all levels who want continuing education in digital skills. The service is network-based and is founded on connectivist learning theory, the principles behind

so-called cMOOCs. Lillehammer University College has also partnered with the University of Karlstad and the Swedish National Agency for Education on the online course "Bedömning och betyg årskurs 4–6" (assessment and grades – years 4–6), which has 2000 enrolled teachers. The course is located on a newly-established Scandinavian MOOC platform, Lifelong Learning Web. Norwegian courses have also been developed in "Assessment for learning" and "Digital storytelling".<sup>41</sup>

At the University of Oslo, a MOOC version of examen philosophicum (mandatory introductory course in philosophy), FlexPhil is being developed, and start-up is scheduled for the autumn of 2014. The course will include videos, quizzes, multiple-choice tests and a study guide.<sup>42</sup> The Centre for Development and the Environment at UiO is developing a MOOC with planned start-up in the autumn of 2014. The course will be based on the master's degree course "What works? Success stories in international development". The course is intended to recruit participants on a global scale.

The University of Stavanger has developed a MOOC for drug dosage calculation, which, in addition to a review of the subject matter, also contains the "pill game", an educational game developed as an open learning resource supported by Norway Opening Universities. The MOOC for drug dose calculation can be used by all nurse training and other health education subjects where students need assistance in drug dosage calculation.<sup>43</sup>

## 6.9 The MOOC debate

In September 2013, the Department for Business, Innovation & Skills published a review of available documentation on the development of MOOCs.<sup>44</sup> In addition to gathering published research on the

<sup>37</sup> Swedish Ministry of Education and Research (2014) *Lars Haikola utreder högskolans utbildningsutbud (Lars Haikola studies the Swedish university colleges' education programmes)*. Available from: <http://www.regeringen.se/sb/d/18276/a/238290> (Retrieved: 21 April 2014).

<sup>38</sup> NTNU (2013) *Norges første MOOC åpnes i dag (Norway's first MOOC opens today)*. Available from: <http://www.ntnu.no/aktuelt/pressemeldinger/13/mooc-apning> (Retrieved: 11 December 2013).

<sup>39</sup> UiB (2013) *Natural Resources Management*. Available from: <http://www.uib.no/utdanning/evu/evutilbud/natural-resources-management> (Retrieved: 11 December 2013).

<sup>40</sup> Open Online Experience (2013) *What is Digital Citizenship?* Available from: <http://www.oee13.org/> (Retrieved: 11 December 2013).

<sup>41</sup> Lifelong Learning Web (2013). Available from: <http://www.llw.se/> (Retrieved: 11 December 2013).

<sup>42</sup> UiO (2013) *FlexPhil er på vei (FlexPhil is coming)*. Available from: <http://www.hf.uio.no/ifikk/studier/aktuelt/aktuelle-saker/2013/flexphil.html> (Retrieved: 11 December 2013).

<sup>43</sup> MOOC.no (2014). Available from: [www.mooc.no/course/legemiddelregning-2/](http://www.mooc.no/course/legemiddelregning-2/) (Retrieved: 5 May 2014).

<sup>44</sup> Department for Business, Innovation and Skills (2013) *The Maturing of the MOOC. BIS Research Paper number 130*. Available from: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/240193/13-1173-maturing-of-the-mooc.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/240193/13-1173-maturing-of-the-mooc.pdf) (Retrieved: 10 December 2013).

topic, the report also reviews the recent years' debate on MOOCs as it has emerged in various sources.

The report puts particular emphasis on the debate between participants from academia. Here the report concludes that a majority believe that, at the present time, MOOCs will not radically change the education sector by making traditional institutions obsolete, but that such courses will gradually change the education landscape. The literature review also shows that many believe that we are facing a disruptive innovation that will bring about major changes in the sector. A survey among administrators and academics at US universities are mapping which education innovations they feel will have the greatest positive and negative impact on higher education in the US. Both administrators and academics believe that the various hybrid models that combine traditional education and digital aids will have the greatest positive influence. Correspondingly, both groups believe that MOOCs will have the strongest negative influence. Among university executives, two per cent reply that MOOCs would make a positive contribution to the development of US higher education, while 50 % feel that MOOCs would have a negative contribution. Eight per cent of the academic employees believe MOOCs will contribute in a positive way, while 65 % believe that such courses would be negative for the future of US higher education.<sup>45</sup>

In Europe, the general attitude seems to be that MOOCs would not bring about major upheavals in higher education, and that changes would come anyway as a result of other types of digital learning. In their report, the European University Association (EUA) argues that this applies particularly to countries that already have well developed programmes for flexible education. The EUA believes that the debate here only marginally relates to MOOCs as such, but rather how digital services in general can contribute to developing higher education.<sup>46</sup>

The report from the Department for Business, Innovation & Skills shows that academics who are positive to the development of MOOCs, see such

courses as a natural consequence of the great challenges facing US higher education. In an education system with a low completion rate and where students enter the labour market with a very high debt burden, cheaper web-based courses are a welcome alternative. Many therefore see the emergence of MOOCs as a natural innovation in the education market, an innovation similar to what we have seen in, for example, the publishing industry.

Others point out that MOOCs are important in order to elevate the quality of web-based courses. A recurring theme is that the majority of current MOOCs are better in terms of quality than the first courses called MOOCs. This is primarily because current MOOCs are largely adapted to meet the needs of the average campus student in order to succeed in his/her studies. Current MOOCs are more integrated with established flexible learning services and campus education, and in many instances yield results in the form of credits.<sup>47</sup> One final group of participants in the debate has primarily focused on MOOCs offering a new and necessary arena for self-study.

In an article, Sir John Daniel expressed several critical objections to the emergence of xMOOCs.<sup>48</sup> Several of these objections are directed at players that have been central in the development of MOOCs in recent years. Among other things, Daniel points out that the elite institutions behind many of the most popular courses available through the major xMOOC platforms are elite institutions due to their research efforts, and that there is little to indicate that they are at the forefront as regards web-based education. Daniel also believes that many of the players have little concern for the students' benefit from the courses. Furthermore, he is critical as regards the value of the accreditation offered by the courses, and particularly certificates issued by such players as Coursera. Daniel argues that there are organisations with extensive experience in accrediting web-based learning, and that they are far better equipped to certify knowledge acquired through flexible education.

<sup>45</sup> Maguire Associates & The Chronicle of Higher Education (2013) *What Presidents Think: A 2013 Survey of Four-Year College Presidents*. Available from: <http://www.maguireassoc.com/wp-content/uploads/Chronicle-Presidents-Survey-for-Education-Counsel.pdf> (Retrieved 24 April 2014).

<sup>46</sup> Gaebel, Michael (2014) *MOOCs: Massive Open Online Courses*. EUA Occasional Papers. Available from: [http://www.eua.be/Libraries/Publication/MOOCs\\_Update\\_January\\_2014.sflb.ashx](http://www.eua.be/Libraries/Publication/MOOCs_Update_January_2014.sflb.ashx) (Retrieved: 28 April 2014).

<sup>47</sup> Department for Business, Innovation and Skills (2013) *The Maturing of the MOOC*. BIS Research Paper number 130. Available from: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/240193/13-1173-maturing-of-the-mooc.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/240193/13-1173-maturing-of-the-mooc.pdf) (Retrieved: 10 December 2013).

<sup>48</sup> Daniel, Sir John (2012) "Making Sense of MOOCs: Musings in a Maze of Myth, Paradox and Possibility", *Journal of Interactive Media in Education*. Available from: <http://jime.open.ac.uk/article/2012-18/pdf> (Retrieved: 10 December 2013).

The article also contains critique of the xMOOC providers' educational basis. Daniel believes that the educational science forming the basis for such courses is not new, but in reality a behaviouristic educational approach that is already outmoded. Finally, Daniel also raises criticism against the xMOOC providers' philanthropic motivation behind disseminating free knowledge to the masses. According to Daniel, the opportunity to make a profit is the real motivation behind the development in recent years, which, according to him, is clearly emphasised by the considerable interest MOOCs are generating among investors with a clear ambition of making a profit.

Many have also been concerned with the fact that the democratising effect of MOOCs, where knowledge is now more readily available to those interested around the world, is not as strong as the proponents claim. Firstly, and in line with the argument that strong financial interests are behind recent years' developments, many MOOCs have a course fee. Secondly, and as a result of the way in which courses are produced and distributed, effective use of MOOCs presumes a familiarity with technology and experience with using digital services. In other words, this argument is based on the assumption that MOOCs will bring about a similar effect that can be observed in other forms of knowledge and skill acquisition; the provision primarily leads to an acceleration in differences, in that those who already have knowledge and skills will acquire additional knowledge and skills.

Other critics have emphasised that the types of courses offered through platforms such as Coursera cannot teach the participants the more complex skills education is meant to instil, for

example critical thinking and creativity. Many have also pointed out that mass teaching, as expressed through the xMOOC platforms, cannot deal with the fact that participants have different needs. The courses and learning processes they prescribe follow a fixed structure that can be effective for some participants, but not all.

A central theme in the recent MOOC debate has been the high number of participants that are not completing the courses. As mentioned previously, the New York Times called the year 2012 "The Year of the MOOC". The year 2013 was by many referred to as "The Year of the Anti-MOOC", the year where many of the visions for what MOOCs could contribute, turned out to be difficult to realise.<sup>49</sup> There was considerable media coverage surrounding Sebastian Thrun, the founder of Udacity, in late 2013 when he stated that the company delivered a bad product. The background for the statement was the low number of participants completing the courses, and the fact that the courses did not seem to help previously excluded groups gain access to higher education.<sup>50</sup>

The commission believes there are signs of a developing MOOC debate in Norway, and refers to the input to the Commission from trade and industry organisations in Chapter 14.3.

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<sup>49</sup> University Affairs (2014) *An interview with Canadian MOOC pioneer George Siemens*. Available from: <http://www.universityaffairs.ca/an-interview-with-canadian-mooc-pioneer-george-siemens.aspx> (Retrieved: 30 April 2014).

<sup>50</sup> Fast Company (2013) *Udacity's Sebastian Thrun, Godfather of Free Online Education, Changes Course*. Available from: <http://www.fastcompany.com/3021473/udacity-sebastian-thrun-uphill-climb> (Retrieved: 30 April 2014).

## Chapter 7

# MOOC participants

One important driving force behind the MOOC development has been a concurrent development in available technology and demand for higher education. This has facilitated web-based education for more students. 46 % of US college students who have graduated over the last ten years, participated in web-based education at some time during their study. 39 % of all adults who have participated in web-based education feel that the value of their education is equal to that of traditional campus education. A recent survey shows that 49 % of all Americans and 61 % of everybody in the age group 18–30 years, are of the opinion that the quality of web-based education is commensurable to the quality of campus education.<sup>1</sup>

At the same time, a survey from 2013 among nearly 110 000 undergraduate students at universities in 47 American states and 14 countries has shown that very few have participated in a MOOC over the last year. The share was three per cent in the US, four per cent in Canada and six per cent among students from the rest of the world. Nearly 75 % of students in the study did not know what a MOOC was.<sup>2</sup>

### 7.1 Who are the participants?

MOOCs are still very popular. The number of courses and institutions offering courses have increased significantly. Even if few courses have more than 100 000 participants, as some of the first courses had, there are still several xMOOCs with between 20 000 and 60 000 participants.<sup>3</sup>

There is a limited amount of data available on participants in MOOCs and their backgrounds. A review of literature that mapped peer-reviewed articles on MOOCs during the 2008–2012 period included 45 articles. Some of these articles concerned the participants' background and experiences, but they all had a limited data basis. Much of the knowledge we currently have on MOOC participants, originates from the large MOOC providers, and are often published as infographics on the providers' blogs.

One exception is recently published data from MITx and HarvardX from the courses offered on edX in 2012 and 2013. The data, which originates from a total of nearly 850 000 participants, will be used as a basis for a comprehensive research project carried out jointly by the two institutions. In the initial reports from the project, the data were analysed separately for each course, and one of the researchers' conclusions is that there are significant variations in the average demography across the courses. This applies to gender, education, age and nationality. The researchers concluded that the most typical MOOC participant was male, 26 years or older, and had a bachelor's degree. At the same time, this demography represented fewer than one out of three students.<sup>4</sup>

A report from early 2013 also concluded that MOOC participants are a far more heterogeneous group than those who pursue a traditional degree: some already have a career and want a refill of knowledge, some are researchers who want to use open digital learning resources (OER) in their own teaching, some acquire new knowledge on a hobby basis, some are future students, while oth-

<sup>1</sup> Australian Trade Commission (Austrade) (2013) *More than MOOCs: Opportunities arising from disruptive technologies in education*. Available from: <http://www.austrade.gov.au/Education/News/Reports/More-than-MOOCs-Opportunities-arising-from-disruptive-technologies-in-education> (Retrieved: 11 December 2013).

<sup>2</sup> Dahlstrom, Eden et al. (2013) *ECAR study of Undergraduate Students and Information Technology*. Available from: <https://net.educause.edu/ir/library/pdf/ERS1302/ERS1302.pdf> (Retrieved: 11 December 2013).

<sup>3</sup> Universities UK (2013) *Massive Open Online Courses: Higher Education's Digital Moment?* Available from: <http://www.universitiesuk.ac.uk/highereducation/Documents/2013/MassiveOpenOnlineCourses.pdf> (Retrieved: 11 December 2013).

<sup>4</sup> Campus Technology (2014) *Inside the First-Year Data From MITx and HarvardX*. Available from: <http://campustechnology.com/articles/2014/01/27/inside-the-first-year-data-from-mitx-and-harvardx.aspx> (Retrieved: 28 April 2014).

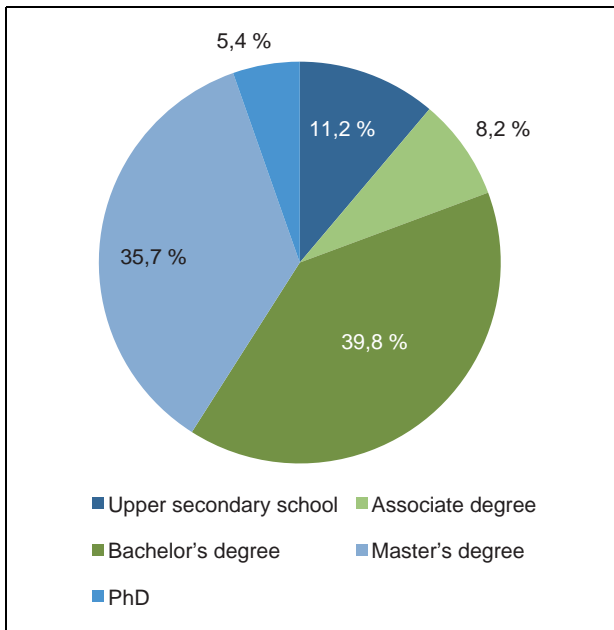


Figure 7.1 Participants in MOOCs by highest completed education, January 2013. Coursera<sup>1</sup>

<sup>1</sup> Universities UK (2013) *Massive Open Online Courses: Higher Educations Digital Moment?* Available from: <http://www.universitiesuk.ac.uk/highereducation/Documents/2013/MassiveOpenOnlineCourses.pdf> (Retrieved: 11 December 2013).

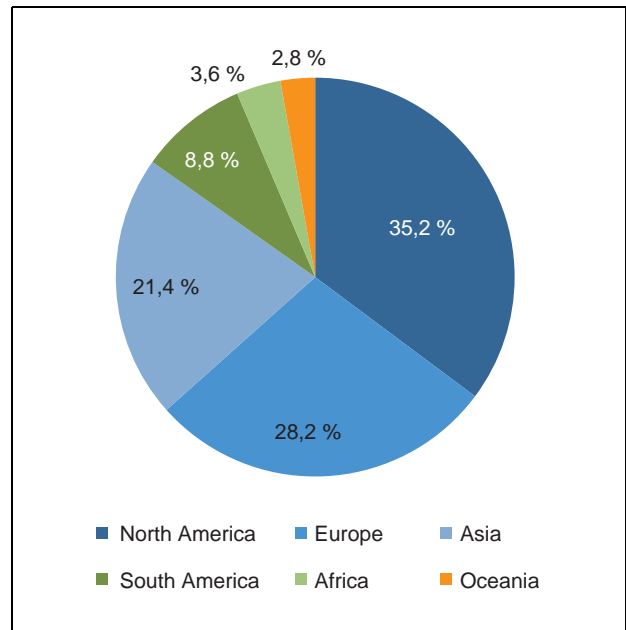


Figure 7.2 Participants in MOOCs by continent, January 2013. Coursera<sup>1</sup>

<sup>1</sup> Universities UK (2013) *Massive Open Online Courses: Higher Education's Digital Moment?* Available from: <http://www.universitiesuk.ac.uk/highereducation/Documents/2013/MassiveOpenOnlineCourses.pdf> (Retrieved: 11 December 2013).

ers are students in higher education.<sup>5</sup> In October 2013, the University of Pennsylvania published the highlights of a survey they had carried out among students participating in the 32 MOOCs offered by the university through Coursera. The data include nearly 35 000 students from more than 200 countries and territories, and show that most course participants were highly educated men who were taking MOOCs to develop their career. The participants generally had a considerably higher level of education than what is the norm in the country or territory they were from. This tendency was particularly strong for participants from Brazil, Russia, India, China and South Africa, where almost 80 % of course participants were from the richest six per cent of the population.<sup>6</sup>

Coursera and the other major platforms have repeatedly published statistics on the education

<sup>5</sup> Universities UK (2013) *Massive Open Online Courses: Higher Educations Digital Moment?* Available from: <http://www.universitiesuk.ac.uk/highereducation/Documents/2013/MassiveOpenOnlineCourses.pdf> (Retrieved: 11 December 2013).

<sup>6</sup> Fowler, Geoffrey A. (2013) *Survey: MOOC Students Are Elite, Young and Male*. Available from: <http://blogs.wsj.com/digits/2013/11/20/survey-mooc-students-are-elite-young-and-male-2/> (Retrieved: 11 December 2013).

background of those who participate in their MOOCs.

Data from Coursera shows that course participants come from all over the world, but that the majority are located in North America, Europe and Asia, cf. Figure 7.2. Corresponding data from edX and Canvas largely support this impression.

## 7.2 Motivation for taking MOOCs

Researchers at Duke University have analysed data from the first MOOCs that were offered by the university. The data show that the MOOC participants' motivation for enrolling in courses can be grouped into four different categories:<sup>7</sup>

- Life-long learning or a desire to achieve understanding of a subject without any particular expectation of completing or documenting competence
- for entertainment, a desire to gain social experience and intellectual stimulation

<sup>7</sup> Belanger, V. & Thronton, J. (2013) *Bioelectricity: A Quantitative Approach – Duke University's First MOOC*. Available from: [http://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/6216/Duke\\_Bioelectricity\\_MOOC\\_Fall2012.pdf](http://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/6216/Duke_Bioelectricity_MOOC_Fall2012.pdf) (Retrieved: 11 December 2013).

- for practical purposes, often because more traditional education options are limited
- to test web-based education.

15 % of the participants used the course to decide whether they wanted to enrol in traditional university programmes, while ten per cent felt that they could not afford the alternative, i.e. traditional education.

Edinburgh University has had the same kind of experience. The main argument for the majority of the participants at the university's six initial courses was curiosity to find out more about MOOCs and web-based learning, as well as the desire to learn more about a new subject. Career and documentation were less important as motivation. The participants' motivation was clearly more geared toward exploration than a means to an end.<sup>8</sup>

### 7.3 Participants' involvement in MOOCs

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Based on three MOOCs in computer science, Stanford's Lytics lab has identified four main groups of participants.<sup>9</sup>

- *auditing learners*: follow the lectures, but are otherwise not active
- *completing learners*: complete most assignments in the course
- *disengaging learners*: complete assignments at the start of the course, but disengage in whole or in part during the course
- *sampling learners*: exploring the course by testing parts of the content.

The courses that formed the basis for the analysis were at three different levels: upper secondary (high school), undergraduate studies and graduate studies. The number of students falling within the four different categories varied between the three courses. The upper secondary-level course had a considerably higher number of completing learners (about 25 per cent) than the two other courses (about five to ten per cent).

Phil Hill has developed a similar four-category grouping. Hill distinguished between active participants who e.g. take the entire course and take part in discussions, passive participants who follow the course content, but do not participate actively beyond that, *drop-ins who only* follow parts of the course, and observers who merely observe and test certain parts.<sup>10</sup>

Vanderbilt University in the US has similar experience with its three first MOOCs. The smallest of the three courses had 23 000 attendees, the largest had 43 000 attendees. In the largest course, 78 % watched one or more videos. In the two other courses 90 % watched one or more videos. The more work and effort that was needed in the various types of assignments in the course, the fewer people took part. In one course, seven per cent received a completed course confirmation, in the two others this was 15 and 16 %. Data from these courses e.g. shows that differences in background and knowledge are much more prevalent than in traditional courses. Vanderbilt believes it can conclude that MOOC participants are motivated, but that there are significant differences in motivation between different groups of participants. Furthermore, the experiences from Vanderbilt show that MOOC participants to a large extent also make use of the opportunities provided by technology to produce their own work as well.<sup>11</sup>

Edinburgh University was the first university in the UK to offer Coursera courses. The university has analysed data from more than 300 000 people who enrolled in the initial six MOOCs offered by the university.<sup>12</sup> Even if the courses were offered through Coursera, these courses were educationally closer related to cMOOCs, with use of videos and discussions on social media (e.g. Google Hang-out). The university has carried out a survey among 45 000 students at the start of the courses and 15 000 at their conclusion. It is not possible to draw any clear-cut conclusions

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<sup>8</sup> University of Edinburgh (2013) *MOOCs @ Edinburgh 2013 – Report #1*. Available from: <http://www.era.lib.ed.ac.uk/bitstream/1842/6683/1/Edinburgh%20MOOCs%20Report%202013%20%231.pdf> (Retrieved: 11 December 2013).

<sup>9</sup> Kizilcec, René et al. (2013) *Deconstructing Disengagement: Analyzing Learner Subpopulations in Massive Open Online Courses*. Available from: <http://lytics.stanford.edu/deconstructing-disengagement/> (Retrieved: 11 December 2013).

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<sup>10</sup> Hill, Phil (2013) *Emerging Student Patterns in MOOCs: A Graphical View*. Available from: [http://mfeldstein.com/emerging\\_student\\_patterns\\_in\\_moocs\\_graphical\\_view/](http://mfeldstein.com/emerging_student_patterns_in_moocs_graphical_view/) (Retrieved: 11 December 2013).

<sup>11</sup> Bruff, Derek (2013) *Lessons Learned from Vanderbilt's first MOOCs*. Available from: <http://cft.vanderbilt.edu/2013/08/lessons-learned-from-vanderbilts-first-moocs/> (Retrieved: 11 December 2013).

<sup>12</sup> University of Edinburgh (2013) *MOOCs @ Edinburgh 2013 – Report #1*. Available from: <http://www.era.lib.ed.ac.uk/bitstream/1842/6683/1/Edinburgh%20MOOCs%20Report%202013%20%231.pdf> (Retrieved: 11 December 2013).

from these data. However, certain common features are evident.

Firstly, they discovered a considerable drop in participation in all courses from registration to the first week of the course. Out of the total of 300 000 who enrolled, 42 % were active during the first week of the course. In week three, a total of 40 000 assignments were submitted. In week seven this had dropped to about 10 000 assignments. However, participation patterns after course start varied significantly between the six courses. The main reasons for participating were curiosity as regards MOOCs and web-based learning, as well as a desire to learn new subjects. Career and documentation were less important motivation factors. In other words, they discovered, as in other analyses, that the students' motivation was clearly more explorative than a means to an end. Edinburgh University also found that the students were highly satisfied with the courses. Only three per cent of those who completed believed they had not benefited as desired.

Analyses of participant patterns show that the number of participants who complete MOOCs is low. The previously mentioned study from HarvardX and MITx found that around five per cent of course participants achieved a course certificate. The researchers behind the study were, however, convinced that a completion ratio at best was an insufficient measure of the value of MOOCs and the participants' degree of success. According to the researchers, the data they have analysed show that many course participants were in fact highly involved in the courses without achieving a course certificate. According to the researchers, withdrawal from MOOCs is therefore not a sign that the courses have failed, but a natural result of an open, free of charge and asynchronous enrolment process where the participants themselves decide how long they want to attend. The researchers believe that it is natural to analyse MOOC participation based on the fact that the participants regard the content as web content that they want to "surf", rather than courses they are going to complete.<sup>13</sup> Stephen Downes, who was behind the first course called a MOOC, also believes that Stanford's classification of the MOOC participants' behaviour demonstrates that completion is a too narrow measure of whether MOOCs are

suitable and effective. The reasoning behind this is that the measure overlooks the participants' motivation and reasons for attending. Many participate out of curiosity, rather than to achieve documentation of completed study.<sup>14</sup>

There is currently little information available on the learning effects of MOOCs. As mentioned above, there are indications that learning taking place in MOOCs has to be analysed in a different manner than learning taking place within the traditional education institutions. Andrew Ho, research director at HarvardX, believes that knowledge of learning in MOOCs will not be a result of conventional statistics;

Rather, our research describes an emerging learning ecosystem, one where enrolment can be casual and nonbinding, learning happens asynchronously, and registrants come from all countries in the world, with diverse intentions and patterns of learning.<sup>15</sup>

The Educause Center for Analysis and Research (ECAR) has carried out a study among students in undergraduate studies. The study found that students preferred forms of blended learning when they experimented with utilising MOOCs. The study showed that the students wanted face-to-face contact with academic employees, in spite of having the opportunity to contact them directly via the web. The results are in line with a recent meta-analysis that examines the effects of integrating technology in higher education.<sup>16</sup>

A survey carried out by Columbia University found that the fail percentage and withdrawal rate were significantly higher in a course offered online than a corresponding course offered with actual meeting points between the participants and academic employees (32 vs. 19 %). At the same time, San Jose State and edX found that the fail percentage fell from 45 to nine per cent in an experiment where elements from an online ver-

<sup>13</sup> Reich, J. and Ho A. (2014) "The Tricky Task of Figuring Out What Makes a MOOC Successful", *The Atlantic*, 23. January 2014. Available from: <http://www.theatlantic.com/education/archive/2014/01/the-tricky-task-of-figuring-out-what-makes-a-mooc-successful/283274/> (Retrieved: 29 April 2014).

<sup>14</sup> E-Literate (2013) *Insight on MOOC student types from ELI Focus Session*. Available from: <http://mfeldstein.com/insight-on-mooc-student-types-from-eli-focus-session/> (Retrieved: 11 December 2013).

<sup>15</sup> Reich, J. and Ho A. (2014) "The Tricky Task of Figuring Out What Makes a MOOC Successful", *The Atlantic*, 23. January 2014. Available from: <http://www.theatlantic.com/education/archive/2014/01/the-tricky-task-of-figuring-out-what-makes-a-mooc-successful/283274/> (Retrieved: 29 April 2014).

<sup>16</sup> Dahlstrom, Eden et al. (2013) *ECAR study of Undergraduate Students and Information Technology*. Available from: <https://net.educause.edu/ir/library/pdf/ERS1302/ERS1302.pdf> (Retrieved: 11 December 2013).



sion of the course Circuits and Electronics were incorporated into the campus version of the course.

The analysis of the same course found a weak correlation between the number of posts contributed by participants in the course's discussion forum and the result achieved by the course participants. This may indicate that learning outcomes improve along with involvement and participation in the course. San Jose State and edX also found that the time participants spent working independently in connection with the course had a considerably larger impact on outcomes than the time participants spent watching the course videos.<sup>17</sup>

The vast amounts of data from MOOCs and other learning platforms provide new opportunities for analysis and research on student learning.

Learning Analytics is an emerging field of research that revolves around analysing these data to improve learning and teaching. For example, one of edX's goals is to carry out experiments to explore how students learn, and how digital tools and different teaching methods can improve learning.

According to the NMC Horizon Report, Learning Analytics will become one of the most important technological changes within education over the next five years. In Chapter 10, the Commission evaluates the opportunities offered by Learning Analytics.

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<sup>17</sup> Fowler, Geoffrey, A. (2013) "An Early Report Card on Massive Open Online Courses", *The Wall Street Journal*. Available from: <http://online.wsj.com/news/articles/SB10001424052702303759604579093400834738972> (Retrieved: 11 December 2013).

## Chapter 8

# Documentation of competence achieved

### 8.1 MOOCs with credits and MOOCs as part of degree programmes

Internationally, MOOCs are increasingly accepted by established institutions in line with specialised campus-based studies. There have been a number of examples of this in recent years, particularly in the US. In September 2012, Colorado State University, as the first higher learning institution, accepted the Stanford course Artificial Intelligence taken through Udacity as a credit-earning course.<sup>1</sup> In October of the same year, Antioch University entered into a licensing agreement with Coursera in order to use courses from Duke University and the University of Pennsylvania in their curriculum.<sup>2</sup>

In 2013, the University of Maryland University College (UMUC) has offered credits to those who complete, or who can document that they have learned from, MOOCs.<sup>3</sup> In January 2013, Udacity launched a pilot in collaboration with San Jose State University with three MOOCs that would earn the students credits if they finished. While Udacity was responsible for the platform and assistance to the academic staff who taught the course, lectures in the courses were given by professors at the university.<sup>4</sup>

The American Council on Education (ACE) has entered into a partnership with Udacity where they want to assess MOOCs against credits, and look more closely into how MOOCs can best contribute to the students' learning. This is one of ACE's research and evaluation measures toward assessing the academic potential of MOOCs, initiated in November 2012.<sup>5</sup> In February 2013, the American Council on Education's College Credit Recommendation Service (ACE CREDIT) evaluated five Coursera courses and recommended that they become credit-earning. ACE thus advised its 1 800 academic member institutions that the courses were of such quality that the institutions could award credits to students who had completed them. ACE later recommended awarding credits for four courses from Udacity and one from edX. The institutions themselves decide if they want to follow this recommendation.<sup>6</sup>

In May 2013, Udacity announced that they would partner with the telecommunications company AT&T and Georgia Institute of Technology to offer the first MOOC-based master's degree programme, a master's in computer science. The degree in computer science from Georgia Institute of Technology is popular among students, and graduates have traditionally been in demand in the labour market. Whereas tuition for the campus-based master's degree programme amounts to more than USD 40 000, the university now offers a MOOC-based version at USD 7 000 – 80 % cheaper.<sup>7</sup>

Another example is the new Open Educational Resources University (OERu). This is a partnership consisting of 31 institutions from e.g. the US,

<sup>1</sup> Mangan, Katherine (2012) *A First for Udacity: a U.S. University Will Accept Transfer Credit for One of Its Courses*. Available from: <http://chronicle.com/article/A-First-for-Udacity-Transfer/134162/> (Retrieved: 11 December 2013).

<sup>2</sup> Kolowich, Stewe (2012) *MOOCs for Credit*. Available from: <http://www.insidehighered.com/news/2012/10/29/coursera-strikes-mooc-licensing-deal-antioch-university> (Retrieved: 11 December 2013).

<sup>3</sup> Bishop, Tricia (2013) "Maryland college offering credit for massive open online courses", *The Baltimore sun*. Available from: [http://articles.baltimoresun.com/2013-09-04/news/bs-md-mooc-20130815\\_1\\_moocs-umuc-higher-education](http://articles.baltimoresun.com/2013-09-04/news/bs-md-mooc-20130815_1_moocs-umuc-higher-education) (Retrieved: 11 December 2013).

<sup>4</sup> Faine, Paul (2013) *As California Goes? Available from: http://www.insidehighered.com/news/2013/01/16/california-looks-moocs-online-push* (Retrieved: 11 December 2013).

<sup>5</sup> ACE (2013) *ACE to Forge New Ground in MOOC Evaluation and Research Effort*. Available from: <http://www.acenet.edu/news-room/Pages/ACE-to-Forge-New-Ground-in-MOOC-Evaluation-and-Research-Effort.aspx> (Retrieved: 11 December 2013).

<sup>6</sup> Kolowich, Steve (2013) *American Council on Education Recommends 5 MOOCs for Credit*. Available from: <http://chronicle.com/article/American-Council-on-Education/137155/> (Retrieved: 11 December 2013).

Australia and New Zealand that started in November 2013. Students that finish online, free courses through OERu institutions, can pay to have their work assessed as credit-earning. The institutions that have joined the partnership will accept the credits as part of a degree. The director of the New Zealand-based organisation behind the initiative, believes the access to credits will make OERu more attractive than other forms of MOOCs.<sup>8</sup>

In Chapter 9, the Commission evaluates MOOCs with exams and credits as part of Norwegian higher education.

## 8.2 US legislation associated with accreditation of MOOCs

In 2013, the state of California initiated a legislative amendment that would obligate universities in the state to give credits for MOOCs delivered by third party providers. The objective was to establish a system where students who have trouble being admitted to certain undergraduate programmes in high demand, could take approved online courses from providers outside the state's higher education system. A faculty board would be tasked with identifying 50 courses of this type – i.e. courses that most students need to fulfil for further admission, according to the general education requirements. The board would then review which courses ought to be incorporated into the system.<sup>9</sup> The amendment is temporarily on hold.<sup>10</sup>

In the summer of 2013, the Governor of Florida signed a bill which entails that MOOCs, under certain circumstances, can be used to help teach K-12 pupils in four subjects.<sup>11</sup> The bill also entails

that students will have the opportunity to use MOOCs to take credit-earning courses that will count when they apply for college.<sup>12</sup>

At the federal level in the US, several US Representatives want to reform the accreditation system in the “Higher Education Act”. The background is a desire to see more innovation in the use of web-based education. Another argument is that federal funding of higher education has not kept up with new approaches to higher education. The Republican Senator Mike Lee has proceeded with a bill that will give state authorities the opportunity to establish their own accreditation systems. States, along with the US Department of Education, will prepare agreements that will trigger federal funding for course providers, including providers other than traditional higher education institutions. The Senator believes it should be possible to achieve accreditation for specialised programmes, individual courses, skills-based tests and hybrid models with both campus and non-campus-based elements.<sup>13</sup>

Potential legislation will require new funding for higher education, or will come at the expense of existing funding. In the latter case, this will entail redirecting funds from traditional institutions toward a broader scope of providers. Many people are sceptical to the proposal. The Council for Higher Education Accreditation (CHEA) has stated that more competition is good, but urges caution. Among other things, CHEA points out that state-level accreditation as an alternative to the current federal system, may result in authorities rather than academic employees making decisions on e.g. academic content. Senator Mike Lee's proposal is also only one of many simmering proposals in the debate surrounding potential reform of the “Higher Education Act”. Many people are concerned with promoting emerging forms of web-based education, but most would prefer a less radical direction than what is represented by Senator Lee's proposal.<sup>14</sup>

<sup>7</sup> Onink, Troy (2013) *Georgia tech, Udacity Shock Higher Ed With \$7,000 Degree*. Available from: <http://www.forbes.com/sites/troyonink/2013/05/15/georgia-tech-udacity-shock-higher-ed-with-7000-degree/> (Retrieved: 11 December 2013).

<sup>8</sup> Times Higher Education (2013) “MOOC rival puts accreditation ‘beef’ on menu”, *Times Higher Education* 31 October 2013.

<sup>9</sup> The Chronicle of Higher Education (2013) *California's Move Toward MOOCs Sends Shock Waves, but Key Questions Remain Unanswered*. Available from: <http://chronicle.com/article/California-Considers-a-Bold/137903/> (Retrieved: 11 December 2013).

<sup>10</sup> Kolowich, Steve (2013) *California Puts MOOC Bill on Ice*. Available from: <http://chronicle.com/blogs/wiredcampus/california-puts-mooc-bill-on-ice/45215> (Retrieved: 11 December 2013).

<sup>11</sup> K-12 is used as designation for *primary* and *secondary education* in the US.

<sup>12</sup> Inside Higher Ed (2013) *'Watered Down' MOOC Bill Becomes Law In Florida*. Available from:

<http://www.insidehighered.com/quicktakes/2013/07/01/watered-down-mooc-bill-becomes-law-florida> (Retrieved: 11 December 2013).

<sup>13</sup> Baily, Misty (2014) “New Bill Proposes Changes to College Accreditation System”, *Education News*. Available from: <http://www.educationnews.org/higher-education/new-bill-proposes-changes-to-the-college-accreditation-system/> (Retrieved: 15 May 2014).

<sup>14</sup> Fain, Paul (2013) *Time to Change the Rules?* Available from: <http://www.insidehighered.com/news/2013/11/01/calls-washington-streamlined-regulation-and-emerging-models#ixzz2jNkKUPAQ> (Retrieved: 11 December 2013).

### 8.3 Other forms of documentation of competence

Significant parts of the market for continuing and further education are based on course certificates for individual courses. Within the IT sector, for example, there is a large market for Microsoft-certified engineers. In recent years, badges have become the most commonly mentioned example of alternative forms of documentation of competence. Badges are web-based manifestations of a skill, interest or ability one has learned.<sup>15</sup> The skill or competence may be acquired through a number of different channels. Some examples are online games, MOOCs, courses, participation in networks, interests or involvement. Badges can be made and issued by anyone and can be shared on websites, blogs, online communities, social media, portfolios and CVs.

An ever-increasing number of players now offer various forms of badges. Khan Academy, Coursera and edX offer badges as documentation of completed courses.<sup>16</sup> According to WICHE Cooperative for Educational Technologies (WCET), badges are a new way of demonstrating and certifying areas of expertise and knowledge in many different professions and sectors.<sup>17</sup> Along with Mozilla, Blackboard Inc. and Sage Road Solutions LLC, WCET launched a MOOC in September 2013 with the topic badges as a new form of professional documentation.<sup>18</sup>

Through the project “Mozilla Open Badges”, several partners are attempting to establish a joint standard for badges. The standard will make it possible to get certifiable documentation of skills and competencies regardless of where they have been achieved; in school, in society, at work or online.<sup>19</sup> The goal is to create new opportunities

for students and employees, at the same time as employers are able to identify candidates with the competence required in today’s rapidly changing labour market. According to Mark Surman, Executive Director of Mozilla, the Internet opens up radical new approaches to learning. “Open Badges” are part of this because they allow people to demonstrate their skills anywhere. According to the US Secretary of Education, Arne Duncan, badges can shift focus from sit-in time to actual achieved knowledge and competence.<sup>20</sup> He maintains that in the current technological society, education can and should take place anytime and anywhere, and that we should recognise this competence.

Apart from Mozilla’s Open Badges, several different providers and models have sprung up for digital documentation of skills acquired outside the traditional education institutions. Udacity recently partnered with e.g. Khan Academy and Google to create the Open Education Alliance.<sup>21</sup> The objective of the alliance is to match employers with education institutions in order to educate the labour force of tomorrow, as well as provide documentation of these skills. Degreed.com provides the opportunity for people to prepare their own profile with a digital overview of credits achieved from different education institutions, as well as web-based learning resources.<sup>22</sup> On Smarterer.com one can take web-based tests to document one’s skills.<sup>23</sup> StraighterLine offers students a subscription service for courses where the course credits can be used with their rapidly increasing number of accredited partner institutions.<sup>24</sup> In June 2013, former President Bill Clinton launched, through the Clinton Global Initiative, a “Commitment to Action” to increase the use of “Open Badges”.<sup>25</sup>

The various digital solutions are now met by parts of the more traditional education system, in that more attention is paid to the skills achieved rather than on completed courses. For the time

<sup>15</sup> OpenBadges (2013). Available from: <http://www.openbadges.org/about/> (Retrieved: 11 December 2013).  
<sup>16</sup> Khan Academy (2013) *Badge types*. Available from: <https://www.khanacademy.org/badges>; edX (2013) *ID Verified Certificates of Achievement*. Available from: <https://www.edx.org/verified-certificate> (Retrieved: 11 December 2013).  
<sup>17</sup> Learning Solutions Magazine (2013) *MOOC: Badges as New Currency for Credentials*. Available from: <http://www.learningsolutionsmag.com/articles/1230/mooc-badges-as-new-currency-for-credentials> (Retrieved: 11 December 2013).  
<sup>18</sup> PR Web (2013) *WCET to Launch MOOC on “Badges as New Currency for Professional Credentials”*. Available from: <http://www.prweb.com/releases/2013/8/prweb10993464.htm> (Retrieved: 11 December 2013).  
<sup>19</sup> OpenBadges (2013). Available from: <http://www.openbadges.org/> (Retrieved: 11 December 2013).

<sup>20</sup> US Department of Education (2011) *Digital Badges for Learning*. Available from: <http://www.ed.gov/news/speeches/digital-badges-learning> (Retrieved: 11 December 2013).  
<sup>21</sup> Udacity (2013) *The Open Education Alliance*. Available from: <https://www.udacity.com/opened> (Retrieved: 11 December 2013).  
<sup>22</sup> Degreed (2013). Available from: <http://degreed.com/> (Retrieved: 11 December 2013).  
<sup>23</sup> Smarterer.com (2013). Available from: <http://smarterer.com/> (Retrieved: 11 December 2013).  
<sup>24</sup> Straighterline (2013). Available from: <http://www.straighterline.com> (Retrieved: 11 December 2013).

being, it would seem as if Western Governors University has moved furthest along this road, as they now offer purely skills-based degrees.<sup>26</sup>

## 8.4 Verification of identity

If MOOCs are to be credit-earning, the students have to take an examination. The applicable regulations for this examination would then be the same for MOOC students as for ordinary students. Most MOOCs do not take attendance or check the participant's identity, while this is the case for all students admitted to Norwegian higher education. Students have a Feide identity<sup>27</sup> or an equivalent local solution that is used along the way and at the digital exam. Formal exams require a connection between the student and the exam, enabling the institution responsible for the exam to verify that a certificate is issued to the right person. MOOCs that do not earn credits do not need a formal connection between the person and the certificate, but the need for acknowledging the skills, exemplified by badges, may require identification of the student. Several course and platform providers are experimenting with various approaches to verifying the students' identity.

In the following we will review cases where Norwegian students have taken foreign MOOCs, and the issues this presents for accreditation at Norwegian institutions. Verification of correct identity is important to the students e.g. when:

- a Norwegian student wants to incorporate a MOOC taken with a foreign MOOC provider into a degree at a Norwegian education institution
- a Norwegian person wants to use a MOOC taken with a foreign MOOC provider as part of an Accreditation of Prior Experiential Learning

<sup>25</sup> Hastac (2013) *President Clinton Announces Commitment to Create New Pathways to College and Career Success Through Open Badges*. Available from: <http://www.hastac.org/news/president-clinton-announces-commitment-create-new-pathways-college-and-career-success-through-o> (Retrieved: 11 December 2013).

<sup>26</sup> Inside Higher Ed (2013) *Beyond the Credit Hour*. Available from: <http://www.insidehighered.com/news/2013/03/19/feds-give-nudge-competency-based-education>; Inside Higher Ed (2012) *Competency Based Education May Get Boost*. Available from: <http://www.insidehighered.com/news/2012/10/01/competency-based-education-may-get-boost> (Retrieved: 11 December 2013).

<sup>27</sup> Feide – Felles Elektronisk IDEntitet, is the solution selected by the Ministry of Education and Research for secure identification within the education sector. Available from: <https://www.feide.no/om-feide> (Retrieved: 25 April 2014).

in connection with admission to higher education in Norway

- an institution offers MOOCs that earn credits. Then the institution needs to know that the identity of the student is correct in order to give such accreditation.
- a person wants to use MOOCs taken with a Norwegian or foreign MOOC provider as part of the documentation of skills when applying for a position.

### 8.4.1 Identity verification solutions in MOOCs

The MOOC players' current solutions for ensuring correct identity include several practical approaches, such as:

- Control mechanisms incorporated in the actual platform. One example of this is Coursera's "Signature Track",<sup>28</sup> which applies biometric methods (registering the user's physical behaviour and appearance) to identify the student through a photo (web camera) and text sample (keyboard). Based on this, the course provider verifies that the student's identity is correct.<sup>29</sup>
- Physical exams at the course provider's institution, as practiced by the German iversity.<sup>30</sup> Lübeck University of Applied Sciences and Osnabrück University offer MOOCs on iversity in marketing and computer science. Students who enrol in these courses are able to take ordinary digital school exams by attend-

<sup>28</sup> Coursera (2014) *How to earn your verified certificate, Signature Track Guidebook*. Available from: <https://www.coursera.org/signature/guidebook> (Retrieved: 26 March 2014).

<sup>29</sup> When the student enrolls in a course that offers Signature Track, he or she takes a photo with a webcam of him/herself along with his/her passport, and enters this into the Coursera platform. He or she also submits a text sample via the keyboard. The presumption is that a combination of e.g. speed, rhythm and pauses constitute a unique fingerprint. In connection with any credit-earning activity in the course, the text sample and photo shall be repeated and automatically compared with the stored text sample and photo. After completing the course with Signature Track, Coursera can, for a small fee, distribute a course certificate to the student which is issued by the institution offering the course, verifying that the identity of the student is correct. This is different from an "ordinary" course certificate, which is issued only on behalf of the lecturer without any guarantee of the student's identity.

<sup>30</sup> Lee, P. (2013) "Students to earn credits for MOOCs after passing exams", *University World News*, 22 March. Available from: <http://www.universityworldnews.com/article.php?story=20130920142014403> (Retrieved: 26 March 2014).

ing and gaining accreditation in the form of ECTS.

- Monitored physical exams at a test centre (proctoring). This is a service that the platform providers buy and offer as a paid service to the students. One such service is Pearson VUE,<sup>31</sup> which is used by e.g. edX and Udacity,<sup>32</sup> but there are several such providers of test centre services.
- Remote monitoring (online proctoring).<sup>33</sup> This is also a service that the platform providers buy and offer as a paid service to the students. One company specialising in manual remote monitoring is ProctorU,<sup>34</sup> but there are many such services. The student needs a webcam and microphone.

Identity verification in MOOCs is about accrediting the right person for competence achieved. Achieved competence may take many different forms, and different types of exams are therefore used for web-based training. Credits require a verified identity. Identity verification consists of three components: first, a check of the participant's ID, then a check of the connection between ID and person, and finally an interim check to ensure that it is the same participant the whole time.

Both the ID check and control on the way is unproblematic when the student attends in person on campus or in a test centre. Open exams are governed by policy, not through technical instruments, and the student has to confirm that he or she has not cheated. Online school exams or proctored exams are in frontier stages as regards solutions. In principle, only biometric methods will be used in these cases, but preferably services that require information verified by a trusted third party, and which the student does not want to share. BankID is one example of such services. For BankID to function as a verification method, it is assumed that students who potentially would want to cheat, do not want to share their bank

access with others. It is thereby possible to prevent students from letting another person take their exams. Some biometric methods such as retina scans and fingerprints, which the student cannot share, also raise some questions related to verification via a trusted third party.

If MOOCs are to be included as credit-earning, an evaluation should be made of exam routines.

#### 8.4.2 Identity verification on campus

The education sector's normal identity solution is Feide. In connection with school exams, this is complemented by physical attendance in the exam venue or other safety measures such as manual ID check and a daily password per exam assignment.

Today, active work is being carried out in connection with digital exams in the higher education sector, and identity is a part of this work. Today's solutions are based on exams on campus or home exams, and there are no proctored online exams at the moment. Physical attendance and manual ID check are important parts of exams on campus today.

#### 8.4.3 Identity verification online

Proctored online exams are complicated for several types of assessments, so we are in a frontier stage of solutions at the international level as well. Active testing of solutions for ID check and interim checks are taking place. So far, there are no simple solutions to the connection between ID and the student, and this would depend on the development of both policy and technology. Solutions of the BankID type would for example have to be looked into.

Internationally, log-in solutions for higher education are connected via eduGAIN.<sup>35</sup> This ensures better Feide interaction with similar solutions in other countries.

There will also be an evolution of various biometric online methods, which could be worthwhile to follow.<sup>36</sup> Biometric methods are already used for identification and access control in many

<sup>31</sup> Pearson VUE (2014). Available from: <http://www.pearsonvue.com/> (Retrieved: 26 March 2014).

<sup>32</sup> The Evolution (2014) *MOOCs Making Strides Toward Credit*. Available from: <http://www.evollution.com/friday-links/moocs-making-strides-toward-credit/> (Retrieved: 26 March 2014).

<sup>33</sup> Sherrie N. (2014) "Online proctoring gaining popularity with MOOCs", *University Business*, March. Available from: <http://www.universitybusiness.com/article/online-proctoring-gaining-popularity-moocs> (Retrieved: 26 March 2014).

<sup>34</sup> ProctorU (2014). Available from: <http://www.proctoru.com/forstudents.php> (Retrieved: 26 March 2014).

<sup>35</sup> eduGAIN – international interaction between log-in solutions for higher education. Available from: <http://edugain.org> (Retrieved: 25 April 2014).

<sup>36</sup> examiner.com (2013) *Technology that verifies MOOC test takers on the spot*. Available from: <http://www.examiner.com/article/technology-that-verifies-mooc-test-takers-on-the-spot> (Retrieved: 26 March 2014).

other instances. In the education context, this could e.g. include fingerprints, retina recognition, face pattern recognition, as well as physical signature. One challenge would then be where and how the biometric data on users, such as fingerprints, would be administered. Pertinent questions to be asked are whether data should be managed by the service providers themselves, or stored by a trusted third party, and if so, by which party.

Another question is what kind of issues these methods raise in terms of personal information.

#### 8.4.4 Possible identity verification in MOOCs

In summary, the identity of students requiring formal accreditation of MOOCs in Norwegian institutions could be safeguarded in the following manner:

	Digital exam on campus or at test centre	Open exam online/take-home exam	Written exam
<b>ID check at start-up</b>	Log-in and exam personnel	Log-in or ID check via trusted third-party	Log-in or ID check via third-party
<b>Check connection between ID and ID</b>	Exam personnel	Log-in or ID check via trusted third-party, biometrics	ID check via third-party, biometrics
<b>Checks along the way</b>	Exam personnel	Limited, but also biometrics	Biometrics or exam personnel online (remote monitoring)

Figure 8.1 Possible identity verification in MOOCs

## Chapter 9

# MOOCs in Norwegian higher education

### 9.1 Applicable regulations

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#### *Accreditation*

The Quality Reform introduced a comprehensive system of quality-assurance in Norwegian higher education. The institutions were given more extensive academic authority to establish and terminate study programmes. At the same time, a professional independent body was established for quality-assurance of higher education (Norwegian Agency for Quality Assurance in Education, NOKUT). Systems were introduced for accreditation of study programmes and institutions, and requirements were set for all institutions to have their own quality-assurance systems.

The Act relating to Universities and University Colleges determines the degree levels at which the institutions can offer education.<sup>1</sup> Both the Act and associated regulations apply to all higher education institutions, including the private institutions.

Depending on the institution category, the different institutions have different authorisations as regards establishing new study programmes themselves. If institutions are not authorised to establish study programmes, they must apply to NOKUT for accreditation.

The universities, which are all public, are authorised at all levels. Specialised university institutions and university colleges, both public and private, are authorised to establish study programmes at all levels within the disciplines where they are authorised to award doctorates, i.e. the same authorisations as universities within these

disciplines. Public university colleges and private university colleges that have been accredited as university colleges, can establish new programmes at the undergraduate level. Private university colleges that are not accredited at the institution level can apply to NOKUT for accreditation of study programmes.<sup>2</sup>

The same system applies to joint degrees. If the relevant degree level is outside the authority of the individual institution, it must also apply for accreditation of joint degrees. Norwegian institutions that cooperate to award joint degrees must together satisfy the criteria for accreditation of study programmes. Norwegian institutions can award joint degrees in cooperation with foreign institutions. The Norwegian institution will then be responsible for ensuring that the foreign institution's part of the study is accredited or approved in line with national regulations in the cooperating country. The Norwegian part must satisfy the criteria for the relevant degree level in Norway.<sup>3</sup>

#### *Recognition and exemption*

Exams from universities and university colleges that have been accredited, are recognised with the same number of credits between institutions, given that they satisfy the academic requirements inherent in the subject to be recognised.<sup>4</sup> This means that a student who has taken a subject at a Norwegian institution, will be credited for this

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<sup>1</sup> Available from: <http://www.lovddata.no/all/nl-20050401-015.html>  
The Act has been elaborated in a separate regulation providing standards for accreditation of institutions (Forskrift om kvalitetssikring og kvalitetsutvikling i høyere utdanning og fagskoleutdanning). NOKUT's regulations relating to supervision elaborate on the standard laid down in the Ministry's regulations, including the requirements for e.g. scientific production and the research communities' size and academic profile (Regulation relating to supervision of education quality in higher education).

<sup>2</sup> NOKUT (2013) *Institusjonskategoriar (Institution categories)*. Available from: <http://www.nokut.no/no/Fakta/Det-norske-utdanningssystemet/Institusjonskategoriar/> (Retrieved: 11 December 2013).

<sup>3</sup> NOKUT (2013) *Søk om akkreditering av nye studietilbud og institusjonskategori (Apply for accreditation of new study programmes and institution categories)*. Available from: <http://www.nokut.no/no/Universitet-og-hoyskole/Kvalitetssikring-og-tilsyn/Sok-om-akkreditering-av-nye-studietilbud-og-institusjonskategori/> (Retrieved: 11 December 2013).

<sup>4</sup> The provision concerning recognition and academic accreditation in Section 3-5 (1) of the Universities and Colleges Act.



subject as part of a degree at a different Norwegian institution, provided the subject satisfies equivalent academic requirements.

It is also possible that subjects taken at foreign institutions may qualify for exemption in a Norwegian degree. The institutions themselves must consider whether the subjects in question provide a basis for such exemption. This is not something for which a student is entitled to exemption; an academic assessment must be made in each instance.<sup>5</sup>

#### *Quality-assurance system*

Norwegian higher education institutions are responsible for ensuring the quality of their own study programmes.<sup>6</sup> In order to safeguard this responsibility, the institutions are obliged to have internal quality-assurance systems. The quality-assurance system is a tool for the institutions to acquire necessary knowledge in order to assess the quality of their own education programmes. The systems aim to ensure continuous improvement, identify deficient quality and document quality efforts. NOKUT is responsible for evaluating and approving the institutions' quality-assurance systems.

#### *The qualifications framework for higher education*

The Bologna Process established a pan-European qualifications framework for higher education in 2005, with learning outcome descriptions for the three main levels of higher education – bachelor, master and Ph.D. The Norwegian qualifications framework for higher education, adjusted in line with the general European framework, was laid down in March 2009.<sup>7</sup> The qualifications are described through learning outcomes, not input

factors. The level descriptions describe the knowledge, skills and competence that all candidates who have completed education at the relevant level must have.

#### *The Qualifications Framework and its relationship with prior learning and work experience*

Documentation, assessment and appraisal of prior learning and work experience is a tool used to facilitate lifelong learning. The right to an Accreditation of Prior Experiential Learning is laid down in the Education Act, the Tertiary Vocational Education Act and the Act relating to Universities and University Colleges. Prior learning and work experience must be assessed in relation to applicable curriculums for primary and lower secondary school, upper secondary education, education plans for tertiary vocational education and national curriculums and syllabi for higher education. The objective of assessing prior learning and work experience is for adults to be able to document and appraise their expertise, as a basis for further training or work. Prior learning and work experience must have legitimacy both in the education system and working life. Individuals' prior learning and work experience in subjects cannot be placed directly into the Qualifications Framework, but Accreditation of Prior Experiential Learning will indirectly be able to provide learners with a shorter course of study leading up to an approved diploma.<sup>8</sup>

## **9.2 The Commission's considerations**

### *MOOCs in Norwegian education institutions*

When Norwegian institutions offer credit-earning MOOCs, the regulations for higher education apply. The universities themselves decide which study programmes and subjects the institution will offer, regardless of educational level. The university colleges and specialised university institutions have more limited opportunities to decide this for themselves, and would have to apply to NOKUT for accreditation on certain levels.

The same will apply as regards quality-assurance. When institutions offer MOOCs with exams and credits, these study programmes must be included in the institution's system for quality assurance.

If MOOC students are to take exams and earn credits, these students must have been accepted

<sup>5</sup> Section 3-5 (2) of the Universities and Colleges Act.

<sup>6</sup> The Ministry of Education and Research has laid down separate regulations relating to quality assurance and quality development in higher education and vocational college education. Available from: <http://www.lovddata.no/cgi-wift/ldles?doc=/sf/sf/sf-20100201-0096.html> (Retrieved: 11 December 2013).

<sup>7</sup> Since then, the Norwegian Ministry of Education and Research has also stipulated a national qualification framework for all levels of Norwegian education – the Norwegian Qualifications Framework, which is in line with the European Qualifications Framework (EQF). Kunnskapsdepartementet (2011) *Nasjonalt kvalifikasjonsrammeverk for livslang læring (NKR)*. Available from: <http://www.regjeringen.no/upload/KD/Vedlegg/Internasjonalt/UNESCO/Nasjonalt/Kvalifikasjonsrammeverk200612.pdf> (Retrieved: 11 December 2013).

<sup>8</sup> *ibid.*

in the study programme according to applicable enrolment requirements. This applies both to those who take exams in a course and those who take exams as external candidates.<sup>9</sup> Students who take MOOCs with exams and credits at Norwegian institutions, can receive a normal transcript as documentation.<sup>10</sup> Such subjects/courses can be included as part of a degree.

A student who has completed MOOCs with exams and credits at an accredited institution in Norway, will be entitled to exemption from equivalent exams at another institution. This means that MOOCs in this form, taken at one institution, can be part of a degree at other institutions as well. In these cases, it is assumed that the MOOCs have been quality-assured at the institutions where the subject has been studied.

The Commission is of the opinion that the institutions' management of the accreditation system has a potential for improvement. The Commission therefore encourages the institutions to use the latitude inherent in the system to a larger extent by facilitating a more flexible practice of accrediting subjects across Norwegian institutions. The Commission also believes that there is need for an assessment of how the institutions' practice of accrediting subjects can be improved.

It will be challenging to have MOOCs without credits and exams recognised as part of a degree. Likewise, it will be difficult to approve other types of subjects that the student has taken without sitting for an exam. The Commission believes that such assessments must continue to be made by the individual institution exercising its academic judgment.

In Chapter 15.3, the Commission recommends pilots with exemptions from entrance requirements in MOOCs.

#### *MOOCs delivered by foreign institutions*

In order to accredit MOOCs with exams and credits from a foreign institution at a Norwegian institution, they must be assessed in the same way as other types of subjects that the students take at foreign institutions. This means that an academic assessment must be carried out, in the same way as is currently done for other foreign education. The academic assessment must be carried out by the individual institution.

How students and institutions should relate to quality assurance of such courses, could be a chal-

lenge. If the scope of applications for accrediting foreign MOOCs is significant, particularly from hitherto unknown providers, it is uncertain whether the institutions have the capacity to assess this themselves. In the opinion of the Commission, there may be a need for systems or arrangements to support institutions in their work linked to such assessments, for example national systems for quality-assuring MOOCs.

It will be challenging to grant credits for a MOOC without an exam or credits from a foreign institution toward a degree at a Norwegian institution. For a student who has completed a MOOC without an exam, it could for example be challenging to document that the content of the subject is equivalent to the subject from which the student is seeking exemption. The individual institution must conduct a discretionary academic assessment of such MOOCs.

The Commission believes that Accreditation of Prior Experiential Learning may be more relevant in the institutions' assessments of MOOCs without exams and credits. It is the case today that one is entitled to have one's prior learning/work experience assessed for the purpose of enrolment and recognition of this type of expertise in degree studies. If the number of students completing MOOCs increases, this may lead to increased demand for this type of assessment. In that case, the Commission is of the opinion that MOOCs will make Accreditations of Prior Experiential Learning even more relevant than they are today. The Commission believes that this will put pressure on and demand increased attention to good practice of Accreditation of Prior Experiential Learning from higher education institutions. The Commission believes that the institutions must develop good schemes for Accreditation of Prior Experiential Learning involving MOOCs.

#### *Competence assessment of MOOCs without exams and credits*

MOOCs without exams and credits can also be viewed as a form of skills acquisition that is not necessarily intended to be incorporated into a degree system. Skills that are currently outside the Qualifications Framework and the formal education system can take many forms, and there is a need for a comprehensive assessment of the state of affairs. Different forms of skills must be assessed in an international context. Norwegian authorities must therefore work closely with European initiatives and organisations linked to quality-assurance of education, and consider such

<sup>9</sup> Section 3-10 of the Universities and Colleges Act.

<sup>10</sup> Section 3-11 of the Universities and Colleges Act.

issues in the context of the systems that have been constructed around the current quality-assurance system and international skills recognition.

In this connection, the Commission wants to point out the fact that, in 2013, the Ministry of Education and Research appointed a separate commission to assess skills outside the formal education system, with particular focus on how they can be incorporated into the national qualifications framework. This commission will assess whether there are special challenges related to education programmes offered internationally or in parallel in multiple countries by e.g. companies, industries and organisations. The MOOC Commission believes that MOOCs without exams and credits fall within this type of service, and that the commission appointed by the Ministry therefore also must consider MOOCs as part of their work. The report will be completed by the end of 2014.

### 9.3 The Commission's recommendations

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- MOOCs with exams and credits, both from Norwegian and foreign institutions, may be

included in the current degree system. Consequently, the Commission does not see a need for changes to the Norwegian regulations for accreditation and recognition of subjects.

- The Commission recommends a national review of how the institutions' practice of accrediting can be improved.
- The Commission feels that the institutions must facilitate a more streamlined practice of accrediting subjects across Norwegian institutions.
- The Commission believes that the institutions must develop good schemes for Accreditation of Prior Experiential Learning for people who have completed MOOCs.
- The MOOC Commission recommends having the Ministry-appointed commission tasked with inquiring into skills outside the formal education system also assess skills developed through MOOCs without exams and credits.

## Chapter 10

# Quality and learning outcome

In the Commission's opinion it is important that MOOCs being developed in Norway maintain a high level of quality. In the development of MOOCs, there is much to learn from the systematic quality work performed in connection with the development of flexible education and web-based programmes.

The Commission also believes that there are some new, specific challenges and opportunities involved in assuring the quality of MOOCs.

### 10.1 Quality in web-based higher education

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#### 10.1.1 NOKUT's quality assurance work

In recent years, NOKUT has worked with quality assurance of web-based higher education. This relates particularly to applications for accreditation of web-based higher education. In 2013, NOKUT revised its guidelines for accreditation applications, and clarified the requirements related to quality.<sup>1</sup> The following will give a description of these requirements.

#### *Learning objectives, content and structure*

The Bologna process adopted a pan-European Qualifications Framework for higher education, cf. Chapter 9. The qualifications achieved by a candidate upon completing a study, shall be described as knowledge, skills and competence.<sup>2</sup> The descriptions are an important basis for assessing the quality of a web-based study. The syllabi's descriptions of the learning outcomes will also be

essential to the online student's preparations and expectations, which is also important for quality. Furthermore, NOKUT requests an account of the contents and structure of the study, including its academic scope, depth and context. It should also be clear what parts of the study that support development of the qualifications described in the learning outcome.

#### *Work scope*

NOKUT requires an account of the work scope in a web-based programme, including an overview of how many hours of teaching and guidance are facilitated. In addition, a description of the anticipated extent of self-study and exam preparations must be available. The extent of guidance and follow-up from a lecturer is particularly important to online students.

#### *Types of education and the educational rationales*

The work and education forms in a web-based programme could comprise a number of educational instruments and use of a wide spectrum of technologies. The work and education forms must, like in other educations, be selected on the basis of what the students are going to learn.<sup>3</sup> This means that the descriptions of learning outcomes will form the basis for the educational reasoning relating to the choice of web-based teaching forms and instruments. NOKUT requires a reflection on the choice of technological tools, and the choices shall be substantiated based on educational and academic considerations, what the students are going to learn and what kind of students are in the target group for recruitment. Facilitating communication and collaboration is also an important part of the educational facilitation of a web-based programme, where the subject content

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<sup>1</sup> NOKUT (2013) *Veileder til studietilsynsforskriften (Guidelines for the education supervision regulations)*. Available from: <http://www.nokut.no/no/Universitet-og-hoyskole/Kvalitetssikring-og-tilsyn/Sok-om-akkreditering-av-nye-studietilbud-og-institusjonskategori/Korleis-sokje-akkreditering/> (Retrieved: 22 March 2014).

<sup>2</sup> NOKUT (2013) *Regulations relating to supervision of education quality in higher education*.

<sup>3</sup> *ibid.*

and the descriptions of learning outcomes must be the decisive factors.<sup>4</sup>

The subject contents must be facilitated for the web in digital learning resources that are appropriate for the students' subjects. Selection, production and adaptation of the subject content, as well as the educational and technological methods for presenting it, will determine the quality along with the choice of digital learning platform.<sup>5</sup>

#### *Digital skills*

NOKUT emphasises that the composition of the academic environment, its size and overall competence shall be aligned to the study content as described in the study programme. At the same time, the academic environment must be large and robust enough to safeguard research and professional development work. In addition to overall educational competence, the lecturers must also have satisfactory digital skills.<sup>6</sup> This means knowledge and experience of online education, and skills related to use of relevant technological tools. This applies not only to lecturers, but to all employees involved.<sup>7</sup> The size of the academic staff is also significant. It must be ensured that there are enough available lecturers to teach and instruct the online students, and ensure that the lecturers are given enough time to follow up the students.<sup>8</sup> The students must also receive training in online study methods and use of digital tools.

#### *Student recruitment*

How students are recruited and how admissions are carried out is vitally important to the facilitation of a good online study environment. In web-based studies it is important for the study environment, study groups and other subject matter activities that require collaboration, to ensure that the students have approximately the same academic basis and progression. NOKUT therefore emphasises that the institutions must ensure that the

recruitment of students strengthens and promotes a good study environment.<sup>9</sup>

#### **10.1.2 Quality norms for web-based education**

In addition to NOKUT, there are several other players in Norway working on quality in web-based education, e.g. Flexible Education Norway and Norway Opening Universities. Both institutions have cooperated with NOKUT and provided input to the work on developing requirements relating to assessment of web-based studies.

#### *Lessons learned from flexible education*

Flexible Education Norway (FuN) is a national member organisation for institutions that offer flexible education in the form of online studies, online studies in combination with workshops and other flexible adaptations.<sup>10</sup> FuN has prepared quality norms for web-based education.<sup>11</sup> These norms were last revised in 2011, and constitute a set of quality standards that FuN believes are reasonable to expect from providers of web-based education. The norms are detailed and grouped into the following principal elements: quality management and quality work, programme development, information and instruction and programme execution. The objective of the norms is to help stimulate quality in the education programmes, in parallel with and pursuant to the quality assurance work carried out by NOKUT.

#### *Lessons learned from the work of Norway Opening Universities*

#### *Ownership in the institution, resource use and the "hybrid expertise"*

Norway Opening Universities (NUV) is an administrative body under the Ministry of Education and Research. NUV shall contribute to promoting the development of ICT-supported learning and flexible education in higher education, and collaboration between higher education institutions and working life. Norway Opening Universities e.g. funds development projects at universities and

<sup>4</sup> Bates, Tony (2012) *Online learning and distance education resources*. Available from: <http://www.tonybates.ca/2012/05/02/nine-steps-to-quality-online-learning-introduction/> (Retrieved: 22 March 2014).

<sup>5</sup> Swedish National Agency for Higher Education (2008) *E-learning quality*. Report 2008/11.

<sup>6</sup> NOKUT (2013) *Regulations relating to supervision of education quality in higher education*.

<sup>7</sup> Flexible Education Norway (FuN) (2011) *Kvalitetsnormer for nettbasert utdanning. Kvalitet i alle ledd*. (Quality standards for web-based education. Quality from start to finish)

<sup>8</sup> NOKUT (2013) *Regulations relating to supervision of education quality in higher education*.

<sup>9</sup> *ibid.*

<sup>10</sup> Fleksibel utdanning Norge (2014) *Om Fleksibel utdanning Norge (About Flexible Education Norway)*. Available from: <http://www.fleksibelutdanning.no/om-fun/om-fun> (Retrieved: 27 March 2014).

<sup>11</sup> Flexible Education Norway (2011) *Kvalitetsnormer for nettbasert utdanning. Kvalitet i alle ledd* (Quality standards for web-based education. Quality from start to finish).

university colleges related to development and use of technology for learning and flexible education.<sup>12</sup> In the same way as NOKUT, Norway Opening Universities is focusing on learning objectives, choice of instruments, educational rationales and digital skills. Norway Opening Universities is concerned with the significance of strategy, management focus and organisation as regards quality. Studies from Norway Opening Universities show that it is important for the quality of web-based education that the activities are owned and supported by the institutions' administrations, and that they are integrated into the strategies and plans of the institution. The management's focus on, follow-up of and will to pursue this kind of education is of vital importance.<sup>13</sup>

It is also important for quality that the development work and implementation of the education programmes have a dedicated staff with diverse but complementary competence. The academic environment should consist of academic employees, administrative personnel and representatives from the IT department or employees with other technological or digital support skills. Broad participation could contribute to a better understanding of what the technology could provide, as well as the educational and academic challenges related to the development of a web-based study programme. Expertise in the intersection between pedagogy, administration and technology is referred to as "hybrid expertise" in certain contexts, and is described as essential in the development and implementation of flexible education.<sup>14</sup>

### *Evaluation and documentation, transparency and sharing*

Norway Opening Universities believes that it is important to document and evaluate the pro-

cesses under way in the educational innovation efforts, and in the development and implementation of flexible studies. The opportunities for reflection on lessons learned and the development of own knowledge on education and development work may contribute to a quality culture and better education quality.<sup>15</sup>

Transparency and sharing may promote quality. Use of technology in education may contribute to a transparency that can benefit students, academic employees and the institutions. Access opens up education for the outside world. It has to bear comparison, it must be professional and updated. This sharpens the quality mindset.<sup>16</sup>

### *Norway Opening Universities' expert group on quality*

Over the last three years, Norway Opening Universities has had an expert group on quality in ICT-supported and flexible education.<sup>17</sup> The expert group's work will, together with other work carried out in this field, form the basis for developing a set of criteria for work on quality in web-based education. The basis for the work is that national stakeholders, higher education institutions, employees and students will contribute to ensuring quality in flexible education. The work in the expert group will be continued in 2014 with focus on detailing and specifying the criteria, as well as on making the criteria and basic data for the work available to the public.

## 10.2 Educational opportunities in MOOCs

The educational perspectives on media and technology development have historically been distin-

<sup>12</sup> Norway Opening Universities (2014) *Om Norgesuniversitetet (About Norway Opening Universities)*. Available from: <http://norgesuniversitetet.no/om> (Retrieved: 28 March 2014).

<sup>13</sup> Ørnes et al. (2009) *Digitale utfordringer i høyere utdanning – Norgesuniversitetets IKT-monitor (Digital challenges in higher education – Norway Opening Universities' IT monitor)*. Norgesuniversitetets skriftserie 1/2009; Ørnes et al. (2011) *Digital tilstand 2011 – Norgesuniversitetets monitor (Digital status 2011 – Norway Opening Universities' monitor)*. Norgesuniversitetets skriftserie 1/2011 (Norway Opening Universities' publications 1/2011).

<sup>14</sup> *ibid*; Nordkvelle et al. (2010) *Kunsten å ile langsomt (The art of making haste slowly)*. Norgesuniversitetets skriftserie (Norway Opening Universities' publication series) 2/2010; Schulstad, G. (2013) *Det grønne laget – hjelp til selvhjelp (The green team – help for self-help)*. Presentation at Norway Openings Universities' autumn conference 2013. Available from: [www.norgesuniversitetet.no](http://www.norgesuniversitetet.no) (Retrieved: 22 March 2014).

<sup>15</sup> Bates, Tony (2012) *Online learning and distance education resources*. Available from: <http://www.tonybates.ca/2012/05/02/nine-steps-to-quality-online-learning-introduction/> (Retrieved: 22 March 2014); Flexible Education Norway (2011) *Kvalitetsnormer for nettbasert utdanning. Kvalitet i alle led (Quality standards for web-based education. Quality from start to finish)*; Harvey and Green (2012) "Defining Quality", in Wittek and Habib (2012) *Undervisningskvalitet som praksis (Education quality in practice)*, Norsk pedagogisk tidsskrift 3/2012.

<sup>16</sup> Paulsen, M. F. (2012) *Cooperative freedom and transparency in online education*. ICICTE 2012 Proceedings.

<sup>17</sup> Fosslund et al. (ed.) (2013) *Ulike forståelser av kvalitet i norsk fleksibel høyere utdanning – teknologi og læring på og utenfor campus (Different notions of quality in Norwegian flexible higher education – technology and learning on and off campus)*. Norgesuniversitetets skriftserie 1/2013; Nordkvelle et al. (ed.) (2013) *Kvalitet i fleksibel høyere utdanning – nordiske perspektiver (Quality in flexible education – Nordic perspectives)*. Akademika forlag.

guished both by optimistic visions and profound scepticism related to the consequences that this development represents in terms of changes to the education institutions and educational practice. A pragmatic attitude has characterised players within flexible education, who have consistently applied new media as channels for communication of education schemes. Within the rest of the education system there have been visions and expectations over the last hundred years of changes in educational practice, without this coming to fruition.<sup>18</sup> This applies, e.g., to how films, education television, video, computers, CD-ROM and other types of media merely have functioned as a supplement to the established educational practice revolving around the teacher and the text book. Over the last fifteen years, a number of critical voices have also been heard concerning the imbalance between the technological visions and use of new media in the educational practice.<sup>19</sup> So far, the education institutions have only been marginally successful in changing the educational practice with use of technology from a traditional, communication-oriented model for web-based education, to utilising the opportunities offered by digital media for the students' involvement in their own learning process, as well as the social collaborative dimension of learning.

Many now claim that this is about to change, not least in higher education. This is first and foremost about how technology development creates new opportunities for the use of digital media in an educational context. One opportunity is in scaling the services, nationally and globally, and how the access to technology and number of users in digital networks have increased considerably in recent years. Another opportunity is in the integration of various types of technology, such as video formats, social media and new learning platforms.

In many MOOC services, the attention is to a large extent directed at the participants as stakeholders in their own learning, while also changing the traditional role of teacher. The teacher has, e.g., a facilitator's role in support of collaboration and interaction between the participants. The communication and cooperation takes place in

other ways such as through social media. Technology may be used to support students based on needs, capabilities and interests. This may take place by collecting and analysing data from the students' learning process, and then preparing an education programme and course materials based on the progress of the relevant participant and contributions from other students. In some programmes the social interaction between the participants could be an important component. In other programmes the main focus could be on individualised, tailor-made learning processes through adaptive learning, i.e. systems that check what a participant knows about a subject, retrieve relevant learning objects from a database, check goal achievement and demonstrate learning progress over time.

Flipped classroom entails that the students study the subject matter outside the classroom, e.g. through video lectures, and use their time in the classroom for student-active learning activities such as presentations, seminars, exercises and reflection. Blended learning refers to educational schemes with varied learning activities that combine both web-based education and campus education. Blended learning and flipped classroom are not new phenomena resulting from the MOOC development. However, the emergence of MOOCs gives students and the education institutions access to a far greater number of programmes than previously used in such educational schemes.

Over the last years, there have been several national initiatives to use digital exams in higher education.<sup>20</sup> The work shows that digitisation of exams involves a number of opportunities and challenges, not least from an educational, administrative, technical and legal perspective. The Education Committee in the Norwegian Association of Higher Education Institutions (UHR) and Norway Opening Universities have jointly established an expert group to continue working on the legal perspective, as well as assessing the opportunities for future digital forms of evaluation.<sup>21</sup> In recent years, an increasing number of lecturers and academic communities have used the opportunities offered by digital technology to evaluate students in new ways. The benefit of the digital evaluation

<sup>18</sup> Cuban, L. (1986) *Teachers and machines: The classroom use of technology since 1920*. New York: Teachers College Press; Erstad, Ola (2010) *Digital kompetanse i skolen* (2. utgave). Oslo: Universitetsforlaget.

<sup>19</sup> Cuban, L. (2001) *Oversold and Unused: Computers in the Classroom*. Cambridge, MA: Harvard University Press; Selwyn (2011) *Education and Technology. Key issues and debates*. London: Continuum International Publishing Group.

<sup>20</sup> ATCS (2014). Available from: [www.atc21s.org](http://www.atc21s.org) (Retrieved: 1 April 2014).

<sup>21</sup> Norway Opening Universities (2014) *Ekspertgruppe for digital vurdering og eksamen (Expert group for digital assessment and exams)*. Available from: <http://norgesuniversitetet.no/node/5425> (Retrieved: 1 April 2014).

types could, e.g., be more feedback to the lecturer on the student's learning progress, more feedback to the student on the understanding of the subject and time saved for the lecturer in the grading process.<sup>22</sup> The development of MOOCs has begged the question of how technology can stimulate new, efficient types of assessment for larger numbers of online students, and how digitisation of the assessments can help stimulate the quality of higher education. In connection with MOOCs, self-assessment and peer assessment have also received a lot of international attention.<sup>23</sup> Research indicates that there is a correlation between peer assessment and teacher assessment. There is less knowledge as to whether there would be a similar correlation between peer assessment and teacher assessment in MOOCs, and whether the peer assessment would contribute to better learning outcomes.<sup>24</sup>

### 10.3 Learning analytics

In the literature on MOOCs, learning analytics is constantly highlighted as one of the key changes involved in the fully digital study programmes. Such analyses collect data from different levels in ways that previously were not possible: macro level (international, regional, national), meso level (institutions) and micro level (participants and participant groups). This applies particularly to higher education where data at the micro level has been missing.

Collection of such data is often referred to as *data mining*, and the objective is to identify and test various learning patterns. This knowledge is used to develop models to predict how different participant groups will succeed in their studies, how they learn and what needs they have. When this knowledge is integrated with analysis of the individual participant's "learning history" (micro),

the student will be able to follow his/her own progress, in addition to receiving individual and relevant follow-up. In the literature, this last process is referred to when we speak of learning analytics.

It is common to differentiate between five different types of learning analytics, but the field is rapidly expanding.

What is referred to as *basic learning analytics* entails using the analysis functions embedded in most of the learning platforms used today. A simple visualisation of data logs may give the individual participant a quick overview of his/her own results compared to others, and give the teacher an overview of the participants' activity. NOKUT points out that simple types of learning analytics are already in use in Norway, as the current learning platforms provide opportunities for visualising data logs and clarifying activity. Furthermore, NOKUT refers to the fact that some of the Norwegian education institutions also connect student data from several systems (e.g. LMS and Common Student System (FS)) in order to give a broader picture of the student activity.<sup>25</sup>

A more advanced form is referred to as *predictive analytics*. This involves combining static data, e.g. demographics and previous academic results, with dynamic data, e.g. log-in patterns on learning platforms, which documents the participants are working on, or the extent of participation in online discussions. The goal is to predict how well each individual participant will do, identify characteristic learning patterns for different groups, and applying relevant measures at an early stage. Students in an assumed risk group may be offered extra follow-up, and particularly proficient participants may be motivated to additional efforts by getting some extra challenges. Predictive analytics also assume that it will be possible to predict what kind of learning activities have the best effect on the individual student.<sup>26</sup> Even if predictive analytics are still at an early stage of development, there are several examples of application of such analyses. In "School of one", a mathematics programme introduced in public schools in New York City, learning algorithms are used to analyse the pupils' manner of learning and math skills. The algorithm produces a personal mathematics

<sup>22</sup> University of Oslo (2014) *Digital eksamen ved det juridiske fakultet (Digital exams at the Faculty of Law)*. Available from: <https://www.jus.uio.no/for-ansatte/arbeidsstotte/prosjekter/digital-eksamen/> (Retrieved: 21 March 2014).

<sup>23</sup> Allern, M. (2005) "Kontinuerlig prøvelser? Fleksible vurderingsformer i høyere utdanning" (Continuous trials? Flexible forms of assessment in higher education), in Arneberg & Skare (2005) *Fleksible vurderingsformer – kontinuerlig prøvelser (Flexible forms of assessment – continuous trials)*. Norgesuniversitetets skriftserie (Norway Opening Universities publication series) nr 3/2005.

<sup>24</sup> Luo, Heng (2014) *Is Peer Grading a Valid Assessment Method for Massive Open Online Courses (MOOCs)?* Available from: <http://sloanconsortium.org/conference/2014/et4online/peer-grading-valid-assessment-method-massive-open-online-courses-moocs> (Retrieved: 26 March 2014).

<sup>25</sup> NOKUT (2013) *Learning analytics – automatisert kvalitets-sikring av utdanning (Automated quality-assurance of education)*. Available from: [http://www.nokut.no/Documents/NOKUT/Artikkelbibliotek/Kunnskapsbasen/Aktuelle%20analyser/2013/Lid\\_Stein\\_Erik\\_Learning\\_analytics\\_automatisert\\_kvalitetssikring\\_av\\_utdanning\\_2013.pdf](http://www.nokut.no/Documents/NOKUT/Artikkelbibliotek/Kunnskapsbasen/Aktuelle%20analyser/2013/Lid_Stein_Erik_Learning_analytics_automatisert_kvalitetssikring_av_utdanning_2013.pdf) (Retrieved: 22 March 2014).

<sup>26</sup> *ibid.*



“learning play-list” for each pupil, which follows the progression considered optimal for each individual student. In this programme, the predictive analytics are intended as a supplement and not as a replacement for teacher follow-up.<sup>27</sup>

*Adaptive learning analytics* builds models of the participants’ understanding of specific subjects. It makes it possible to automate individual feedback to the participants, for example which parts of the curriculum they have understood and on what level they have understood it. This may be integrated in learning platforms in such a way that the participants are continuously presented with learning content in line with their academic level.

*Analysis of social networks* is used to clarify relationships. The objective may be to identify participants who are not socially and academically integrated, or whether the teachers’ interaction with the participants is too biased in favour of one participant group. The Social Networks Adapting Pedagogical Practice (SNAPP) is an example of technology being applied to analyse behaviour for the purpose of learning. SNAPP analyses social networks and forum activity in LMSs, and provides the educators with diagnostic instruments to evaluate the digital participant activity in terms of learning. Such analyses are supported in modern research showing that there is strong correlation between offline activity, i.e. cooperation with other course participants or others who are familiar with the subject matter, and the test result. Participants who cooperate with others do achieve better results than those working alone.<sup>28</sup>

*Discourse analysis* is commonly considered the most complicated form of learning analytics. Here the systems must be able not only to log and identify the participants’ and teachers’ contributions and activities, but also the quality of what has been written. The system would then be able to give specific feedback to the teachers and participants on the quality of their contributions. Even if technologies exist that can analyse certain qualitative aspects of a text, they are not good enough for advanced learning purposes.<sup>29</sup>

Learning analytics, and particularly the most demanding types of such analytics, is still in its

infancy. Researchers at HarvardX and MITx, who have analysed data from these institutions’ MOOCs on edX in 2012 and 2013, wanted to discover which learning patterns gave good results for the course participants. However, in their initial reports they conclude that it is not possible to identify such patterns at the moment:

Everything predicts MOOC performance, because doing anything in this space separates you from the thousands of people who are doing relatively little – thus doing anything predicts doing anything else.<sup>30</sup>

In spite of the fact that the researchers possess data from nearly 850 000 participants, they explain their problems in finding such patterns with insufficient data. Because learning in MOOCs takes on so many forms, even more data is required to identify the learning patterns. An important conclusion in the project is that learning analytics appear to require extensive cooperation between the many institutions that possess data from MOOCs. The researchers believe that the institutions must enter into binding partnerships and share data in order to realise the potential inherent in learning analytics.<sup>31</sup>

#### 10.4 “MOOC for ICT in learning” at Sør-Trøndelag University College

One example of how quality assessments can be carried out in the development of MOOCs, is the course “MOOC for ICT in learning” at Sør-Trøndelag University College (HiST). HiST has received funding from Norway Opening Universities in order to develop the course.<sup>32</sup> The purpose of the project is to transform the existing web-

<sup>27</sup> iZone (2014). Available from: <http://izonenyc.org/> (Retrieved: 22 March 2014).

<sup>28</sup> Brelow et al. (2013) “Studying Learning in the Worldwide Classroom: Research into edX’s First MOOC”, *Research & Practice in Assessment*, Volume Eight. Available from: <http://www.rpajournal.com/studying-learning-in-the-worldwide-classroom-research-into-edxs-first-mooc> (Retrieved: 22 March 2014).

<sup>29</sup> NOKUT (2013) *Learning analytics – automatisert kvalitetssikring av utdanning (Automated quality-assurance of education)*. Available from: [http://www.nokut.no/Documents/NOKUT/Artikkelbibliotek/Kunnskapsbasen/Aktuelle%20analyser/2013/Lid\\_Stein\\_Erik\\_Learning\\_analytics\\_automatisert\\_kvalitetssikring\\_av\\_utdanning\\_2013.pdf](http://www.nokut.no/Documents/NOKUT/Artikkelbibliotek/Kunnskapsbasen/Aktuelle%20analyser/2013/Lid_Stein_Erik_Learning_analytics_automatisert_kvalitetssikring_av_utdanning_2013.pdf) (Retrieved: 22 March 2014).

<sup>30</sup> Campus Technology (2014) *Inside the First-Year Data From MITx and HarvardX*. Available from: <http://campustechnology.com/articles/2014/01/27/inside-the-first-year-data-from-mitx-and-harvardx.aspx> (Retrieved: 28 April 2014).

<sup>31</sup> *ibid.*

<sup>32</sup> Sør-Trøndelag University College (2013) *Prosjektmidler – Endelig søknad (Project funds – Final application)*. P31/2014 – MOOC for IKT i læring (MOOC for IT in learning). Application to Norway Opening Universities for project funding.

based subject “ICT in learning” to a MOOC that can be offered free of charge and at a large scale to Norwegian teachers, as well as developing a model for how Norwegian players can offer courses and educational pathways as MOOCs that are both financially sustainable and have a high academic and educational quality.

In terms of the specific contents of the MOOC, it is, as mentioned, a question of developing a model for how Norwegian players can provide MOOCs. The educational objectives of the course are described as challenges that the institution offering MOOCs may encounter in terms of educational, assessment-related, administrative, technological and financial challenges. As regards the educational challenges, it points out the need to assess suitable teaching methods that ensure a good learning environment and learning outcomes. Design of both subject matter and learning activities are mentioned as key success criteria. Issues related to selecting suitable ICT tools and services to create good learning in various MOOC schemes and for different disciplines are also mentioned. The course will focus on how to motivate MOOC participants, how to reduce withdrawal rates and ensure good learning outcomes, the social interaction between participants, as well as use of personal learning environments and learning networks.

The project “MOOC for ICT in learning” provides good insight into issues related to what HiST calls “moocification” of a web-based subject, and what is characteristic for the development of MOOCs. In the project, HiST has selected certain criteria they believe must be given special attention in the development of MOOCs. Box 10.1 lists the emphasised quality criteria. HiST also points out that for each criterion, a description must be made for how the task is to be solved, as well as an objective for the outcome. It must be possible to verify and evaluate this process.

The learning activities to be used in the programme are also described, along with the technological solutions, organisation and implementation, what academic resources are to be used, how the lessons learned from the course can be applied in further work, and how it will be evaluated. They emphasise that planning, development and implementation of MOOCs require carefully considered use of technology. The project intends to use technology to make the cooperation between different players more efficient, minimize travel time, and not least produce good-quality results. The technology must facilitate the division of the subject matter into smaller parts, with

### Box 10.1 Criteria for education quality in “MOOC for ICT in learning”

- implementation of free start/stop: how to ensure that this works well for the students, teachers and other teaching supervisors, as well as for the administration
- student counselling services for a large number of students; how to ensure that all students are seen and receive guidance as needed, the interaction between technical solutions and personal accessibility
- relationships between students (student-student relationships): how to facilitate students cooperating with other students, voluntary or managed cooperation
- choice of structure for the course that can support variable progress for a large number of students
- quality of and opportunities for student-adapted learning content
- choice of technology(ies) and expenses related to this: what is the cost of using external platforms as opposed to implementing the course on a self-developed platform? How will the division of labour and responsibilities be affected by the selected platform.

Source: Sør-Trøndelag University College (2013) *Prosjektmidler – Endelig søknad (Project funds – Final application). P31/2014 – MOOC for IKT i læring (MOOC for IT in learning)*. Application to Norway Opening Universities for project funding.

a mixture of text, video, polls and multiple-choice questions, as well as the opportunity to have discussions related to each content block. The project at HiST also demonstrates the need to adjust learning contents to the technology used.

## 10.5 The Commission’s considerations

### 10.5.1 Quality in MOOCs

The Commission believes that the development and provision of MOOCs in Norway will require thorough work on the part of the institutions in order to ensure good-quality courses. It is the Commission’s opinion that much of the quality work related to campus education in general and web-based education in particular, will be highly relevant for the work on quality in MOOCs as

well. This issue is also pointed out by the UK Quality Assurance Agency for Higher Education (QAA). QAA believes that UK's "Quality Code for Higher Education" is a good basis for higher education institutions' work on quality assurance of MOOCs as well.<sup>33</sup> The Commission believes that the institutions should learn from the overall quality development and quality assurance work when they develop, provide and evaluate MOOCs.

One example of how such assessments can be applied to the development of MOOCs, is the course "MOOC for ICT in learning" at HiST, cf. Chapter 10.4 above.

The Commission feels that the project at HiST aptly illustrates how lessons learned and quality assessments from web-based education can be applied to the development of MOOCs, but that they have to be adapted to the MOOC format.

The Commission believes that learning objectives must form the basis for the quality work. This will be relevant for all types of MOOCs, whether it be a service with a clearly defined learning outcome, or courses with more general subjects where the specific learning goals are defined by the participants along the way. The learning activities must be designed so as to be an instrument towards reaching the learning goals. This also applies to the choice of technological solutions. The Commission therefore believes that there must be a clear connection between the purpose of the course, the choice of learning activities and choice of technological solutions. It is also important to have a good evaluation of the organisation and implementation of the course, e.g. related to the degree of participation, the teacher's role, forms of communication and forms of interaction. Follow-up of the participants and a good learning environment will also be important. The choice of educational resources must be in line with the rest of the educational scheme. Evaluation and experience sharing should be used actively, e.g. as part of further development of the offer.

The Commission believes that MOOCs have a potential to strengthen both the access to and quality of higher education for people with impaired functional ability, thus making it possible for more people to choose higher education. This assumes, however, that the potential inherent in MOOCs is utilised in the right way, and that stu-

dent diversity is taken into account in the further development of the programmes. A prerequisite in order for MOOCs to make education more accessible to all, is that the technology and contents are of high quality and adhere to the principles of universal design. The Commission also believes that it is important for the institutions to have the necessary familiarity with universal design when developing MOOCs, both in terms of the existing needs and how the courses can be designed to take these needs into account in the best possible way.

### 10.5.2 Assessment, exams and identity checks

The Commission believes that digital tools provide new opportunities for assessments and exams.<sup>34</sup> Firstly, digital media can facilitate testing of a large number of users, thus streamlining the forms of assessment. Secondly, digital tools, e.g. through simulations, provide new opportunities for evaluating skills that traditionally have been difficult to assess. This could for example relate to cooperation, problem-solving and creativity. Thirdly, it could entail considering new areas of expertise, such as digital skills.

The Commission is of the opinion that the development of Norwegian MOOCs must ensure that exams and assessment schemes support the courses' other quality work. If course certificates from MOOCs are to have an impact in working life, it is also necessary to have systems that are credible to society.

The Commission believes it is important for the institutions to consider and follow up the recommendations given by national work groups on the educational, administrative, technical and legal sides of digital exams.

Chapter 8.4 refers to challenges in ensuring correct identification of MOOC participants. The Commission believes that there must be systems to check the identity of Norwegian students enrolled in both foreign and Norwegian MOOCs. Such an identity check is e.g. essential in order for foreign MOOCs to be included as part of a degree, or for admittance to studies at Norwegian institutions. A secure identity check is also important if a person seeking employment wants to use MOOCs as part of documenting skills when applying for a job. The Commission believes that it is

<sup>33</sup> The Quality Assurance Agency for Higher Education (2014) *Statement on Massive Open Online Courses*. Available from: <http://www.qaa.ac.uk/Newsroom/News/Pages/QAA-position-statement-MOOCs.aspx> (Retrieved: 22 March 2014).

<sup>34</sup> Erstad, O. (2008) "Changing assessment practices and the role of IT", in Joke Voogt & Gerald Knezek (ed.) *International Handbook of Information Technology in Primary and Secondary Education*. New York: Springer Publishing Company.

essential that further work be carried out to develop sound solutions to secure the identity of persons taking MOOCs. The Commission recommends that questions relating to handling of personal information in MOOCs be included in the investigative studies related to digital exams in the university and university college sector.

### 10.5.3 Measures and premises for quality development

In order for Norwegian higher education to utilise the educational opportunities represented by MOOCs, the Commission believes there is a need for strategic measures in several areas: strategic ownership through national framework conditions and good educational management at the institutions, incentives for developing teaching quality, further development of digital skills among employees and students within the sector, as well as development and sharing of knowledge related to the educational aspects of technology development.

#### *Strategic ownership*

In order for strategies for the use of technology in education and development of MOOCs to be sustainable, they must be anchored and supported by the leadership of the institutions, and must be part of the institutions' overall strategies and plans. Good strategies are a matter of clear educational management at all levels in each institution. At the same time, MOOC development strategies must also be anchored at a national level. National authorities have to facilitate framework conditions and incentives to support the work of the institution. The Commission's recommendations to national authorities in this report are meant as a contribution to precisely that.

#### *Incentives for developing teaching quality*

The higher education sector uses a limited number of incentives at the individual level as regards developing teaching quality. The incentives for research are far stronger. This is not unique for Norway. In a new Swedish report, Swedish institutions are compared with Stanford and Berkeley. The comparison shows that Swedish universities and university colleges have significant potential for improvement, particularly as regards the role of teaching. The report concludes that the role of teaching in a research career must be strengthened, e.g. through clear career paths for those

who combine research and high-quality teaching, and through systematic evaluations of teaching quality.<sup>35</sup>

The Commission believes that an analysis similar to the Swedish one is highly relevant for Norway. In the Commission's opinion, there are no incentives for educational development work beyond the minimum standards. In the Norwegian Association of Higher Education Institutions' instructive guidelines concerning promotion to professorships in several disciplines, there is only one minimum requirement relating to competence for teaching in the individual subjects.<sup>36</sup> The lack of incentives does not stimulate and motivate the individual scientific employees to get involved in the development of teaching quality. The Commission believes that the current minimum requirements for educational competence in the higher education sector are insufficient to ensure educational development work, nor do they facilitate follow-up of the development taking place within technology and new forms of teaching. The Commission believes that there is a need for better incentives for increased teaching quality, as well as for more innovative types of learning. The goals for teaching quality must be far more ambitious. The Commission therefore recommends a review of the general range of policy instruments and incentive schemes for the education area, at the individual, institution and national levels. Instruments and incentives must be coherent and pull in the same direction.

#### *Digital competence*

Digital status 2011 shows that, so far, the institutions are not using a lot of resources on developing the employees' skills in varied use of ICT to promote the students' learning.<sup>37</sup> In order to use technology in teaching and learning, the Commission therefore believes that there is a need for a

<sup>35</sup> Bienenstock, Serger et al. (2014) *Utbildning, forskning, samverkan. Vad kan svenska universitet lära av Stanford och Berkeley?* (Combining excellence in education, research and impact: inspiration from Stanford and Berkeley and implications for Swedish universities) SNS Utbildningskommission.

<sup>36</sup> Norwegian Association of Higher Education Institutions (2013) *Veiledende retningslinjer for professoropptrykk (Instructive guidelines for promoting professors)*. Available from: <http://www.uhr.no/ressurser/veiledninger/opprykkordsordninger> (Retrieved: 11 December 2013).

<sup>37</sup> Norway Opening Universities (2012) *Digital tilstand i høyere utdanning 2011 (Digital status in higher education 2011)*. Tromsø: Norway Opening Universities.

systematic and permanent skills upgrade for personnel in the higher education sector.

The Commission believes it is entirely necessary to strengthen the digital proficiency related to teaching for personnel in the higher education sector. The Commission strongly feels that the use of technology in learning creates the need for broadly composed expertise of an educational, technological and administrative nature. The learning must be organised in a team-based manner. It is important that academic employees gain experience in developing educational schemes with the use of technology that will stimulate good learning activities and increased education quality. Knowledge and experience must be developed in applying digital instruments, resources and services. The Commission believes that the institutions should take comprehensive, organisational steps by prioritising funds for developing composite expertise and support functions related to the educational development work. The Commission believes that the need for such expertise development is great, and that not all institutions are capable of establishing such services under their own direction. The Commission therefore believes that national authorities must take overall responsibility by making the expectations clear to the institutions regarding development of digital skills, but also by allocating funds to initiate the desired development. As regards the need for and scope of the support services required for developing MOOCs, the Commission is of the opinion that this must be investigated further. The relationship between the institutions' own responsibility for such services and the need for national initiatives must be considered in such an investigation.

The Commission also believes that it is important that the students have good digital skills. The Commission believes that it is important that the entire educational pathway, from primary and secondary to higher education, is coherent. Students from primary and secondary education must have acquired knowledge and skills relating to the digital tools and methods that are necessary to complete MOOCs. The Digital Commission recommended greater efforts in this area. The Digital Commission believed that higher education institutions should be required to review their descriptions of learning outcomes in all study programmes to ensure that digital skills are reflected in the educational pathway.<sup>38</sup> The MOOC Com-

mission supports the need for strengthening students' digital skills.

#### *Research on educational opportunities and learning activities*

In the opinion of the Commission, there is a significant need for more research into the educational and learning aspects of technology development within higher education. It is important to have systematic and research-based knowledge development, both to contribute towards learning across institutions and academic communities, and for academic and economic resources to be used in the best possible way.

The Commission believes that a number of challenges related to quality in MOOCs and the use of technology in learning need to be considered. The Commission believes there is a need for strategic measures in the form of funds for research and knowledge development within this field. Relevant topics include what effect MOOCs will have on education quality, the learning outcome of attending different types of MOOCs, whether all student groups will handle the new forms of learning equally well, how to facilitate those who will face challenges, whether digital forms of learning and MOOCs can work equally well in all academic areas, and new assessment methods such as peer review and digital exams. Another important topic is the use and effect of MOOCs along with other learning activities on campus, in different types of blended learning and flipped classroom scenarios.

#### *Learning analytics as a policy instrument for quality development*

The types of learning analytics with the greatest potential for quality development are still in early phases of development. There is some uncertainty as to how demanding the analyses will be, as well as how beneficial they will be. There are questions as to whether the large amounts of data generated and stored for use in learning analytics are problematic in terms of personal data protection. This is also a key issue in the discussion surrounding big data.

Ownership and storage of data is another topic that must be addressed. One relevant question is how to ensure that the large amounts of data generated in learning platforms and stored by the commercial companies owning the platforms, are not sold to other players. Another question is how to ensure that logs containing the participants'

<sup>38</sup> Ministry of Government Administration, Reform and Church Affairs (2013) NOU (2013: 2). *Hindre for digital verdiskapning (Barriers against digital value creation)*.

activities are made available for research in formats that will secure anonymity, reuse of data and an appropriate aggregation level. In order to carry out advanced forms of learning analytics, access to data from multiple sources will be required. The contracts the institutions enter into with the large MOOC providers stipulate that the data cannot be passed on to a third party without the consent of the institution.

In sum, there appear to be several unanswered questions, e.g. regarding how easy it would be to gain access to data for research purposes, and whether the various countries' regulations are sufficiently harmonised. There are no standardised formats for this data. In other words, there are some questions of principle and certain unclear issues related to personal data protection, data storage and use of data that should be discussed in relation to learning analytics.

The other main challenge is whether learning analytics can yield anything of substance as regards quality. We need to know what the data can tell us, and equally important – what they cannot. Another obvious issue is that the data are not neutral. This may lead to misinterpretations. Too strong an emphasis on results from a learning analytics may also entail that the focus in the learning process is shifted to certain areas at the expense of others, i.e. that the analyses will govern the learning. This means that important and unclear factors linked to learning analytics and quality should also be discussed.

It is the opinion of the Commission that learning analytics have considerable potential as a tool for quality development in higher education. However, this demands that the numerous challenges mentioned above be assessed in a satisfactory manner. The Commission therefore believes that it will be crucial to strengthen the knowledge basis in this field.

The Commission also believes that the use of learning analytics must be incorporated as part of the educational development work and the bolstering of digital skills at the institutions. At the same time, the Commission sees that it will be necessary for someone to take special responsibility for developing expertise in this area, and contribute to the dissemination and application of this expertise within the sector. The Commission therefore believes that a learning analytics community should be established. The structure and form of this community must be considered vis-à-vis the current players and range of instruments.

The community should be tasked with conducting systematic and research-based knowl-

edge development as regards learning analytics, and through development work and knowledge transfer, contribute to developing and applying learning analytics in Norway. This could e.g. include mapping of global projects and technologies, as well as use and testing of suitable technologies. The community should have a practical approach and connect with relevant stakeholders. Knowledge transfer will be important for the institutions' will and ability to develop courses, and seize the opportunities provided by learning analytics to further develop the quality of higher education.

## 10.6 The Commission's recommendations

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- The Commission recommends that experience and knowledge from quality work in flexible and web-based education be applied in the development of MOOCs.
- The Commission presumes that the institutions will base their development of MOOCs on the principles of universal design.
- The Commission recommends that the institutions test new forms of educational assessment and exams in MOOCs.
- The Commission recommends that questions regarding the handling of personal data information in MOOCs be included in the review of digital assessment and exams.
- The Commission believes that it is necessary to strengthen the digital skills of employees in the higher education sector. The scope must, however, be mapped in more detail. The Commission recommends that funds be allocated to bolster digital skills.
- The Commission recommends that the institutions develop the employees' expertise in use of technology in teaching.
- The Commission recommends that the institutions take responsibility for developing the students' digital skills.
- The Commission believes that there is a need for stronger incentives for increased quality in teaching, as well as for more innovative types of learning. The Commission therefore recommends a review of the general range of policy instruments and incentive schemes for the education sector at the individual, institution and national levels.
- The Commission recommends a systematic effort towards research-based knowledge

development regarding the use of technology in higher education.

- The Commission recommends establishing a community for research-based knowledge

development, development work and knowledge sharing related to learning analytics.

## Chapter 11

# How to provide MOOCs?

It is important to distinguish between the terms portal and platform. A web portal, in this context a MOOC portal, is a website pointing to information and resources on various MOOCs. A platform is the framework in which the applications are run, in this case MOOCs. In essence, a MOOC portal functions as a gateway to the courses, while the actual course is run on a platform.

Looking at the existing MOOCs, it is, however, difficult to distinguish portals and platforms from each other. In practice, the major MOOC providers, e.g. Coursera, edX, FutureLearn and Udacity, function as both portals and platforms. These providers' websites list and promote their own courses, and refer the users to the providers' course platforms.

There are a number of players that provide pure portal functions, e.g. mooc-list.com, or national portals such as the German mooc.de and the Spanish mooc.es. The portals function as free-standing services providing a comprehensive overview of courses from multiple platforms. The most important function of a portal is to provide the users with an overview of relevant offers without having to access different platforms or individual institutions. In Norway, BIBSYS has taken the initiative to establish a Norwegian pilot portal for MOOCs, mooc.no. At the moment, the number of offers is very modest, which is logical since the number of Norwegian MOOCs is very low.

Most Norwegian universities and university colleges have websites promoting their own study programmes. There are also national portals such as utdanning.no, which provide an overview of education programmes in Norway. Commercial portals such as kursguiden.no provide the same service.

### 11.1 Portal for Norwegian MOOCs

MOOC portals provide important links to existing courses, and are therefore important marketing tools for the institutions. The growing interest in

MOOCs in recent years has resulted in heavy competition between different providers and institutions. Several international providers and institutions have been prominent on the MOOC arena, and their position in the market place also makes it more challenging for smaller players to promote their courses.

As mentioned, several countries have established national MOOC portals to gather and demonstrate courses in their own language from the countries' different institutions. In addition to the portals in Germany and Spain, the French Océan is also an example of such a national portal. The objective is to help French-speaking course participants navigate among the many offers in existence, and to give potential participants an indication of the quality of the various services.

A national portal in Norway could be important in order to showcase the existing Norwegian provisions, and to increase the number of Norwegian courses and participants. A portal can have different objectives. It could be a simple list that aggregates and systemises Norwegian MOOCs. The portal could also promote the courses to potential participants. However, in light of the competition with international providers and institutions, this is contingent upon finding a way to position oneself in the marketplace. Promotion is particularly important to the institutions. Surveys have shown that brand building is a key motivation factor for institutions in developing MOOCs. Many state that they develop and offer MOOCs in order to recruit students for their campus programmes.<sup>1</sup>

Another vital consideration in the portal discussion is which target groups one wants to reach. If a Norwegian portal is primarily aimed at potential participants in Norway, the design will be different than if the purpose was also to recruit foreign participants to Norwegian courses.

<sup>1</sup> European University Association (2014) *MOOCs – Massive Open Online Courses*. EUA Occasional Papers.



A consideration must be made as to which programmes the portal will link to. A portal can gather courses that only satisfy the criteria in a strict definition of MOOCs, but may also include courses that adhere to the Commission's broader definition of the term MOOC. Similarly, it is also a question of whether a portal shall only include courses from higher education institutions, or whether courses from other players can be included. A portal can also include MOOCs from foreign providers that can yield credits in the Norwegian education system.

### 11.1.1 The Commission's considerations

The Commission believes that there is a need for a portal aggregating Norwegian MOOCs. There are several arguments in favour of this. Firstly, the Commission believes that a portal would be well-suited to demonstrate the available Norwegian MOOCs. In light of the large number of players and MOOCs on the international market, there is need for a service that can easily link to the Norwegian resources, including MOOCs in the Norwegian language. Secondly, the Commission believes that a portal that gathers the Norwegian courses will make it easy for potential participants and players in working life. In addition, a portal would be a major resource in the institutions' desire to build their brands.

The Commission understands that certain Norwegian institutions may prefer to associate themselves with an established international MOOC provider. One important argument for doing so, could be the potential for brand building by being represented on well-known international portals. Several of the pure portal services in today's marketplace gather and systemise all available MOOCs. The major players that function both as portals and platforms only promote their own courses. The Commission believes there is a basis for questioning whether the majority of participants in these courses are aware of which institution is behind the course. The Commission is therefore uncertain of what promotional value these services have for the institutions that have developed the courses.

In line with the understanding of MOOCs that the Commission has used as a basis, the Commission believes that a Norwegian portal should not apply too strict criteria for which courses can be included in the portal. The portal must both gather the current MOOCs and make them visible, while at the same time being suitable for

including future MOOCs that may differ from the courses dominating the current market.

Furthermore, the Commission believes that the target group for a Norwegian MOOC portal should not be limited to Norwegian participants, but rather that the goal must be to distribute information on the courses to potential participants from other countries. In order to realise this, it is crucial to find a way to promote the distinctive characteristics of Norwegian MOOCs.

The Commission also believes it could be useful to establish a Nordic cooperation with a view toward finding a suitable way of promoting Nordic MOOCs on the international market. The establishment of a joint Nordic MOOC portal could be considered over the longer term, but the Commission believes that this will require more long-term strategies and clarifications both in terms of administration and finances.

In order to reach out internationally with information on Norwegian MOOCs, the Commission believes that a Norwegian portal service should establish strategic agreements to transfer data to already existing portals, such as mooc-list.com and utdanning.no.

In the Commission's view, the cost aspect of the portal will be tripartite:

- technical solution, establishment, and further development and maintenance
- technical operations that ensure high availability, safeguard the exchange of information with other portals, etc.
- content management that contributes to uniform course presentation, categorisation and interaction with the content producer.

The Commission does not believe that the establishment of a portal will require major resources. The Commission is, however, aware that resources for the ongoing work of gathering and maintaining information will be dependent on the number of courses and the ambitions for brand building.

The Commission believes that the realisation of a Norwegian portal could be considered in conjunction with an existing portal service, such as utdanning.no or mooc.no. However, the Commission also strongly feels that a MOOC portal should be clearly visible, and be designed according to the needs of the different users. Consequently, if the MOOC portal is linked to an existing portal service, the opportunities for prominent promotion of the MOOCs must be clearly emphasised.

## 11.2 Platform for Norwegian MOOCs

As initially defined, a MOOC platform is the application on which the actual course is run. Most MOOC platforms share certain primary functions. Firstly, a platform will structure the learning resources in the course in an educationally appropriate way. How this is done will depend on the educational orientation of the course, e.g. illustrated by the differences between so-called cMOOCs and xMOOCs (cf. Chapter 6). Secondly, the platform will offer an interface and support tools for the participants' course completion, and an interface and support tools for course development. The platforms will also provide various support systems for test evaluation and statistics; the latter in combination with different types of analytical instruments.

Most platforms' secondary function will be as a portal for the courses offered on the platform. Many of the platforms have functionality for communicating with registered interested parties and course participants, in addition to issuing course certificates/diplomas.

### 11.2.1 What characterises today's platforms?

Today's platforms are a mixture of evolved learning support systems and solutions developed as MOOC platforms. They are owned and operated by commercial players, as well as non-profit organisations. Examples of commercial players include Coursera, Udacity and Canvas.net.

edX is a platform operated and developed by a consortium (xConsortium) consisting of more than 30 participating universities. Their technical solution is also available as open source code. As previously mentioned, both edX and Google are planning a collaboration based on the edX platform and several of Google's services during the first half of 2014. The Canvas learning platform, provided by the commercial company Instructure, is the core of the platform and portal concept canvas.net. As a point of departure, it is freely available to use for MOOCs. Canvas as a pure platform is available as open source code. As of today, none of the international players have the Norwegian language as an option. However, work is under way to facilitate the use of the Norwegian language on Canvas and edX in the open source code version.

The least accessible platform for Norwegian institutions appears to be Coursera, which markets itself to the top-ranking global institutions. edX provided by the xConsortium seems to have a

high price tag, in addition to its exclusivity, while it is more unclear to what extent the European platforms are available to Norwegian institutions. The major US universities appear to be present on various platforms, both open-source platforms with their own branding, as well as platforms with other available solutions.

Most existing platforms are provided as hosted, cloud-based solutions. This often includes a form of support, depending on how much one is willing to pay. For example, Canvas.net offers counselling on course design for classic MOOCs at a limited cost, while edX offers to produce courses with a subject co-ordinator as an advisor. Support is primarily aimed at those who are developing the course, rather than those taking the course, although the course participant may receive web-based support in some fashion.

### 11.2.2 Selecting a platform for Norwegian MOOCs

One essential question is whether it is more practical to make each institution consider and decide which platform solution they want to use, or whether national authorities should facilitate a shared national solution.

The choice of platform solution also raises several other issues. One important question is which target group one wants to reach. Other key issues are associated with copyrights, educational development opportunities, language, where data will be stored, data ownership and how it will be used by the platform owner. Questions related to the institutions' promotion of courses are also relevant when selecting a platform solution.

Platform access for MOOCs can be obtained by becoming part of existing solutions. Access to technical solutions operated and partly supported by a third party can be purchased, or it is possible to use open source code operated and maintained by the institutions themselves or through shared solutions with multiple partners, such as national solutions. An example of the latter is France, where the government has funded and made the open-source version of edX available through the French, digital university.

The main argument for affiliating with an existing platform, such as Coursera, edX or FutureLearn, is the access to global target groups provided by these platforms. The high number of participants available to the established international suppliers will be particularly attractive to Norwegian institutions that have academic communities with a global target group. This will typi-

cally be internationally oriented research communities. Courses offered by such communities could most likely be provided via one of the large internationally renowned MOOC platforms. As mentioned above, the established platforms will most likely not be an alternative for all Norwegian institutions, as they primarily enter into collaboration with internationally familiar institutions. Moreover, choosing an established international player will make it more difficult to offer courses in Norwegian or the Sámi language.

By entering into a partnership with an established player, there is a risk of having to relinquish sole control of personal data and course data. There are also copyright challenges related to the established players. Coursera e.g. requires co-ownership to content posted on their platform. This makes it more difficult to move content to other platforms at a later date (lock-in). Another consequence is that the content may be subject to US legislation. In January 2014, this resulted in Coursera having to block users from Cuba, Iran and Sudan from their services, since commercial players cannot operate in these countries.<sup>2</sup> US-based providers are subject to extensive export regulations for countries, organisations and individuals.<sup>3</sup>

It is possible to choose free, openly available international solutions such as Canvas.net or the upcoming mooc.org. The uncertainty associated with these solutions appears to revolve around how data is stored, data ownership and how the data can potentially be used and exploited by the platform owner. When a business outsources its handling of personal information in whole or in part to other companies, so-called data processing agreements must be established.<sup>4</sup> These framework agreements are extensive. The Norwegian Centre for ICT in Education has prepared a guide on cloud services and external IT services.<sup>5</sup>

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<sup>2</sup> Coursera Blog (2014) *Update on Course Accessibility for Students in Cuba, Iran, Sudan and Syria*. Available from: <http://blog.coursera.org/post/74891215298/update-on-course-accessibility-for-students-in-cuba> (Retrieved: 25 March 2014).

<sup>3</sup> Export.gov (2014) *Consolidated Screening List*. Available from: [http://export.gov/ecr/eg\\_main\\_023148.asp](http://export.gov/ecr/eg_main_023148.asp) (Retrieved: 30 April 2014).

<sup>4</sup> Norwegian Data Protection Authority (2011) *Databehandleravtale om behandling av personopplysninger (Data processor agreement for processing personal information)*. Guide.

<sup>5</sup> Norwegian Centre for ICT in Education (2011) *Skytjenester og eksterne IT-tjenester i grunnsopplæringen (Cloud services and external IT services in primary and secondary education)*. Guide.

By using the open-source versions of edX and Canvas, an institution will have full import and export opportunities for courses between each of these solutions, as well as the corresponding commercial variants of the platforms. If an institution is operating a platform based on open source code, course material can be posted on it without having to sign an agreement with external suppliers. Thus, the use of materials on such a platform would not create new restrictions as regards copyright or reuse of the materials.

It would also be possible for an institution to choose whether to use its own platform or be part of a shared national solution. The one does not preclude the other. One aspect of this is cost. When establishing a shared platform solution for Norwegian institutions, the costs would primarily be related to establishing the solution, and would only marginally increase along with the number of courses until a relatively high number is reached. The financial benefit of establishing shared solutions appears to be significant, given that initial costs would accrue for one rather than multiple installations. As mentioned, national solutions will ensure control of personal data and course data, in addition to providing more prominent branding of each individual institution offering MOOCs. A shared national solution would facilitate the establishment of user support with associated assistance in developing MOOCs. The largest institutions would most likely be able to establish such support services internally, but it is likely that the number of courses relevant to MOOC platforms will be fairly low in the foreseeable future. This means that many institutions will find it too expensive to establish their own operational solutions and the necessary support services for developing MOOCs.

BIBSYS has established and provides a limited Canvas platform for providing MOOCs. So far, this has been a free service developed within the Ministry of Education and Research's appropriation to BIBSYS. As of the summer of 2014, BIBSYS will invoice for such services. BIBSYS also launched edX for testing in March 2014. During the test period this was free of charge for the educational institutions, but when they use it for regular MOOCs, the institutions will have to pay for the service.

### 11.2.3 The Commission's considerations

The Commission believes that arrangements should be made to help Norwegian institutions' develop MOOCs to a larger degree than today. In

the Commission's opinion, it is currently challenging for many Norwegian institutions to develop and provide MOOCs. The reasons for this may be the lack of educational, organisational and/or technological expertise in developing and operating such services. In order to gain access to international platforms, the institutions must also go through a process that can be very time and resource consuming.

In the opinion of the Commission, easy access to platform services is an important precondition for increasing the pace of MOOC development in Norwegian institutions. The Commission believes this indicates that all Norwegian institutions should have access to one or more platforms through a national initiative.

The Commission is concerned with the brand building opportunities that a national platform for MOOCs can provide. The institutions that develop courses are often overshadowed by platform providers on the large, established platforms. The Commission believes that the establishment of a national platform is an important measure toward enabling Norwegian institutions to manage their brands appropriately, both on a national and international level.

When selecting a national platform, the Commission believes that particular emphasis should be placed on the opportunities for educational development work on the platform. In its work, the Commission has presumed that MOOCs will continue to develop and change. It is through testing of how digital technology can provide more educational opportunities, that technology can contribute to better education quality.

In the Commission's opinion, many of the dominant players in today's market provide services that only marginally facilitate such educational development. A player like Coursera primarily builds its product around pedagogy tailored to the xMOOC format. What is important in such an educational approach is the opportunity to scale the course to the number of participants at very low cost. At this stage in the MOOC development, the Commission believes that it will be inappropriate to connect to platforms that are too stringent as regards which educational approaches MOOCs should use.

The market for MOOCs is developing rapidly. The Commission therefore believes that it will not be advisable to commit to a platform with strict copyright guidelines. This would result in an increased risk of *lock-in*. The Commission believes that it is desirable to choose a platform where the content can be stored outside the

respective platform, and merely be linked to or streamed from the platform. This makes it easier to move content to another platform at a later stage.

The Commission has noted the considerable interest in learning analytics, and shares the view that learning analytics may have a significant impact on both quality development in education, as well as research relating to education. In the Commission's opinion, there are many unanswered questions related to data ownership, access to data and personal data protection. The Commission believes that when choosing a platform, focus should be on maintaining sound control of the institutions' own data.

The Commission believes that the opportunity to choose Norwegian, Sámi or Nordic languages is of vital importance. The Commission has noted that France and Spain have chosen strategies for developing and providing MOOCs which are in line with their own language and context. The Commission believes that this is a good strategy for Norway. The Commission also believes that development and use of MOOCs outside of the higher education sector, e.g. in working life, will further increase the need for services adapted to the Norwegian society. In line with the considerations of portal services above, the Commission believes that it may be valuable to have a joint Nordic collaboration to promote and organise Nordic MOOCs, both toward international and Nordic users. This may also be relevant for smaller groups of languages used across borders, e.g. Sámi. The Commission believes that the consideration for universal design must be a fundamental principle in the production of content and when selecting and designing technological solutions in MOOCs, e.g. when choosing a platform.

The Commission believes that, overall, this speaks in favour of a national shared initiative that uses open-source versions adapted to Norwegian and Sámi languages, the Norwegian context and the profile of Norwegian institutions. The Commission believes that such access is necessary in order to lower the threshold for producing MOOCs, developing expertise and thereby participating in the educational development work represented by MOOCs.

The Commission wants to emphasise that the institutions themselves should be free to enter into agreements with available platform and portals. The Committee's recommendation for a shared national initiative does not prevent institutions from signing their own agreements with platform providers. The Commission recommends

that institutions that wish to develop MOOCs with wide and global target groups, consider the possibility of entering into such agreements. Such a consideration should e.g. include a process for mapping the institution's own needs and different platform providers. In the Commission's opinion, the choice of platform provider will require thorough study.

It is the Commission's opinion that a number of Norwegian education institutions require access to expertise in order to develop MOOCs, and in order to participate in the development work associated with the production of digital learning resources. The Commission also believes that MOOC development requires cross-disciplinary cooperation at the institutions, and that broad-based cooperation across areas of expertise is a prerequisite for success. The Commission is of the opinion that the effect of this expertise will be maximised if it is located in the institutions. The Commission believes, however, that the institutions are in great need of, and may benefit from, support services offered on the national level in developing MOOCs. This is particularly relevant in a development phase. The objective of this national support function must be to assist in building up relevant educational and technological expertise in the institutions. The goal must be for the education institutions themselves to eventually be able to assume this responsibility. The Commission believes that such a

national support function should be located in conjunction with the nationally available platform resource.

### 11.3 The Commission's recommendations

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- The Commission recommends that Norwegian MOOCs be aggregated and promoted through a dedicated national portal.
- The Commission recommends that Norway take the initiative for a Nordic partnership aimed at a joint effort to promote Nordic MOOCs internationally.
- The Commission recommends that preparations be made to give Norwegian institutions access to one or more MOOC platforms adapted to Norwegian and Sámi languages, as well as to the profile of Norwegian institutions.
- The Commission recommends that preparations be made to allow the institutions to use a central support function in the development of MOOCs. A primary objective for this support function is to assist in the development of relevant educational and technological skills at higher education institutions.
- The Commission recommends that the consideration for universal design be safeguarded in the choice of platform.

## Chapter 12

# Copyright and open access

On assignment from the MOOC Commission, Professor (J.D.) Olav Torvund (UiO) prepared the memo “Noen opphavsrettslige spørsmål knyttet til MOOC” (Certain copyright issues associated with MOOCs). On assignment from the MOOC Commission, Assistant Professor Gisle Hannemyr (UiO) has prepared the memo “Rettighetshåndtering og lisensiering av læremidler ved MOOC” (Handling copyright and licensing of course materials with MOOCs). The two memos are enclosed with the Commission’s recommendation.

### 12.1 Copyright and licensing

The copyright issues related to MOOCs are diverse and complex.<sup>1</sup> Key issues are agreement licences for course materials, copyright to material produced in MOOCs, for MOOC producers, students and third parties, the right of quotation, the use of photos and video as part of teaching and the right to the actual lectures. Another key topic is challenges related to cooperation agreements with international providers of MOOC platforms and proprietary platform solutions. When Norwegian institutions use services from international platform providers, Norwegian law does not apply in the processing and securing of data, cf. Chapter 11.

### 12.2 Open access and digital learning resources

OpenCourseWare (OCW) and Open Educational Resources (OER) are two development features that can be associated with the development of MOOCs. They may be related both to the use of technology in higher education institutions, as well as better access to training and education.

#### *OpenCourseWare*

The OCW movement started around the turn of the century, when the University of Tübingen, as the first higher education institution, published recordings from classes, open and free of charge on the Internet. However, the movement did not catch on until a few years later, when the Massachusetts Institute of Technology (MIT) established MIT OpenCourseWare (MIT OCW). The objective was as follows:

... to make MIT course materials that are used in the teaching of almost all undergraduate and graduate subjects available on the web, free of charge, to any user anywhere in the world. MIT OCW will radically alter technology-enhanced education at MIT, and will serve as a model for university dissemination of knowledge in the Internet age.<sup>2</sup>

The OCW material is usually organised as courses, and often includes planning materials and evaluation tools in addition to the academic content. The course materials are open-licensed and made available to everyone via the Internet.<sup>3</sup>

OCW courses have grown in scope since the start-up. In 2007, the British Open University had 16 million downloads via iTunes U. In an illustration used by Delft University of Technology in the Netherlands, it is estimated that more than 250 education institutions are offering a total of 9 000 courses.<sup>4</sup>

<sup>1</sup> This is discussed further in appendices 1 and 2.

<sup>2</sup> MIT (2013) *MIT Open Courseware – Fact Sheet*. Available from: <http://web.mit.edu/newsoffice/2001/ocw-facts.html> (Retrieved: 29 November 2013).

<sup>3</sup> Open Courseware Consortium (2013) *About us*. Available from: <http://www.oecconsortium.org/about-ocw/> (Retrieved: 29 November 2013).

<sup>4</sup> OpenCourseWare (2013) *OpenCourseWare: changing how we learn since 1999*. Available from: <http://opencourseware weblog.tudelft.nl/2013/07/26/opencourseware-changing-how-we-learn-since-1999/?TUD-USE-COOKIES=yes> (Retrieved: 29 November 2013).

### *Open Educational Resources (OER) and Open Access*

Launched by UNESCO in 2002, Open Educational Resources (OER) is closely associated with OCW. OER has a broader impact, and describes any education, learning or research material that is openly available for use by teachers and students without payment of royalties or licence fees. OER can freely be reused, adapted and distributed. The rights to OER are regulated through open licensing, typically through Creative Commons (CC) licensing. This licensing is particularly relevant in connection with MOOCs, e.g. because it facilitates sharing, changing and further processing of e.g. course materials through the two licensing types “CC Attribution” and “CC Attribution-ShareAlike”.<sup>5</sup>

OER is not the same as Open Access, which is open access to peer-reviewed scientific articles online, where open access has been granted for this purpose. Open Access can be part of OER, depending on the rights associated with the individual article, and may play an important role in strengthening research-based education. Lately, Open Access has become more common in terms of making scientific production more available. This was initiated e.g. by university libraries, who believe the cost of subscribing to and handling scientific publications on paper have become high.

The University of Bergen is an example of a Norwegian educational institution that has formulated a policy for its students and researchers in connection with Open Access. As part of the university board’s policy, the university’s employees are encouraged to make their scientific publications available in open archives or through open publication. The university library manages a separate budget used to cover author payments related to Open Access publication.<sup>6</sup>

Open Access has gained a key role internationally, and UNESCO has e.g. prepared a separate policy in this area.<sup>7</sup> According to UNESCO, it is also an expressed wish that publicly funded educational resources shall be freely available as OER:

<sup>5</sup> Creative Commons (2014) *Lisenser (Licences)*. Available from: <https://creativecommons.no/licences> (Retrieved: 15 April 2014).  
<sup>6</sup> University of Bergen (2014) *Open Access*. Available from: <http://www.uib.no/ub/tjenester/vitenskapelig-publisering/open-access> (Retrieved: 13 April 2014).  
<sup>7</sup> UNESCO (2014) *Open Access Policy*. Available from: [http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ERI/pdf/oa\\_policy\\_rev2.pdf](http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ERI/pdf/oa_policy_rev2.pdf) (Retrieved: 13 April 2014).

The declaration marks a historic moment in the growing movement for Open Educational Resources and calls on governments worldwide to openly license publicly funded educational materials for public use.<sup>8</sup>

## **12.3 The Commission’s considerations**

As shown by the enclosed memos from Olav Torvund and Gisle Hannemyr, the copyright issues associated with MOOCs are diverse and complex. The Commission has not had the opportunity to discuss this topic in more depth, but would like to refer to the two appendices for a more detailed account of the issues. The Commission believes that the institutions, in their development of MOOCs, must look closely into the copyright issues, to ensure that the courses are prepared in line with the prevailing applicable legal framework. Norway Opening Universities and the Norwegian Centre for ICT in Education are responsible for the DelRett service. The service was established to give advice on copyright issues, and can be used by both employees and students.<sup>9</sup>

The Commission believes the questions regarding copyright and licensing of material should be examined further. Among other things, there is a need to consider changes so it becomes easier to practice the regulations and develop open MOOCs.

The Commission believes the education institutions should focus both on the students’ rights to their own material, and employees’ rights to the material they produce and education they contribute to when developing MOOCs. For example, it is important to have a concise clarification of and good information regarding this when starting a MOOC.

The Commission recommends that the institutions stimulate production of open educational resources (OER) and that both open and other resources are clearly marked with terms of use, for example Creative Commons. The Commission recommends that employers facilitate and encour-

<sup>8</sup> UNESCO (2013) *Open Educational Resources Congress passes historical declaration*. Available from: <http://www.unesco.org/new/en/communication-and-information/resources/news-and-in-focus-articles/in-focus-articles/2012/open-educational-resources-congress-passes-historic-declaration/> (Retrieved: 29 November 2013).  
<sup>9</sup> DelRett (2014). Available from: [www.delrett.no](http://www.delrett.no) (Retrieved: 30 April 2014).

age their employees to share and re-use educational resources.

The Commission believes that Norwegian authorities, in line with recommendations from UNESCO, should also work actively internationally to promote the OER principle and Open Access in higher education.

Digital educational resources are saved in different places in the higher education sector, even within the same institution. The resources are often located in closed rooms on the Internet. The Commission believes open educational resources should be made more readily available, both as regards use and sharing. The Commission recommends creating an overview of available open educational resources for higher education on the internet.

#### **12.4 The Commission's recommendations**

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- The Commission recommends that the questions relating to copyright and licensing be con-

sidered more closely in order to make it easier to develop open MOOC solutions.

- The Commission recommends that, in developing MOOCs, the educational institutions clarify appropriate agreements for the students' and employees' rights to their own material.
- The Commission recommends that the institutions stimulate production of open digital learning resources, and that all learning resources are marked with terms of use.
- The Commission is of the opinion that Norwegian authorities should work actively, also internationally, to promote the principle of open digital learning resources and Open Access in higher education.
- The Commission recommends establishing an overview of available open digital learning resources for higher education.



## Chapter 13

# Cooperation, specialisation and competition

### 13.1 Cooperation, division of labour and consolidation in the sector

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#### *Political guidelines*

In its 2008 report, the Stjernø Commission referenced evaluations which indicate that Norwegian higher education overall does not have a sufficient level of quality.<sup>1</sup> Among other things, it was noted that many small, vulnerable academic communities provide the same education programmes. This results in insufficient consolidation of resources for research and higher education, and that many education institutions compete with each other instead of collaborating. In order to facilitate increased quality, the Commission proposed merging the institutions in Norway into eight to ten major universities.

The SAK strategy (collaboration, division of labour and consolidation) was established by the Stoltenberg II Government as a response to the challenges from the Stjernø Commission. The SAK strategy emphasises voluntary processes and local ownership at the institutions, as opposed to centrally governed structural reforms. The aim of the SAK work is to boost distinguished institutions and robust academic communities and facilitate better quality education and research.

Over the last four years, the Ministry of Education and Research has appropriated NOK 50 million annually to SAK processes. Some of the processes are limited to regional collaborations, while others include education institutions in different parts of the country. The aim is in some cases to merge institutions. In other cases the aim is broad academic cooperation between education institutions or cooperation limited to certain areas within administration, education or research.<sup>2</sup>

The Solberg Government has determined that it will submit a Report to the Storting concerning the structure of higher education in the spring of 2015. The Government states that the challenges outlined by the Stjernø Commission have not been resolved through the SAK processes.<sup>3</sup> The report will e.g. consider how the structure of the higher education sector best may ensure high quality and an expedient national and regional capacity. It has been claimed in a political context that SAK did contribute to processes, but that the challenges outlined by the Stjernø Commission have not been resolved. It is emphasised that one must start with a comprehensive quality assessment and then examine how the structure should be designed to ensure high quality and expedient national and regional capacity.

#### *National and international cooperation and competition*

There are several international examples of players collaborating on MOOCs. For example, edX is the result of collaboration between MIT and Harvard. These are two major, dominant players that acknowledge the benefit of cooperating to establish themselves in a market with heavy competition for the best students. In the US there are also examples of smaller institutions using MOOCs from larger players in their own education programmes.<sup>4</sup> This could in part be seen as a desire to provide their own students with a better academic programme than they themselves are able to develop on their own, and in part as a positioning against other institutions at the same level by

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<sup>1</sup> The Ministry of Education and Research (2008) NOU 2008: 3 *Sett under ett (A comprehensive view)*.

<sup>2</sup> The Ministry of Education and Research (2012) *Prop. 1 S (2012–2013)*

<sup>3</sup> Isaksen, Torbjørn Røe (2014) *Kvalitet først og fremst (Quality first and foremost)*. Speech at Kontaktkonferansen 2014. Available from: [http://www.regjeringen.no/nb/dep/kd/aktuelt/taler\\_artikler/kunnskapsministerens-taler-og-artikler/2014/kvalitet-forst-og-fremst.html?id=749237](http://www.regjeringen.no/nb/dep/kd/aktuelt/taler_artikler/kunnskapsministerens-taler-og-artikler/2014/kvalitet-forst-og-fremst.html?id=749237) (Retrieved: 4 March 2014).

<sup>4</sup> Inside Higher Ed (2012) *MOOCs for Credit*. Available from: <http://www.insidehighered.com/news/2012/10/29/coursera-strikes-mooc-licensing-deal-antioch-university#sthash.GPG2jjw7.dpbs> (Retrieved: 5 May 2014).

providing students with academic content from the most recognised institutions.

The public debate in the US has raised questions regarding the implications it will have for the structure of higher education when increasing numbers of institutions are offering education over the Internet. It is for example noted that if universities with strong brands want to offer web-based degree programmes in finance, this could result in skilled students preferring such offers instead of campus programmes at less reputable institutions. If the influx of skilled students is reduced at the smaller education institutions, this could undermine the quality and number of new students. Over the long term, this could result in a reduction in the number of institutions that provide financial education.<sup>5</sup>

There are many examples of web-based programmes developed through collaboration between institutions in Norway. Over a number of years, Norway Opening Universities has supported projects with a focus on developing flexible education as part of SAK collaboration. In other words, technology is a recognised instrument for collaboration. The MOOCs offered in Norway so far have not been anchored in a cooperation between institutions. This is now about to change. Examples of this are two continuing education courses for mathematics teachers. One of the projects is headed by the Norwegian Centre for ICT in Education and is being developed in cooperation with several institutions, while the second is a collaboration between the university colleges of Østfold, Lillehammer and Bergen.

The European University Association (EUA) has carried out a mapping of e-learning among its members (249 institutions, seven of which are Norwegian).<sup>6</sup> The mapping showed:

- 70 % believe that web-based education will have a significant impact on cooperation within the institution and internationally. Nearly 60 % expect a national impact
- the four most common purposes of web-based education are: flexible learning (27 %), more effective utilisation of time in the class room

(20 %), offering multiple learning opportunities for off-campus students (20 %) and on campus (20 %). A desire for internationalisation is not among the most important purposes (8.5 %).

According to the EUA, the figures indicate that there is a potential within web-based education, e.g. as regards institutional cooperation, both nationally and internationally. The EUA believes that MOOCs in particular have a potential for increased cooperation in the following areas:<sup>7</sup>

- strategic policy instrument for spreading knowledge and increased cooperation globally, for example through a north-south partnership
- contribute to research cooperation between institutions
- support development of European higher education and research through teaching cooperation, shared curricula, exchanging employees and students, as well as possibilities for increased use of open educational resources (OER).

The study also shows that the purpose of developing MOOCs is somewhat different than for web-based education in general. When asked about motives for developing MOOCs, more than 50 % respond international visibility and the institution's reputation. Only about five per cent state cooperation with other institutions or partners as motivation. This could indicate that an important driving force for the institutions to develop MOOCs is increased visibility, reputation and recruitment, in other words, a tool in the competition for students.

Competition for students could be an important driving force for Norwegian institutions' development of MOOCs in English. Such offers could presumably increase the appeal of Norwegian institutions and thus contribute to increased student recruitment. One example of this is the Centre for Development and the Environment (SUM) at the University of Oslo, which is in the process of developing a MOOC about international development. One of the primary objectives of this programme is highlighting and promoting UiO internationally.<sup>8</sup>

<sup>5</sup> Patrick Clark (2014) "Half of U.S. Business Schools Might Be Gone by 2020", *Bloomberg Businessweek*, 14 March 2014. Available from: <http://www.businessweek.com/articles/2014-03-14/online-programs-could-erase-half-of-u-dot-s-dot-business-schools-by-2020> (Retrieved: 10 April 2014).

<sup>6</sup> European University Association (2014) *MOOCs – Massive Open Online Courses*. EUA Occasional Papers.

<sup>7</sup> *ibid.*

<sup>8</sup> The Centre for Development and the Environment, UiO (2013) *Prosjektmidler – Endelig Søknad (Project funds – Final application)*. P82/2014 – *What works?* Application to the Norway Opening Universities for project funding.

## 13.2 The Commission's considerations

The figures from the European University Association (EUA) discussed in Chapter 13.1, indicate that the possibilities for cooperating on web-based education, both nationally and internationally, are not sufficiently exploited.

Erasmus+, the EU's new programme for education, young people and athletics for the period 2014–2020, gives Norwegian institutions opportunities to apply for project funding for educational cooperation, and gives access to a network of European partners.<sup>9</sup> The Commission is of the opinion that Norwegian institutions that want to cooperate internationally on MOOCs, should actively explore the possibilities in Erasmus+.

MOOCs give Norwegian institutions the opportunity to efficiently share expertise. Resources can be used more expediently across institutions, and larger academic clusters can develop over time. A generic subject offered as part of a study programme at several institutions, can for example be developed and offered as a MOOC at one of the institutions. The other institutions can arrange for their own students to follow this MOOC. Institutions can also use programmes from other institutions, both international and national, as part of their own education in variations of blended learning and flipped classroom. This could free resources for strengthened advisory services and facilitation for own students.<sup>10</sup> When dividing the labour, the institutions can focus their own efforts on promotion and their own advantages, and thereby develop more robust academic clusters and higher quality education and research.

Norwegian institutions will face increased web-based competition from reputable international institutions. At the same time, the Commission believes there is a significant need for increased cooperation, division of labour and specialisation in the Norwegian higher education sec-

tor. In order for Norwegian institutions to be able to face stronger international competition, and be capable to develop quality and relevance in its education programmes, more cooperation-oriented, innovative and robust institutions are needed. The Government's decision on a structure report could indicate a desire to reinforce the significance of structure as an instrument for increased quality in higher education. The Commission believes the use of technology provides increased opportunities for collaboration, division of labour and specialisation. This can contribute to better utilisation of the overall sector resources and contribute to higher quality education and research. The Commission believes use of technology in higher education, and MOOCs in particular, make it possible to handle these types of challenges in a new way.

In particular, the MOOC Commission would like to emphasise the importance of incentives and instruments that make cooperating on developing and providing MOOCs profitable, for example through flexible ways of sharing credit production. The Commission recommends having the committee that will review and assess financing of the higher education sector, assess the use of incentives and instruments for cooperation, division of labour and specialisation.

## 13.3 The Commission's recommendations

- The Commission encourages Norwegian institutions to utilise the opportunities provided by MOOCs for professional cooperation, division of labour, specialisation and efficient exploitation of resources.
- The Commission recommends Norwegian institutions that want international cooperation on MOOCs to take advantage of the opportunities for European cooperation presented by EU's education programme Erasmus+.
- The Commission recommends that incentives and policy instruments supporting cooperation, division of labour and specialisation between the institutions be considered by the committee that will review and evaluate the funding system for the Norwegian higher education sector.

<sup>9</sup> The Ministry of Education and Research (2014) *Regjeringa ønskjer norsk deltaking i Erasmus+ (The Government wants Norway to participate in Erasmus+)*. Available from: <http://www.regjeringen.no/nb/dep/kd/aktuelt/nyheter/2024/regjeringa-onskjer-norsk-deltaking-i-era.html?id=751963> (Retrieved: 4 March 2014).

<sup>10</sup> The European University Association (2014) *MOOCs – Massive Open Online Courses*. EUA Occasional Papers.

## Chapter 14

# Skills needed in working life

### 14.1 The importance of education for growth and prosperity

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People are Norway's most important resource. Human capital makes up about 80 % of national wealth. An investment in human competency is an investment in the most important basis for future growth. In other words, education is important not only for the individual but also for further development of the Norwegian welfare state.

Norwegian value creation and prosperity are founded on extensive economic, cultural and political interaction with the surrounding world. Working life is becoming increasingly knowledge-intensive and the extensive interaction with other countries requires new knowledge and skills compared to earlier. This places great demands on highly developed knowledge, innovation and adaptability. The white paper Long-Term Perspectives for the Norwegian Economy from 2013 shows that more efficient use of labour and capital is the most important source of prosperity growth over time.<sup>1</sup> The OECD points out that greater utilisation of human resources may result in more and better jobs, greater economic activity and higher participation in the labour market. Productivity growth is linked to increased labour quality – which means labour characterised by, e.g., updated skills, creativity and collaborative capacity. Modern growth theory greatly emphasises human capital as a source of economic growth. A high level of human capital promotes the ability to carry out new tasks and acquire new knowledge, for innovation and adaptation.

Education is crucial in order to ensure a knowledge-based working life. The social mandate of the universities and university colleges is to educate candidates that society needs, and conduct research that benefits society over the short and long term. The education and research sector

must satisfy the demand for knowledge and skills in working and social life. A high-quality education sector is therefore one of the most important preconditions for further growth and for taking on global and national challenges.

A well-developed higher education sector, free higher education and good schemes for education support contribute to good access to higher education in Norway. At the same time, it is important to have opportunities for lifelong learning. An important part of the societal role of universities and university colleges is therefore to facilitate lifelong learning, regardless of age, place of residence and life situation. Norway is a high-cost country and global competition means that working life must become increasingly knowledge-intensive and undergo constant development and adaptation. This entails greater demands than previously for employees to acquire new knowledge and skills throughout their lives.

### 14.2 Need for skills development

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Businesses compete globally, but are located regionally. Regions and nations compete to be an attractive location for knowledge-based companies. Whether or not a region is competitive depends on several factors, where expertise and the ability to adapt to change are essential. The availability of employees with relevant expertise is a key factor for businesses in all sectors. The Confederation of Norwegian Enterprise (NHO) is concerned with “learning life” and we see that private sector enterprises are increasingly working together to create centres of excellence and learning clusters, such as Campus Ålesund and Campus Asker.

There is a need for different skills in working life in the intersection between industry and digital online communities. There is a need for accessible and scalable knowledge in both sectors. Many knowledge-intensive companies need increasingly specialised knowledge, and need to

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<sup>1</sup> The Ministry of Finance (2013) Meld. St. 12 (2012–2013) Report to the Storting (white paper) *Long-term Perspectives on the Norwegian Economy 2013 – a summary.*

draw on the expertise of an international and specialised knowledge menu that can be assembled in an à la carte-fashion.

NIFU has mapped continuing education and training in Norwegian small and medium-sized businesses (SMBs).<sup>2</sup> The report states that most businesses in Norway are experiencing higher skills requirements in many areas, particularly in the use of technology and professional updates in the company's areas. A large number of companies state that they have difficulties recruiting people with correct or sufficiently extensive expertise, especially in areas where the industry structure is specialised and industry-focused. The report shows that SMBs invest less in continuing and further education than major companies. Knowledge-intensive companies with high education levels invest the most in continuing and further education. Outside university cities, the majority of businesses' expenses on continuing and further education is on formal continuing professional development. Private course providers and industry-oriented courses are the main providers of skills development in SMBs. Within the higher education sector, university colleges outside the major cities are the most active providers of continuing and further education.

### 14.3 Use of MOOCs in skills development – input from organisations in working life

The MOOC Commission has invited the social partners' organisations to provide input as to what extent and in what ways MOOCs can help meet the labour market's need for skills. The following organisations were invited to submit written input: The Federation of Norwegian Professional Associations, Norwegian Association of Local and Regional Authorities (KS), Confederation of Norwegian Enterprise (NHO), Norwegian Confederation of Trade Unions (LO), Spekter, Unio and Confederation of Vocational Unions (YS). Apart from the Federation of Norwegian Professional Associations and Spekter, all of the invitees contributed written submissions to the Commission. The input from the organisations that have submitted written contributions will be presented in the following. The input is not reproduced in its entirety.

<sup>2</sup> NIFU (2013) *Bedriftskultur for læring. En studie av videreutdanning og opplæring i norske små og mellomstore bedrifter* (Corporate culture for learning. A study of continuing education and training in Norwegian small and medium-sized businesses). NIFU report 27/2013.

The Commission's references to working life in the recommendation include both public and private sectors.

#### *Norwegian Association of Local and Regional Authorities (KS)*

KS notes that municipalities and county authorities represent knowledge-intensive jobs with a high level of education. There is currently a high degree of cooperation between local government and the higher education sector, both relating to continuing and further education and qualification of unskilled workers. Approximately 20 % of full-time equivalents in the municipal sector are performed by unskilled workers. While there are wide variations between different sectors, there is a need in the school, kindergarten and healthcare sectors for more personnel with formal education and training. At the same time there is a need for skills development among many current workers. A good example of this is the need for continuing and further education of teachers.

KS notes that recent reforms, such as the Coordination Reform, NAV reform and reform of the child welfare service, clarify the need for strategies and actions to meet the skills requirements linked to good-quality services. New reforms, tasks and demands in the future, for example as a result of a possible local government reform, will reinforce this need. According to KS, a key step will be better cooperation with education institutions, not only to qualify and provide further training to own employees, but also to ensure that the content of undergraduate education is in line with the skill requirements.

According to KS, MOOCs could play a role as a knowledge dissemination tool. A large number of municipal services are produced around the clock, and it is problematic to shut down operations or bring in temporary workers to provide opportunities for professional courses and continuing education. This is especially true in the large municipal service areas of care and early childhood. The municipal sector has employees all over the country, and in some sectors it is particularly challenging to access the necessary expertise in rural areas. In some contexts, it is also difficult to get qualified personnel for positions that require skilled workers or higher education. MOOCs can provide better opportunities for decentralised education alongside work.

Offering joint courses and skills development to an entire department or position group can be challenging. It will nevertheless be feasible with

training that is independent of time and place. MOOCs would make it possible to bring in top expertise from a larger geographical area, another part of the country or another country.

MOOCs could be a source of lifelong learning and adaptation of continuing and further education in relation to business or operational needs. The combination of work and education will be more accessible. It will provide opportunities for both formal education and more informal skills development, and could be a tool for the implementation of skills development for employees in many areas.

MOOCs also provide an opportunity for sharing. The municipal sector produces a lot of skills development materials in-house. The services in the different municipalities are similar in nature and their needs can be congruent. KommIT has a skills platform that can be used to share courses and training modules.

There are many national centres of excellence. It is important that their skills are propagated, and that appropriate tools are used for this. MOOCs could be a channel for this type of dissemination. A video or lecture can be more accessible than a report. Some municipalities also possess specialist expertise in particular areas. This could be made widely available in the same manner.

It is important to look at issues related to quality assurance and recognising qualifications acquired through MOOCs. From an employer's perspective, this will entail a need for awareness and knowledge about the various offers and what they represent, as well as confidence in the providers and approval systems.

A ministry-appointed committee has been formed to assess skills outside the formal education system, and possible placement in the Norwegian Qualifications Framework (NKR). Here are some parallel issues, which are also mentioned in the MOOC Commission's interim report: "The MOOC Commission recommends having the Ministry-appointed commission tasked with inquiring into skills outside the formal education system also assess skills developed through MOOCs without exams and credits." KS believes this work must be viewed in context. Employers are responsible for recognising and appraising skills in their own activities, based on the activity's goals, tasks and priorities.

#### *The Norwegian Confederation of Trade Unions (LO)*

In its input to the MOOC Commission, LO pointed out that the education system must be

adapted to the requirements of future working life and deal with development trends such as increased international competition, technological advances, changes in industrial structure, rising numbers of elderly employees and high immigration. There is a considerable need for continuous skills development in working life, both in the public and private sectors. The desire for skills development is great. The Confederation of Vocational Unions' (YS) employment survey for 2013 shows that almost half of Norwegian workers are motivated to pursue continuing and further education.<sup>3</sup>

According to LO, MOOCs provide, among other things, the following opportunities:

MOOCs can help expand access to higher education and continuing education and enhance the quality of programmes. It can free teacher resources for closer follow-up of students and pupils.

MOOCs can help support a high level of learning in the workplace, both in the private and public sectors. The courses represent a substantial simplification in that one can be at work during the training. The courses can easily be tailored to actual needs.

MOOCs can help strengthen cooperation between higher education and working life. To enable Norwegian companies to compete, the education and training system must have the ability to respond to labour market needs and provide individuals with opportunities for further qualifications.

MOOCs can help channel information about the labour market and distinctive characteristics of Norwegian working life (the Norwegian model) in schools and education institutions to make pupils and students well prepared for working life.

MOOCs can help bolster vocational higher education (vocational college). Vocational higher education is clearly underdeveloped relative to demand in the labour market. The new technology can make it easier to develop the breadth of vocational college programmes in particular.

LO, however, also sees challenges associated with MOOCs:

The difference between those who have good basic skills versus those who do not, could be

<sup>3</sup> AFI (2013) *YS Arbeidslivsbarometer 2013: Stabilitet og sårbarhet*. (The Confederation of Vocational Unions (YS) Employment Barometer 2013: Stability and vulnerability) Available from: [http://www.afi-wri.no/modules/module\\_123/proxy.asp?I=6346&C=1&D=2](http://www.afi-wri.no/modules/module_123/proxy.asp?I=6346&C=1&D=2) (Retrieved: 22 April 2014).

amplified. The need to concentrate on good basic skills early in training and education (especially within ICT) will become even more important as more lifelong learning takes place digitally.

How do we ensure that groups that have the greatest need for training and education, receive it? It is a challenge that those who already have the least education (and the greatest risk of dropping out of the workforce), participate the least in training and education. The new technology should help create better sharing of knowledge and better access for more people. A high level of competence at all levels is also important for employee-driven innovation.

Quality will be a challenge. The same applies to ways of accrediting, documenting and appraising skills acquired through the use of ICT.

#### *Confederation of Norwegian Enterprise (NHO)*

In 1997, NHO launched a proposal to establish “Åpent Universitet – Norsk kompetanse i grenseløs konkurranse” (Open University – Norwegian competence in borderless competition).<sup>4</sup> In its definition of an open university NHO wrote that it differs from established institutions in that it:

- does not have formal requirements for prior knowledge
- adopts new technology based on distance learning
- develops new forms of cooperation with the traditional institutions
- builds and develops cutting-edge expertise in knowledge dissemination and use of new technology in education
- works closely with social partners and develops specific training programmes for continuing and further education.

NHO believes that the points that were emphasised in the launch of the “Open University” still explain why the organisation, on behalf of its members, is interested in the MOOC phenomenon. The Commission’s mandate also has clear guidelines towards what is NHO’s social mission: contributing to framework conditions for Norwegian business and industry that, among other things, provide us with the expertise we need to assert ourselves globally.

<sup>4</sup> NHO (1997) *Åpent universitet – norsk kompetanse i grenseløs konkurranse* (Open University – Norwegian competence in borderless competition). Oslo: Næringslivets forlag A/S.

In an article, NHO has pointed out some of the challenges that draw lines from the launch of the “Open University” to the MOOC Commission’s work<sup>5</sup>

Teaching technology is already here. Transmission, speed or capacity problems no longer limit educational opportunities for organising learning in new ways. A robust infrastructure is about to fall into place and change the basis for how we think about the organisation of higher education. There is a basis for real optimism in the development of edtech and the opportunities that are opening up for much closer and more interesting interaction between working and learning life. We will see the development of a more extroverted higher education sector and more proactive knowledge-driven businesses.

The Commission should provide a comprehensive presentation of the current edtech situation to document and justify why MOOCs have propagated so quickly. This force will be the “engine” in a development that opens up new opportunities for Norwegian trade and industry, not to mention being a prerequisite for collaboration with the entire tertiary education sector.

Trade and industry is not concerned with where knowledge is produced, but rather that it is of high quality and relevant. Development is under way on a supply side that is global and with contributions from some of the most renowned education institutions and teaching forces. It is important for the sector to take this into account. Norway will never be self-sufficient in skills, so looking for the foremost expertise, wherever it may be, will become increasingly common. Technology and skilled teachers are the main drivers of this development.

Globalisation – the fact that excellent knowledge can be moved almost free of charge between countries and continents, provides a powerful incentive for the part of Norwegian trade and industry that relies on being at the forefront in terms of knowledge. This is the second major driver in the development of online learning.

There will be a lot of pressure on our own education institutions for further strengthening courses that are adapted for students other than traditional campus students. An inevitable conse-

<sup>5</sup> Halvorsen, Helge (2013) “Yes, we Khan”, in Fosslund et al. (ed.) *Ulike forståelser av kvalitet i norsk fleksibel høyere utdanning – teknologi og læring på og utenfor campus* (Different notions of quality in Norwegian flexible higher education – technology and learning on and off campus). Norgesuniversitetet skriftserie 1/2013 (Norway Opening Universities’ publications 1/2013).

quence of this development is that the requirement to deliver quality teaching distributed via the Internet will increase. We can already see that this is about to happen.

The development sets a high(er) standard for content and quality through benchmarking with the best. It will sharpen our own requirements and boost quality. Through a wider market with good access, the market will act as proctor. It will become more difficult to offer the second best.

NHO believes this is a particularly important effect of the fact that both students and education institutions will increasingly want to include quality lectures in teaching. The impact on learning outcomes and quality will depend on how proactive education institutions are in exploiting this potential.

Smaller campuses that do not have the capacity to keep up with the best, can virtually “retrieve” the academic skills they need. They will be a more interesting partner for industry. Will we see a possible change in the profile of individual education institutions more in the direction of Corporate Universities? Skills brokers who are professionals in quality assuring and adapting teaching to the customer is another development opportunity.

NHO sees some very interesting opportunities that must be considered in the domestic debate on cooperation, division of labour and concentration (SAK) in the sector. Especially when it comes to the smaller regional-based education institutions, some very interesting possibilities open up with regard to offering local businesses bespoke training through a new “skills broker” role. Most of the companies that will be looking for such programmes, do not have the capacity and/or expertise to keep up with such a market, with such growth momentum.

Changing study programmes and a growing group of students grounded in enterprises will act as “Trojan horses” and change the framework of partnerships between local education institutions and businesses, large and small. Educational and occupational careers will no longer be organised in long sequences as now, but will have much more frequent transitions and coordination of learning and work. This will create a growing market for short, flexible courses that can be tailored to the individual enterprise.

One interesting aspect of the MOOC development is the move towards rethinking the organisation of programme studies. This will facilitate far greater diversity in study models than is the case today. NHO also sees a particularly large potential

for correlations between what we refer to today as undergraduate education and continuing and further education. There is a vast potential here for development through systematic application of edtech.

This is not a trend limited to higher education. New groups of pupils will emerge from the 13-year primary and secondary education system with very different skills and expectations of higher education. One need not be a futures scientist to understand that today’s young people are socialised in a world of technology that will affect them in everything they do in all stages of life. They will enter education institutions with entirely different assumptions and expectations of their own learning process.

NHO believes there is little doubt that the current structure of higher education is insufficiently adapted to the generations who are to be trained for working life. Reconciling expectations and programmes for upcoming cohorts represents large and very interesting challenges.

#### *Unio*

In its input, Unio writes that among the very specific recommendations made by the MOOC Commission in its interim report (issued in December 2013), is the clear advice to employers to use MOOCs to develop the skills of their employees. The Commission believes that MOOCs have a potential to improve access to higher education. The Commission therefore believes that if this potential is utilised, it could have a substantial impact on continuing and further education and for providing the skills needed in working life. Unio agrees, but believes it will be important how this is accomplished.

Unio wants to emphasise that in much of Norwegian working life, for example among health professions and teachers, technical and professional development must be adapted to the population’s needs, and continuing and further education courses must have an overall framework that ensures quality in a Norwegian context. In both undergraduate education and in continuing and further education, the choice of learning form (campus, web-based or blended) must be based on a view of knowledge where learning is not only reproduction, but should also consist of knowledge construction.

The Government has launched its commitment to teachers by increasing the investment in continuing and further education for teachers by more than NOK 300 million in 2014. This will ini-



tially involve a large-scale upgrade of science teaching skills. While this commitment is welcomed, Unio and its affiliates, the Norwegian Association of Researchers (NAR) and Union of Education Norway, pointed out that it will be an impossible task to meet the commitments to teachers without also focusing on teacher education, i.e. enabling universities and teacher education institutions to enrol and provide further education to hundreds of mathematics and science teachers.

In Unio's interpretation of the MOOC Commission's interim report, the Commission views MOOCs as the answer to this challenge: further education of teachers using MOOCs. Establishing MOOCs requires no local or building-related costs, few teachers are required to educate many, and the studies can be done in the afternoon and evening, eliminating the expense for substitute teachers. This means that further education measures will be very affordable compared with regular campus studies, for better or worse. That, at least on paper, could imply that a large number of teachers can receive further training in a short period of time. The question is what increased skills will be gained from this?

Unio is fearful of the learning outcomes and quality if the reform is implemented in a unilateral manner. Further education using MOOCs must be a supplement to other forms of further education of teachers. The teaching profession is complex and relational, and it is crucial that continuing and further education of the profession reflects this. Unio therefore believes that MOOCs for teachers should consist of a combination of gatherings, lectures and web-based solutions. If not, there is a risk that the academic fellowship between learners and educators will deteriorate, that students will be left too much to themselves, not to mention that learning outcomes will be poor and dropout rates unnecessarily high.

When it comes to MOOCs and consequences for employees in higher education, Unio is concerned with employees' rights to the materials they produce and the teaching they contribute to.

#### *Confederation of Vocational Unions (YS)*

According to YS, the increasing demands for skills, along with the higher rate of change in the workplace, entail that online education such as MOOCs means that students can get virtually unlimited access to educators of the highest quality at very low cost. The technology enables bespoke education with immense freedom of

choice. Researchers at Carnegie Mellon's Open Learning Initiative have found that by combining web-based dissemination of classroom training, students learned in up to half the time compared to those who only attended class. This would be a benefit that everyone – individuals, enterprises and society – will be able to take great advantage of.

The accessibility afforded by web-based education will have a great impact on continuing and further education. Norway is at the forefront in the use of digital tools. We have well-developed Internet infrastructure, both in terms of quality and geography, and the density of PCs and tablets is high. Because access to digital tools is good for large parts of the population, there are consequently few technical and economic barriers to increased use of web-based training. YS nevertheless wants to point out that there are still large groups of the population where the use and benefits of digital tools is not a natural part of everyday life. There will therefore still be a great need to increase the digital skills of a not insignificant segment of the population, and it is emphasised that YS does not believe that this only applies to the group with little formal education. It is further pointed out that the lack of language skills can also be an obstacle to utilising the opportunities provided by MOOCs and other forms of web-based education. This means that even if YS is positive to the opportunities such forms of education provide, it also sees that there is a need to strengthen other areas of expertise to increase their availability and potential.

From YS's standpoint, establishing a national MOOC portal for Norwegian MOOC-inspired web-based courses will be a practical move. This will simplify the task of finding relevant online courses for both employer and employee, while also being a practical organisational tool in terms of operation and maintenance. In time, such a portal will also include evaluations, so that both quality and relevance are included, although YS also believes it would be an advantage to document workplace-relevant skills acquired through MOOCs without exams and credits. YS notes that the international trend is that the actual courses are free, but that payments are occasionally involved in connection with course certificates and guidance. YS believes that it is important to keep the cost at a level that is not individually excluding. Covering the cost of such training, in the context of time savings in relation to length of study and not least in terms of reduced need for

absence from work, may eventually be a relevant discussion issue for the social partners.

#### **14.4 The Commission's considerations**

##### *Stronger cooperation and increased relevance*

If Norwegian businesses are to compete internationally and the quality of welfare services is to be further developed, the education system must have the capacity to respond to labour market needs and give employees flexible opportunities for qualification and skills development. The Commission believes that the education institutions' range of studies are insufficiently adapted to the need for flexibility. The Commission also believes there is a potential for strengthening the coherence between what the education institutions offer and what working life demands. This is not just about continuing and further education, but also that undergraduate programmes must be relevant to the skills needed in the public and private sectors. Contact with the labour market is essential in order to provide good and relevant undergraduate programmes. Similarly, good and targeted continuing and further education programmes could depend on good basic skills.

The Commission believes that the higher education sector's work on the relevance of programmes to working life needs to be reinforced. One of the Commission's concerns is how to facilitate an increased focus on relevance at a strategic and political level. In the Commission's view, stronger government incentives will be necessary in order to foster such a development. In the Commission's opinion, cooperation between higher education and working life should therefore be used as an incentive in the funding of higher education.

##### *Broader supply side – increased competition in the education market*

The rise of MOOCs exposes Norwegian universities and university colleges to international competition in providing skills for working life. NHO points out that trade and industry are concerned with maintaining a high level of quality and relevance in education programmes, and are less concerned with who is providing them. Development is under way on a supply side that is global and includes contributions from the most renowned education institutions in the world.

Unless the Norwegian education institutions are able to cover the existing need for skills, other

players will fill the gap. Norwegian institutions' proximity to Norwegian working life represents an advantage in the face of international competition. In the Commission's view, flexible education and MOOCs can be a tool for the institutions to strengthen their position as providers of the skills in demand in the labour market. This requires the institutions to have strategies for and an active approach to how they will respond to this opportunity.

##### *Norwegian higher education institutions as facilitators for working life*

Norway can never be self-sufficient as regards expertise. Although the Norwegian institutions are able to cover much of the existing need for expertise, it will also be relevant for the labour market to obtain knowledge from international providers. With MOOCs, specialised knowledge can be distributed between countries and continents. This represents a vast potential for the part of the Norwegian labour market that is dependent on being at the forefront in terms of knowledge.

However, it can be a challenge for the labour market to identify and assess the quality of the MOOCs that may be suitable. The Commission believes there is a need for a facilitator that knows both academia and the needs of the labour market, and that can help identify relevant MOOCs. Especially for small and medium-sized businesses, it may be important to have a facilitator that knows local and regional companies and is able to create a bespoke training programme based on MOOCs and other available expertise in a quality-assured skills plan.

The Commission therefore believes that universities and university colleges can and should assume a role as facilitator or skills broker. The institutions' competitive edge is research-based knowledge and familiarity with the regional labour market. A facilitator will not only be important for employment in the region, but will also be useful to the educational institutions. The role will provide increased knowledge of the skills needed in the workplace, which may contribute to increased understanding of how the relevance of their own education programmes can be strengthened.

##### *Use of MOOCs in skills development*

As one of four countries, Norway is above the international average in terms of adult competencies and skills in reading, numeracy and problem

solving using ICT. Norway is also the country where those with the lowest skills are most likely to participate in education and training.<sup>6</sup> Furthermore, Norway is at the forefront in the use of digital tools. Internet infrastructure is well-developed in nearly the entire country, and the number of Norwegians with PCs, tablets and other technologies is high. In the Commission's opinion, this provides a good starting point for adopting MOOCs as a tool for skills development in the workplace.

However, LO notes the risk that the gap between those who have good basic skills and those who do not, could widen if more lifelong learning takes place digitally. YS shares this concern. Good basic skills are therefore crucial for better sharing of knowledge and improved accessibility for more people. The Commission believes that the development of good basic skills for all is important to ensure that everyone can make use of the opportunities for skills development provided by MOOCs.

In the opinion of the Commission, formal expertise in the form of degree programmes will remain important as a basis for and a door-opener into working life. MOOCs can be offered as part of these degree programmes, cf. Chapter 9. The Commission sees a development where the labour market is becoming increasingly skills-intensive, and where the percentage of employees with higher education is rising. This, in turn, will result in the labour market demanding new types of skills to a greater degree, preferably in addition to formal education, specifically adapted to the individual industry or business. At the same time, there are still many in the workforce who have little or no formal qualifications. The Commission believes that MOOCs can be a good tool for continuing and further education at various levels, from craft certificate to global cutting-edge expertise.

The Commission believes that opportunities for lifelong learning must be strengthened. KS, YS and LO point out a need to be at work during the training. When employees have to travel to an education institution and have to be away from work for a long time, this is incompatible with the need of both businesses and public employers for people to be present at work. Consequently, this restricts the number of people who can participate in continuing and further education. In the Commission's view, the use of MOOCs can contribute

to joint human resource development for entire departments or groups of employees, regardless of time and place, and make it possible to bring in top expertise from an unlimited geographical area. MOOCs can thus help ensure that training programmes become available more quickly and are better adapted to different life and work situations.

In the Commission's opinion, Norwegian education institutions should do more to develop comprehensive educational programmes for those who already have an education and employment. This means programmes that are better adapted for adults, in that they are tailored and take into account participants' prior work experience and current skills needs. Today's experience-based master's programme is a good example of such a model. The Commission believes that MOOCs can be an effective tool in the development of integrated and bespoke programmes.

In the Commission's opinion, the higher education sector should take on a clearer role as a stakeholder in the continuing and further education area. The Commission also believes that the labour market should be proactive and explore the possibility of using MOOCs in developing the skills of employees.

#### *National boost for continuing and further education in the public and private sectors using MOOCs*

The Government's goal is for Norway to be among Europe's most innovative countries. In its political platform, the Government writes that:

Norway has a knowledge-based economy that is seeking success in a globalised world in which there is increasingly rapid movement of capital, knowledge and jobs across national borders. This makes knowledge a criterion for success if we are to hold our own in international competition.<sup>7</sup>

The Government emphasises that the rapid pace of change in working life requires a replenishment of knowledge during one's career. The Government will therefore gradually step up continuing and further education, and eventually introduce rights and duties relating to continuing and further education.

<sup>6</sup> OECD (2013) *OECD Skills Outlook 2013. First Results from the Survey of Adult Skills*.

<sup>7</sup> Political platform for a government formed by the Conservative Party and the Progress Party. Available from: <http://www.Government.no/pages/38500565/platform.pdf> (Retrieved: 5 May 2014).

Several players aspire to contribute to digital continuing and further education. Within the public sector, KS, through its KommIT project, aims to contribute to continuing and further education in Norwegian municipalities.<sup>8</sup> The Agency for Public Management and eGovernment (Difi) is carrying out a four-year investment in digital training in the central government.<sup>9</sup> The Ministry of Education and Research's 2014 budget allocates funding for two projects for the development of MOOCs for further education of mathematics teachers. One of the projects is managed by the Centre for ICT in Education and is being developed in collaboration with several institutions, while the second is a collaboration between the university colleges of Hordaland, Bergen and Lillehammer. In the Commission's view, enhancing skills development in the workplace will require more coordinated use of resources.

In Chapter 11, the MOOC Commission recommends establishing infrastructure that facilitates the development and provision of MOOCs on a large scale. By leveraging this infrastructure, the Commission believes that scalable courses will be made available to both the public and private sectors. The use of MOOCs, often used in blended learning, has a great potential for time and cost-effective continuing and further education on a large scale in working life. Exploiting this potential requires even closer cooperation between the labour market and education institutions, increased digital skills and more coordinated use of resources. All higher education institutions have established a Council on Public and Private Sector Cooperation (RSA). Development of relevant MOOCs in cooperation with the social partners should be put on the agenda in these areas.

The Commission believes public funds should be allocated to a major proactive strategy for skills

development using MOOCs. The Commission recommends that the initiative be established as a scheme based on both competition and collaboration. Distribution of these funds can be done in various ways and must be considered in more detail by public authorities. For example, the funds can be made available to labour market players that actively seek to develop their skills. These provisions shall be developed and implemented in collaboration with relevant education providers. At the same time, the Commission emphasises that training measures must be co-funded by business and the government.

It is important to ensure that the needs of the social partners determine the courses that are supported. This requires cooperation between the government and the social partners. It is the Commission's opinion that substantial public co-funding is required to exploit the potential of MOOCs in a large-scale commitment to continuing and further education.

#### 14.5 The Commission's recommendations

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- The Commission recommends that cooperation between universities and university colleges and working life be used as an incentive in the funding system for higher education.
- The Commission recommends that the educational institutions and social partners strengthen their cooperation relating to continuing and further education, and that MOOCs be used as an instrument in this work.
- The Commission recommends granting public funds for a major public initiative relating to expertise development using MOOCs, which will require collaboration between the authorities and the social partners. The distribution of funds can be done in different ways, and must be considered in more detail by the public authorities.

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<sup>8</sup> KS (2014) *KommIT*. Available from: <http://www.ks.no/kommit> (Retrieved: 5 May 2014).

<sup>9</sup> Ministry of Local Government and Modernisation (2013) *National Budget 2014 – Allocation letter to Agency for Public Management and eGovernment*.

## Chapter 15

# Accelerated education and open admission to MOOCs

### 15.1 Background

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#### *Admission*

Internationally, one of the hallmarks of MOOCs is that courses are open and accessible to all. The principle of open access challenges current regulations for higher education in Norway if participants want a course diploma with credits that can be incorporated into a degree programme.

Pursuant to the Universities and University Colleges Act, only students who meet the requirements for admission to higher education, have the right to sit for examinations.<sup>1</sup> Higher Education Entrance Qualification is the most common path to higher education and is achieved in part through the completion of three years of upper secondary school, vocational subjects with supplementary courses or the 23/5 rule.<sup>2</sup> If you are 25 and have relevant experience in a field you want to study, you can be admitted to higher education on the basis of prior learning. You can also be admitted in any study through alternative admission, for example, through the so-called y-track (based on vocational experience and certification).<sup>3</sup>

The requirements for admission to universities and university colleges apply to both degree programmes and continuing education courses where credits are earned. Current regulations for admission to higher education are thus an obstacle to open admission to MOOCs with exams and credits at Norwegian institutions. Nor do the rules for admission as described above apply to shorter courses and continuing education where credits are not earned.

#### *Accelerated education*

Current regulations for admission to higher education have basically made it challenging for pupils from upper secondary schools to take courses that earn credits at universities or university colleges. As a result of the Knowledge Promotion Reform, emphasis was placed on systematising collaboration between higher education institutions and upper secondary education. The goal was a tailored programme so that upper secondary pupils can attend higher education classes. The programme is called accelerated education and also means that these pupils will be able to earn credits for examinations taken at a university or university college when they have met the admission requirements to higher education. This means that the pupils can take courses that can later be part of a degree while they attend upper secondary school.<sup>4</sup> The credits that pupils earn will count in the funding system for universities and university colleges on a par with that given to regular students.

Pupils who have passed an exam can receive a grade transcript from the university or university college. If pupils take an exam that is substantially different from that taken by regular students in the same course, this should be noted on the transcript.

Pupils participating in the programme will normally have the same requirements for assignments, exams and other mandatory activities required of ordinary students taking the course. The requirement to be admitted to the programmes is normally a grade of 5 or 6 from upper secondary education. If there are more applicants than available places, applicants will be ranked on the basis of grades in the subject. Such programmes at the university or university college level that are adapted to pupils in upper secondary education, normally require physical proximity to

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<sup>1</sup> The Ministry of Education and Research (2007) *Regulations relating to admission to higher education*, FOR-2007-01-31-173. Last amended FOR-2014-03-20-340.?? Available from: <http://lovdata.no/document/SF/regulation/2007-01-31-173> (Retrieved: 15 May 2014).

<sup>2</sup> You turn at least 23 during the admission year, have successfully completed higher education entrance qualification subjects and have at least 5 years of education or work experience.

<sup>3</sup> *ibid.*

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<sup>4</sup> The Ministry of Education and Research (2009) Report No. 44 (2008–2009) to the Storting *Education strategy*.

education institutions. The number of participating pupils has therefore so far been limited. For example, the University of Oslo offered mathematics courses to 30 pupils from Oslo and Akershus County in the spring of 2013.

Lower secondary level pupils have the opportunity to accelerate studies by taking upper secondary courses while they are in lower secondary school, cf. Section 1–15 of the Regulations to the Education Act. The programme is most relevant for pupils who can travel to a nearby upper secondary school and attend classes there. When the programme was introduced in 2008/2009, 622 lower secondary school pupils took exams in upper secondary school subjects. In 2013/2014, 1 414 lower secondary school pupils took upper secondary school subjects. 911 of them came from the counties of Oslo, Akershus, Vestfold and Buskerud.<sup>5</sup> Through “The virtual mathematics school”, lower secondary school pupils have been offered digital access to Mathematics 1T (first subject in upper secondary school). These pupils have been given access to digital resources (videos, quizzes, assignments) and have participated in a virtual class with teachers and peers located elsewhere.

## 15.2 The Commission’s considerations

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### *Admission*

Applicants’ academic qualifications have been an important reason for admission to higher education. Physical and academic capacity constraints at education institutions is another factor that has traditionally entailed a need for admission regulation in higher education. The Commission believes that the national need to regulate admission to credit-earning courses will be less for a MOOC than for ordinary campus studies in higher education. Scalable MOOCs do not have a physical ceiling on the number of participants who can follow a course. An open, digital gateway that provides access to the knowledge that higher education offers, will have a positive impact on skills development for individuals, the Norwegian labour market and for society as a whole.

The Commission therefore believes that open access is a dimension that is desirable to strive for

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<sup>5</sup> Ryste, H. T. (2014) “Vil tilby videregående fag til flere” (Will offer upper secondary subjects to more pupils), *Bergens Tidende*, 28 March 2014.

in Norwegian MOOCs. The Commission also sees that broader digital access for all groups of participants in higher education may have fundamental and economic consequences and repercussions for regular campus education.

The Commission believes issues related to open access for all, regardless of background, must be considered more thoroughly and as a matter of principle. Experience from MOOCs can be valuable contributions in the evaluation. The Commission therefore recommends trial admissions to MOOCs at Norwegian institutions for applicants who do not satisfy requirements for admission to higher education.

### *Accelerated education*

The experience with pupils who take accelerated education appears to have been positive. This shows that university colleges and universities can find flexible arrangements for adapting a higher education programme to pupils from upper secondary schools. Geographical distance and a small number of places limits how many upper secondary school pupils can be included in this scheme.

The Commission believes that more talented pupils in primary and secondary schools should be offered accelerated education. The Commission therefore believes that efforts should be made centrally to facilitate MOOCs for pupils in primary and secondary education. Courses in other subjects should also be developed. The Commission believes that such offers will serve as an academic stimulus for capable and motivated pupils. It will also provide an increased understanding of subject choices in higher education and can thus form the basis for more informed study choices.

## 15.3 The Commission’s recommendations

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- The Commission therefore recommends trial admissions to credit-earning MOOCs for applicants who do not satisfy traditional requirements for admission to higher education.
- The Commission recommends that preparations be made to allow more pupils in primary and secondary school to take accelerated education as MOOCs.

## Chapter 16

# The principle of free education and fees

### 16.1 Background

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The statutory principle of free higher education is laid down in Section 7-1 (1) of the Universities and University Colleges Act. It stipulates that state universities and university colleges cannot claim fees from students for ordinary courses leading to a degree or for vocational training courses. The principle of free education applies regardless of whether the education is on campus or web-based. Private higher education institutions can, however, charge student fees on certain conditions.

The Ministry of Education and Research has issued its own regulations on the right of universities and university colleges to charge fees in exceptional cases. Section 3-2 of the Student Fee Regulation stipulates that public institutions may charge student fees in the following instances:

- for courses
- for subjects/courses that are normally not part of study programmes that lead to a degree or vocational training
- for experience-based master's degree studies
- from students who fill vacant spots in study programmes or subjects/courses that are financed by contract.

Section 3-3 (1) of the Regulations also stipulates that, as regards study programmes or subjects/courses for which institutions cannot charge student fees, the institution also cannot charge students fees beyond actual costs linked to teaching materials.

### 16.2 The Commission's considerations

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Participants in an open MOOC will have various ambitions, depending on whether they are regular full-time students, are working and want to develop their skills or are simply academically curious of a new field. The emergence of a number of different variants of MOOCs may, in the opinion of the Commission, increase confusion and the room for interpretation in the current student fee rules. In some cases this may create different practices between institutions so that students are not treated equally with regard to fees.

The Commission believes that MOOCs in Norway should, as a point of departure, be free. At the same time, the Commission believes it is appropriate that the current regulations also permit institutions to charge fees, as laid down in Section 3-2 of the Student Fees Regulation. The Commission believes that the Ministry should undertake a review of the Student Fees Regulation so that the institutions' leeway becomes clearer with respect to any payment for MOOCs.

### 16.3 The Commission's recommendations

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- The Commission believes that Norwegian MOOCs should basically be free.
- The Commission recommends that the Ministry evaluate the Student Fees Regulation in order to clarify the institutions' leeway as regards payment for the MOOCs.

## Chapter 17

# Educational support

### 17.1 Current schemes

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The objective of the educational support system is to provide access to education, regardless of geography, age, gender, level of disability and economic and social conditions, cf. Section 1 of the Educational Support Act. The system aims to ensure that society and the private sector have access to skills and that education can take place under satisfactory working conditions, thus ensuring that coursework can be efficient.

Educational support is intended for subsistence during education, cf. Section 5 of the Act. Support may also be awarded for other expenses linked to the education, such as tuition and travel. As regards the award of educational support to individual students, there is a regulatory framework for admission requirements, the right to take exams, academic requirements, limits on how many years for which support may be awarded, application deadlines and age limits.

#### *Framework for the amount and duration of support*

Educational support is provided for the prescribed period of study for each programme. As regards combinations of higher education and other education to which the applicant is not entitled pursuant to the Education Act, support can be awarded for up to eight years. Over the course of these eight years, the student can receive support for up to one year, or 60 credits, of delays. The student can receive support for part-time education, with a minimum of 50 % student work load. The education programme must last at least one semester, which is four months in practice. Support will be awarded in proportion to the student work load. The support is disbursed as loans, and students who do not live with their parents can have up to 40 % of their basic support converted into an educational grant, given that they pass their exams. The grant part of the support amount depends on academic progression, which is measured for each semester. If the student takes fewer

credits than the norm for a semester, a smaller share of the loan will be converted into grants.

#### *Education programmes that are eligible for support*

Support can be awarded for higher education both in Norway and abroad. The main rule for approving support for Norwegian education is that it is included in the Norwegian education system, and has been approved pursuant to an education act. The fact that the education programme must be approved pursuant to an education act, also entails that the education programme has admission requirements. Higher Education Entrance Qualification is generally required in order to be admitted to higher education in Norway. Ordinary admission according to these rules is a precondition for the right to educational support.

The main rule for being entitled to support for foreign degrees is that NOKUT can recognise it as equal to Norwegian higher education at the bachelor's or master's level. Alternatively, it can also correspond to Norwegian Ph.D. education. Part-time education is eligible for support in Norway, but not abroad.

#### *Citizenship*

As a main rule, the student must be a Norwegian citizen in order to be entitled to Norwegian educational support. Citizens from EU/EEA countries and their family members are on par with Norwegian citizens if they have an employment connection to Norway, or have a permanent residence permit.

Foreign citizens from countries outside the EU/EEA may receive support if they have a special connection to Norway due to their employment, education, spouse, family or other circumstances, or have entered the country for political or humanitarian reasons. This group's support entitlement does not cover entire study programmes abroad.



### *Support for education abroad*

As regards education abroad that is eligible for support, this support will be disbursed according to the normal rules for subsistence, travel and tuition. The amount for subsistence is the same as in Norway. Larger amounts are awarded for travel and tuition than for education in Norway, and a certain percentage of tuition support is provided as grants.

### *Further details concerning rules for support to web-based education*

Support may be awarded for web-based education offered by Norwegian higher education institutions, but not foreign web-based education. The Norwegian web-based education must correspond to higher education at public education institutions and must conclude with an exam. As regards web-based education in Norway, support is awarded according to normal rules, so the education must, as a main rule, be included in the Norwegian education system. Support may be provided for travel and tuition, in addition to subsistence.

Support for students taking foreign web-based courses has not been a priority. There are two reasons for this; on one hand, the objective of supporting study abroad is that the students, in addition to the formal learning, take part in a different society, and learn culture and language from the inside, which will enrich Norwegian society when the education is completed. Web-based education abroad is not considered study abroad in this context. Foreign web-based education provisions also feature significant variations, which means it is not always easy to have confidence in the quality of this type of education.

The Ministry is working on proposals to open up for support for web-based education offered by higher education institutions in the EU/EEA. This is a consequence of ESA (EFTA Surveillance Authority) pointing out that the distinction between Norwegian and foreign online schools violates the Services Directive (Directive 2006/123), as well as the general prohibition against discrimination in Article 4 of the EEA Agreement, as regards the entitlement to support for tuition. ESA's opinion is that Norway is obliged to treat both providers and recipients of web-based education equally, regardless of the geographic location of the higher education institution. This equal treatment includes the students' right to support for tuition charged by the higher education insti-

tution. The equal treatment obligation applies to higher education institutions established in the EU/EEA. The Ministry presumes in this work that the usual rules for approval of support will apply to the education programme. Among other things, this means that web-based education in its essentials must be organised as traditional higher education.

## **17.2 The Commission's considerations**

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MOOCs vary considerably as regards who is providing the education, how the education is structured, the cost of the education and the academic outcome of the education. Today, the vast majority of MOOCs on an international scale are open and without admission requirements. MOOCs developed in Norway and structured in line with current regulations for higher education will, in the opinion of the Commission, not pose any challenges as regards the current educational support system. Support is already provided today for web-based courses with a minimum of 30 credits, given that the student work load is 50 % or more.

However, the Commission sees that a number of different MOOC variants will affect the students' ability to receive support through the current educational support system. MOOCs are characterised by the fact that there are no admission requirements for the courses, as is the case in higher education. Furthermore, the foreign courses often yield less than 30 credits. It is also unclear for many of the course programmes how to acquire sound knowledge concerning the education quality, how formal assessments are made and how many credits a course will earn.

There are already a number of challenges linked to the educational support system for web-based courses. MOOCs contribute toward rapid upscaling of volume and globalisation of web-based provisions, and it is possible that large groups of students may utilise such education services. This means that the authorities should identify new solutions to challenges that quickly satisfy the Norwegian educational support system's needs in line with the growth in MOOCs and MOOC participants.

In order for additional participants in MOOCs to be included in the Norwegian educational support system, the current educational support system will have to be expanded. The Commission cannot provide a detailed proposal for the content of such an adjustment in this report. The Commission will therefore propose a review of the educa-

tional support system with the aim of stimulating more students to enrol in MOOCs and other forms of web-based provisions, or provisions that combine web-based and campus education.

In general, the Commission wants to point out that the Norwegian educational support model is excessively based on the idea that there is a period in life when one pursues education and a period when one is employed. The Commission believes that this model may turn out to be poorly adapted to the new trends in higher education, which facilitate alternating between education and work throughout large parts of one's life. The Commission is aware that this issue touches on the distinction between financing undergraduate education and continuing and further education.

In reviewing the educational support system one must take into consideration the fact that there are different groups of students. It is relevant to examine the system in relation to both Norwegian and foreign MOOC participants, as well as both Norwegian and international MOOC provisions. In this connection, the Commission finds that there are four groups of participants against which the educational support system must be reviewed. These are highlighted in Figure 17.1.

Citizens from EU/EEA countries and their family members are on par with Norwegian citizens if they have an employment connection to Norway, or have a permanent residence permit. Foreign citizens from countries outside the EU/EEA may also receive support if they have a special connection to Norway, cf. Chapter 17.1 above. Considerations regarding Norwegian participants will thus also have consequences for foreign participants. This means that considering potential changes to the educational support system for Norwegian participants, one must also have in view the consequences for foreign participants.

*Flexibility as regards student work load and progression*

The full-time student is the goal of Norwegian education policy. Nevertheless, the Commission believes that the limit of 50 % student work load in order to satisfy the criteria for educational support is hardly adapted to the new web-based, flexible services within higher education. The preliminary data available on how students use MOOCs indicate that many choose to take courses that result in less than 50 % student work load. The Commission believes that it can be very beneficial to society and working life that people are enrolled in higher education with less than a 50 % student work load. A system where students can distribute their student work load over a greater number of years will be important for those who, for different reasons, cannot study full-time, e.g. due to work, family, illness or other circumstances.

Another key element of MOOCs and other forms of web-based education is that they increasingly free the student from the time aspect. The Commission has noted that the new services within higher education challenge the principles of the educational support system as regards progression and completion within a given time-frame. The Commission also believes that the support system should be more focused on results in the form of credits earned, and less focused on the time spent earning these credits.

*Support for courses without admission requirements*

The Commission also believes that arrangements should be considered where students can receive educational support even though the course of study has no admission requirements. Here, attention should be devoted to the fact that the student is completing an education that yields a formal diploma. The Commission has noted that one of the arguments against equal treatment of

<b>Norwegian participants in Norwegian MOOCs</b>	<b>Foreign participants in Norwegian MOOCs</b>
Norwegian participants in foreign MOOCs	Foreign participants in foreign MOOCs

Figure 17.1 Groups of participants in reviewing educational support

Norwegian and foreign web-based education is concern linked to the quality of certain foreign services. The Commission believes that educational support should not be provided for all forms of foreign web-based education, and that it is crucial to have good systems in place for quality-assurance of these services. The Commission is of the opinion that the Norwegian educational support system should be able to include foreign web-based education that has been quality-assured by foreign players.

#### *Support for web-based education outside Norway*

The Commission has noted that ESA has pointed out that the distinction between Norwegian and foreign web-based schools as regards the right to apply for support for tuition, violates the EEA Agreement. The Commission has also noted that the Ministry of Education and Research is working on proposals to open up for tuition support for web-based education offered by higher education institutions in the EU/EEA. The Commission supports development in the direction of increasingly equal treatment of Norwegian and foreign web-based education. The Commission believes that this should also apply outside the EU/EEA.

The Commission presumes that the economic impact of any changes in the education funding scheme can be vast, particularly in relation to foreign students. The Commission therefore recommends that the financial consequences relating to foreign students be included in the reviews on changes in the education funding scheme.

### **17.3 The Commission's recommendations**

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- The Commission recommends examining whether educational support should be granted to participants in MOOCs and other web-based courses with a flexible student workload and duration.
- The Commission recommends examining whether educational support should be granted to students taking MOOCs and other web-based courses, both inside and outside the EU/EEA.
- The Commission recommends that financial consequences relating to foreign students must be included in the reviews of changes to the educational support scheme proposed by the Commission.

## Chapter 18

# Economic and administrative consequences of the Commission's recommendations

The mandate tasked the Commission with recommending how Norway should relate to the development of MOOCs. The Commission shall examine and quantify the economic and administrative consequences of its proposals, of which at least one proposal can be implemented within unchanged use of resources in the higher education sector. Chapters 18.1 and 18.2 assess the economic and administrative consequences of the Commission's recommendations. In Chapter 18.2, the Commission considers the manner in which the recommendations can be funded.

The Commission believes that MOOCs will help further develop the Norwegian knowledge society by expanding access to and quality of higher education, and will be a good tool for skills development in the workplace and for lifelong learning.

The Commission believes that the Norwegian authorities, education institutions and social partners should have high ambitions of quickly exploiting the opportunities arising from MOOCs.

The Commission is of the opinion that, to date, digitisation of higher education in Norway has not been fast enough, and that the institutions' implementation capacity has been too weak. If the responsibility is placed solely on the institutions, the Commission believes that the development will not proceed quickly enough. The Commission therefore believes that national authorities must facilitate increased digitisation of higher education and the development of MOOCs through incentives and development funds to support the institutions' work. The national initiative should last over a five-year period. The need for further initiatives beyond this period should be considered.

The Commission believes that there is a need for a joint initiative by the authorities amounting to NOK 130–380 million annually over five years. At the same time, the institutions must be aware of their responsibilities and take clear steps to stay

abreast of the developments the Commission believes will take place. The Commission therefore also directs a number of recommendations directly at the institutions.

### 18.1 Recommendations to the authorities

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#### 18.1.1 National initiative with budgetary consequences

The Commission recommends a national initiative amounting to NOK 130–380 million annually over five years. The need for further initiatives beyond this period should be considered. The Commission believes the initiative is necessary to enable institutions to quickly provide MOOCs of high quality and relevance, and to the extent the Commission deems necessary.

The national initiative consists of six recommendations directed at the authorities:

- The Commission recommends that preparations be made to give Norwegian institutions access to one or more MOOC platforms adapted to Norwegian and Sámi languages, as well as to the profile of Norwegian institutions (Chapter 11).
- The Commission recommends that preparations be made to allow the institutions to use a central support function in the development of MOOCs. A primary objective for this support function is to assist in the development of relevant educational and technological skills at higher education institutions (Chapter 11).  
*Total amount: NOK 40 million.*
- The Commission recommends systematic effort towards research-based knowledge development regarding use of technology in higher education (Chapter 10).  
*Total amount: NOK 15 million.*
- The Commission recommends establishing a community for research-based knowledge

development, development work and knowledge sharing related to learning analytics (Chapter 10).

*Total amount: NOK 15 million.*

- The Commission recommends allocating public funds for a major public initiative relating to skills development using MOOCs, which will require collaboration between the authorities and social partners. The distribution of the funds can be done in various ways, and must be considered in more detail by the public authorities (Chapter 14).

*Total amount: NOK 50–300 million.*

- The Commission recommends that preparations be made to allow more pupils in primary and secondary education to take accelerated education as MOOCs (Chapter 15).

*Total amount: NOK 10 million.*

The Commission believes the authorities should facilitate infrastructure and support systems that make it possible for Norwegian institutions to develop and offer high-quality MOOCs. Firstly, Norwegian institutions must have access to one or more MOOC platforms. Secondly, a national support function must be built for the institutions that they can use in developing MOOCs. A primary objective of this support function will be to assist in the development of relevant educational and technological expertise in the higher education sector. An offer of support services is already under development by BIBSYS. This offer is currently on a small scale, and is aimed at the few MOOCs that are already under development. The costs of developing and providing access to MOOC platforms that include both technological and pedagogical support will increase along with the development of MOOCs. The majority of costs will be for the support services. The offer must be developed as the scope of MOOCs increases. The Commission estimates that the total annual appropriation should be a minimum of NOK 40 million.

The Commission recommends the initiation of a systematic effort towards research-based knowledge about the use of technology in higher education. The annual commitment should be NOK 15 million. In addition, the Commission proposes the establishment of a community for research, development and knowledge sharing related to learning analysis. The annual commitment should be 15 million. The structure and form of the two measures must be examined vis-à-vis the current players and policy instruments.

The Commission believes that MOOCs can boost the skills needed in the workplace. It is the Commission's opinion that substantial public co-funding is required in the initial phase of a few years in order to exploit the potential of MOOCs in a large-scale commitment to continuing and further education. For example, in 2014, the Ministry of Education and Research allocated NOK 10 million to the Centre for ICT in Education to develop MOOCs for further education of mathematics teachers. The Commission believes that NOK 50 million annually is a minimum of what is required to get started with development and testing of MOOCs for continuing and further education. The Commission believes that the need is far greater than this, given Norway's ambition as a knowledge society. The Commission refers to input from organisations in working life documenting a large unmet need for expertise, cf. Chapter 14. The Commission therefore recommends escalation towards a significantly higher amount than NOK 50 million a year, but has not examined the cost requirements in detail. The Commission therefore recommends allocating NOK 50–300 million annually to a greater commitment to continuing and further education. The distribution of funds may be done in various ways, and must be considered in more detail by the public authorities. For example, the funds can be made available to labour market players that actively seek to develop their skills. The Commission emphasises that skills measures must be a collaboration between working life and government.

The Commission therefore recommends trial admissions to credit-earning MOOCs for applicants who do not satisfy traditional requirements for admission to higher education. The Commission recommends that preparations be made to allow more pupils in primary and secondary education to take accelerated education as MOOCs. The Commission believes that NOK 10 million should be appropriated annually for the development of such programmes.

### **18.1.2 Recommendations to the authorities within applicable budget limits**

In addition, the Commission recommends a number of national initiatives supporting the main initiatives mentioned above, and which can be funded within the current financial framework:

#### *Promotion*

- The Commission recommends that Norwegian MOOCs be aggregated and promoted through a dedicated national portal (Chapter 11).
- The Commission recommends that Norway initiate a Nordic cooperation with the objective of a joint initiative to promote Nordic MOOCs internationally (Chapter 11).

#### *Open learning resources*

- The Commission recommends establishing an overview of available open digital learning resources for higher education (Chapter 12).
- The Commission is of the opinion that Norwegian authorities should work actively, also internationally, to promote the principle of open digital learning resources and open access in higher education (Chapter 12).

#### *Admission*

- The Commission is of the opinion that Norwegian MOOCs in principle shall be free of charge (Chapter 16).
- The Commission recommends trials with admission to credit-earning MOOCs for applicants who do not fulfil applicable requirements for admission to higher education (Chapter 15).

#### *Crediting*

- MOOCs with exams and credits, both from Norwegian and foreign institutions, may be included in the current degree system. Consequently, the Commission does not see the need for changing the Norwegian regulations for accreditation and crediting of subjects (Chapter 9).

### **18.1.3 Recommendations to the authorities regarding further studies**

In this recommendation the Commission has assessed how the MOOC development affects a number of areas within higher education. In the following areas the Commission sees a need for more detailed study and consideration than what the Commission has been able to do:

#### *Quality*

- The Commission believes that there is a need for stronger incentives for increased teaching quality, as well as for more innovative types of learning. The Commission therefore recommends a review of the general range of policy instruments and incentive schemes for the education area at the individual, institution and national level (Chapter 10).
- The Commission believes that it is necessary to strengthen the digital skills of employees in the higher education sector. The scope must, however, be mapped in more detail. The Commission recommends that funds be granted to strengthen digital skills (Chapter 10).

#### *Infrastructure and rights*

- The Commission recommends that questions regarding handling of identity in MOOCs be included in the assessments regarding digital evaluation and exams (Chapter 10).
- The Commission recommends that the questions relating to copyright and licensing be considered more closely in order to make it easier to develop open MOOCs (Chapter 12).

#### *Crediting*

- The Commission recommends a national assessment of how the institutions' practice of crediting subjects can be improved (Chapter 9).
- The MOOC Commission recommends having the Ministry-appointed commission tasked with assessing skills outside the formal education system also assess skills developed through MOOCs without exams and credits (Chapter 9).

#### *Funding*

- The Commission recommends that the Ministry evaluate the Student Fees Regulation in order to clarify the institutions' leeway as regards payment for MOOCs (Chapter 16).
- The Commission recommends examining whether educational support should be granted to participants in MOOCs and other web-based courses with a flexible student work load and duration (Chapter 17).
- The Commission recommends examining whether educational support should be granted to students taking MOOCs and other

web-based courses, both inside and outside the EU/EEA (Chapter 17).

- The Commission recommends that financial consequences relating to foreign students must be included in the reviews of changes to the educational support scheme proposed by the Commission (Chapter 17).

The Commission finds that the Ministry of Education and Research, in partnership with relevant parties, must initiate the different studies mentioned above. The Commission believes that the studies can be carried out within the framework of the Ministry of Education and Research or by already appointed commissions.

#### 18.1.4 Recommendations to the funding committee

A committee has been appointed to review and evaluate the funding scheme for higher education. The MOOC Commission has made two recommendations to this committee:

- The Commission recommends that incentives and policy instruments supporting cooperation, division of labour and specialisation between the institutions be considered by the committee that will review and evaluate the funding system for the Norwegian higher education sector (Chapter 13).
- The Commission recommends that cooperation between universities and university colleges and the private and public sectors be used as an incentive in the funding system for higher education (Chapter 14).

If MOOCs continue developing at the same rate in Norway as we have seen internationally, the Commission believes that several aspects of MOOCs could challenge the current financing of higher education institutions. If Norwegian institutions gradually develop a considerable number of credit-earning MOOCs, and a large number of Norwegian and international students use such services, this could result in increased credit production, and thus funding, for the institutions. Total allocations to higher education in Norway could also be affected if many Norwegian students choose MOOCs abroad, and if this provides the right to educational support. The development of MOOCs could thus increase the need for growth in higher education allocations. These are important issues that must be assessed at a national level, and by the commission tasked with

assessing the financing of higher education institutions.

## 18.2 Recommendations to universities and university colleges

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In Norway, universities and university colleges are responsible for developing study programmes and ensuring the quality of the courses. The institutions consequently also have a special responsibility to adopt the measures they deem appropriate to support the quality of the courses. The Commission believes that the digitisation of education by developing and offering MOOCs, would be good instruments for the institutions' work on quality. In Norway, MOOCs play only a modest role in universities and university colleges' overall strategies. Several of the Commission's proposals are therefore directed at the institutions:

### *Quality*

- The Commission recommends that experience and knowledge from the work on quality in flexible and web-based education be applied in the development of MOOCs (Chapter 10).
- The Commission recommends that the institutions further develop employee skills in use of technology in education (Chapter 10).
- The Commission recommends that the institutions take responsibility for further development of students' digital skills (Chapter 10).
- The Commission presumes that the institutions base their development of MOOCs on the principles of universal design (Chapter 10).
- The Commission recommends that the institutions test new types of educational assessment and exams (Chapter 10).

### *Infrastructure and rights*

- The Commission recommends that, in developing MOOCs, the education institutions clarify appropriate agreements for the students' and employees' rights to their own material (Chapter 12).
- The Commission recommends that the institutions stimulate production of open digital learning resources, and that all learning resources are marked with terms of use (Chapter 12).
- The Commission recommends that the consideration for universal design be safeguarded when choosing the platform (Chapter 11).

### *Crediting*

- The Commission believes that the institutions must facilitate a more streamlined practice for crediting subjects across Norwegian institutions (Chapter 9).
- The Commission is of the opinion that the institutions must develop good schemes for evaluating the overall qualifications of persons who have completed MOOCs (Chapter 9).

### *Cooperation*

- The Commission encourages Norwegian institutions to utilise the opportunities provided by MOOCs for professional cooperation, division of labour, specialisation and efficient exploitation of resources (Chapter 13).
- The Commission recommends that Norwegian institutions that want international cooperation on MOOCs take advantage of the opportunities for European cooperation presented by the EU's Erasmus+ education programme (Chapter 13).
- The Commission recommends that the education institutions and social partners strengthen their cooperation as regards continuing and further education, and that MOOCs be used as an instrument in this work (Chapter 14).

Higher education institutions have extensive authority to make their own priorities and choices when it comes to use of resources. In the opinion of the Commission, the institutions have greater opportunities to develop and test MOOCs than what has been done so far. MOOCs must be seen as an instrument for educational development, and should be prioritised and implemented in the same way as the institutions otherwise carry out quality development of education programmes within their allocated resources.

## **18.3 Funding of the Commission's recommendations**

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Digitisation of education and development of MOOCs can help improve the quality of education, increase access to education and enhance skills in social and working life. Use of MOOCs can also facilitate academic cooperation, division of labour and specialisation in the higher education sector. Overall, this can contribute to better and more efficient use of resources in the sector

and society at large. The Commission has not quantified the social consequences of this.

The Commission believes the potential for more efficient resource utilisation is considerable. How much of this potential can be realised will depend on the extent to which the institutions are able to exploit the opportunities provided by the use of technology and MOOCs. The freed-up resources can be used to enhance the quality of education, including through the proposed measures the Commission directs at the institutions in this recommendation.

### *Proposals with budget consequences*

The Commission believes that, in a five year period, national authorities must take responsibility along with the institutions. The Commission proposes the allocation of national funds for an national initiative for MOOC development, cf. Chapter 18.1. The Commission has proposed measures within the national initiative amounting to NOK 130–380 million annually. Funding for the development of digital skills in the sector will depend on the proposed study on this subject, and will be in addition. The Commission believes that the national initiative should primarily be achieved through increased appropriations over the national budget.

Another way to fund the Commission's proposals on national measures within the current framework is to set aside strategic national funds within the aggregate, current appropriation to the universities and university colleges. Parts of the current strategic funds in the funding system must be reprioritised and set aside specifically for the digitisation of higher education and MOOC development. This will be a scheme pursuant to the model for allocating cooperation, division of labour and concentration (SAK) funds, cf. Chapter 13.

### *Recommendations within the current budget framework*

The Commission recommends a number of measures that will not require specific additional financial resources in order to be implemented.

Many of the Commission's proposals are aimed directly at the universities and university colleges. Within their own budget frameworks, the institutions are responsible, among other things, for developing and ensuring the quality of their programmes and developing the skills of personnel. The Commission believes that the institutions increasingly need to utilise the availa-



ble latitude in prioritising their own budget frameworks and developing clearer objectives and measures related to the digitisation of education and development of MOOCs. The Commission therefore believes that the proposals aimed at universities and university colleges can be implemented within the current framework. These are discussed in Chapter 18.2.

The Commission believes funding of the studies can take place within the Ministry of Education and Research's budget framework or within already appointed commissions. These proposals are discussed in Chapter 18.1.3.

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## Appendix 1

# Memo from Olav Torvund (D.J.) (UiO)

## 1 Copyright related to traditional education and to MOOCs

The Copyright Act contains a number of provisions regarding the use of protected works in education.<sup>1</sup> These were designed with traditional classroom/auditorium teaching in mind, as well as production and distribution of educational material in the form of hand outs, etc. in such contexts. In such teaching, the works that are used are made available to a limited group, namely those who are present in class.

With MOOCs, the teaching is published. They represent a departure from the traditional teaching role and transition to something more reminiscent of publishing.

I have chosen to initially review the general rules of copyright law followed by a review of the provisions for the use of intellectual property in teaching. My final remarks concern MOOCs in particular.

### 1.1 Overview of copyright law

#### 1.1.1 Brief summary of what is protected

Copyright protects intellectual property. An intellectual property is something that is created and that has been expressed. It can consist of text, images, music, film, etc. An intellectual property must be the result of independent creative effort. It should be original in the sense that it is something you have created, but there is no requirement that it must be something entirely new. Much of what is created are variants over familiar topics. The threshold for whether something is protected, is one of the most difficult issues in

copyright law. I will not go into further detail about this in this context.

Ideas are not protected. Utilising other people's ideas as a starting point for creating your own work does not constitute copyright infringement.

Government documents are not protected. You can freely cite laws, regulations, judgments, official reports, etc.

Knowledge is free. No one has a copyright on knowledge, even in cases where it is clear that someone is presenting new knowledge. A copyright protects the form you have used to present the knowledge, not the content of what is presented. The textbook example often used is that Einstein was never granted a copyright for his theory of relativity, but he held the copyright to the articles in which he presented the theory.

For practical purposes, one can assume that one can freely reproduce facts and knowledge from the works of others, such as from textbooks. But when the actual work is reproduced in whole or in part, one should assume that this is protected by copyright.

#### 1.1.2 Period of protection

A copyright lasts 70 years after the author's death. At this point, the work enters the public domain and can be freely used. Today, we can freely reproduce Ibsen's and Bjørnson's writings and Edvard Grieg's music.

For music performances, performing artists' rights come in addition to the author's rights. A performing artist's performance is protected for 50 years from the end of the year in which the performance took place, or a recording was released. This will be extended to 70 years, but it will not take effect for performances that took place or releases prior to October 1962. This means that we can freely utilise old recordings of many classical music works, but not more recent recordings of the same.

<sup>1</sup> Ministry of Culture (1961) *Act relating to copyright in literary, scientific and artistic works, etc. (Copyright Act)*. Last amended ACT-2013-05-31-26. Available from: <http://lovdata.no/document/NL/law/1961-05-12-2> (Retrieved: 15 May 2014).

### 1.1.3 *Point of departure: Consent is required*

The principle is that consent is required to make copies of intellectual property or make the work available to the public. When a work is copied into, for example, a PowerPoint presentation, copies of the work are presented. When this is presented in class, the work is performed. Performance in teaching will usually be performing for, and thus rendering it available to, the public.

In copyright terminology, exhibiting only includes exhibiting a single copy. In practice, this could be relevant for artworks where an original or a reproduction is exhibited. According to Section 20 of the Copyright Act, copies of published works of art or photographic works can be publicly exhibited in an educational context. It is therefore not necessary to go into detail on this. When something is presented using technical aids, such as when projecting on a screen, it is, in terms of copyright law, a performance, not an exhibition. A film is performed, it is not exhibited.

One can of course obtain the originator's consent. However, in many situations this is impractical. A number of provisions provide the right to exploit a work of intellectual property in teaching.

### 1.1.4 *Compulsory licensing and extended collective licensing*

In some areas we have provisions that provide compulsory licensing. This means that you can use a work in the specified manner without the prior consent of the copyright holder. But compensation must be paid for their use.

Norway also has a number of provisions on extended collective licensing. In practice it may be difficult to clear rights with the individual originator, simply because one does not know how to get in touch with the person. An originator can leave it to others, such as an organisation, to manage the rights on their behalf. This is common for composers and songwriters, whose rights in Norway are managed through TONO. This model covers only those who are members of the organisation and have given them a mandate to manage their rights. There is comprehensive international cooperation in music, so foreign composers are also represented by TONO.

This model will not work in places where unionisation rates are low, or where organisations that administer rights in this way do not exist.

Extended collective licensing is a Nordic construction. This means that an organisation may enter into agreements that apply to all originators

in their field, regardless of whether they are directly represented by the organisation or not. You enter into an agreement with the organisation, and compensation is paid for use. The compensation is then distributed to copyright holders. An extended collective licence is more flexible than a compulsory licence.

Entering into an extended collective licence firstly requires the existence of a legal provision stipulating that an extended collective licence covering the use in question can be entered into. These legal provisions form the framework for the extended collective license. Secondly, there must be an organisation representing the affected licensees.

The extended collective licences that most people come into contact with are copying agreements with Kopinor.

### 1.1.5 *Free licences and other licences that provide consent*

Today, many copyright holders choose to make their works available with free licences where the author consents to certain usage. The most widespread licences relevant to teaching are Creative Commons licences. The licence will then specify the kind of use that is permitted, and you do not have to obtain a new consent or pay compensation as long as the works are used in compliance with those licences. The licenses will typically allow redistribution of the works.

There are special online collections of music, images, etc. that are made available on such terms, and can be freely used. It is also possible to set up a search on Google to only search for material that is marked to indicate that this type of distribution is permitted.

It is also of practical importance that YouTube includes in its normal terms of use that those who upload videos to YouTube must, among other things, accept distribution. Unless special reservations are made, clips from YouTube can basically be used in teaching. But part of the problem with services like YouTube is that we cannot be sure that those who uploaded a video actually had the right to do so or to give consent for further distribution. Whatever the terms of use may state, we cannot be sure that a potential permission is valid.

### 1.1.6 *Right of quotation and use of images*

In some cases, works can be used freely, i.e. so that it is neither necessary to obtain permission nor pay compensation. The right of quotation is of

practical importance. Under Section 22 of the Copyright Act, you can quote from a published work in accordance with proper usage and to the extent warranted by the purpose.

We can quote excerpts of works, or even smaller works in their entirety. When we quote pursuant to Section 22, it follows from Section 11 that the source shall be stated “in the manner required by proper usage”. One can basically quote from any type of work.

The purpose of the right of quotation is not that we should be able to utilise bits of other people's intellectual property without asking for permission or without paying. It is a provision that safeguards general freedom of speech and freedom of discussion. It would have been untenable if one had to ask permission to quote. You could then end up being able to quote what you agree with, but not what you want to criticise. We can, if we have earned it, enjoy being quoted with articulate and good statements. But we must also accept being quoted and criticised when we have written something that was perhaps not so smart when it comes down to it.

One can only quote from works that have been published (with the author's consent). Many of us have certainly written and said stupid things in anger, in failed attempts to be a writer, youthful bravado, tumultuous love or in other situations, which fortunately have never been made public. The rationale for the right of quotation is not so far-reaching that we must accept being confronted with quotes of something we may well have written or said, but never made public.

In order to be entitled to quote under Section 22 of the Copyright Act, the quote must be put into context. One must make it a part of one's work. Sometimes the quote can be what is discussed. But it can also be an example for illustration.

One can in principle also quote images, but it is in practice difficult to ground the use of imagery in the right of quotation. Special provisions exist regarding the use of images. For teaching, Section 23 is primarily applicable. Its first subsection reads:

Issued works of art and issued photographic works may be reproduced in connection with the text of a critical or scientific treatise which is not of a generally informative character, when this is done in accordance with proper usage and to the extent necessary to achieve the desired purpose.

It must therefore be a critical or scientific treatise. The threshold for what should be considered “scientific” is not particularly high. The treatise shall not be “of a generally informative character”. The provision likely envisioned art books, which can have a scientific nature, but also be typical “coffee table books” that cater to the interested public. The first subsection is a free use provision, so consent is not necessary and compensation shall not be paid.

The second subsection of the provision expands this somewhat. It reads:

Subject to the same limitation, an issued photographic work may also be reproduced, on payment of remuneration, in critical or scientific treatises of a generally informative character and in connection with the text in works intended for instructional use.

We should note here that this only includes photographic works, not art. There is still a requirement for this to be critical or scientific works, but it may be of a generally informative character. Furthermore, the provision includes texts intended for instructional use. This is a compulsory license. It is not necessary to obtain consent. Compensation must, however, be paid for their use.

The final subsection states that the provision does not provide the right to reproduction in machine-readable form, unless this concerns a non-commercial reproduction pursuant to the first subsection. We can therefore reproduce images in connection with the text in critical or scientific treatises that are not of a generally informative character, also in machine-readable form, as long as the reproduction is not commercial.

This provision means that scientific publications that also reproduce artworks and photographic works can be made available in open archives. But even if the article itself will not be “commercial”, the publication will be if it is published by an ordinary publisher engaged in commercial publishing.

The artwork that forms part of the background can be freely reproduced when it plays a subordinate role in the context. It is thus not necessary to remove the art from the walls, for example, to take a picture of a person. Art that is permanently set up on or near public roads can generally be freely reproduced. This does not apply if the work is clearly the main subject and the rendering is exploited commercially.

### 1.1.7 *Recording own performance*

Section 13 of the Copyright Act gives teachers and pupils the right to record their own performance for instructional use. It must be assumed to be particularly useful for instruction in music, drama and other contexts where the actual performance is the topic of the instruction. However, the provision is not limited to this.

One can reproduce teachers' and students' own performances under this provision. It does not authorise recording performances by others, even though this also happens to be used in the teaching.

This provision is not limited to public schools or other education institutions, and must therefore apply to all teaching situations.

Recordings made under this provision cannot be used for any other purpose.

### 1.1.8 *Compulsory licences for the use of works during public examinations*

Under Section 13a of the Copyright Act, copies of a published work can be made for use in a public examination. "Public examination" includes, according to the legislative history, "examination at public education institutions also includes examinations at private institutions that have a statutory right to conduct examinations". Under the current rules, this must mean primary and secondary schools that are approved under the Private Education Act, as well as universities and university colleges accredited under Section 3-1 of the Universities and University Colleges Act.

Examinations at private education institutions without state accreditation will not be public examinations. Any examinations in connection with continuing and further education courses that do not earn credits are most likely also excluded.

We should note that the work must be published, it is not sufficient that it has been made public, see Chapter 1.1.6.

### 1.1.9 *Extended collective licensing for education*

Section 13b of the Copyright Act authorises entering into extended collective licences for use in education. You can produce copies of published works for your own teaching when the extended collective licence terms are fulfilled, which in practice means that the education institution in question must have an agreement with the organi-

sation that represents authors in the relevant area. An agreement with Kopinor is required for "everything that can be printed".

An agreement with Norwaco is required in order to record broadcasts. One will then be able to produce copies to the extent permitted by the agreement. Not all television channels are included in this agreement.

At a higher education level, Norwaco will enter into agreements with each institution. For primary, lower and upper secondary schools, the agreement is entered into with the school owner, which means the individual municipality for primary and lower secondary schools, and the county authorities for upper secondary schools. All county authorities have an agreement with Norwaco. However, last I checked, many municipalities had not entered into such agreements. This means that schools in municipalities that have not entered into an agreement with Norwaco, do not have the right to record television programmes for use in education. Agreements are entered into for each individual private school.

### 1.1.10 *Collective works for use in education*

According to Section 18, collective works composed of works from a larger number of authors can be copied for use in religious services or education. Minor parts of literary, scientific and musical works or short works of this kind, can be reproduced. At least five years must have passed from the end of the year the work was published. The authors are entitled to remuneration, so this is a compulsory licencing provision.

This is primarily a textbook, songbook and hymn book provision. You can assemble a collection of texts, songs and musical pieces. Though one can in principle also assemble other course materials according to this provision, it is not very practical to create course materials in the form of anthologies where all works are older than five years.

The provision also authorises making collections of recorded music. However, digital recordings can be read by a machine, and are therefore not allowed. Making such collections on cassette tapes or other analogue recording media is not very practical.

The collective works must be intended for specific use in teaching, but this does not mean that it cannot also be available for normal sale. "Skolens sangbok" (School songbook) can be sold at normal booksellers if it was produced in accordance

with this provision. However, if the book was made for the general public, it cannot be made pursuant to this provision. In 1991, Brikt Jensen published "*Vår egen litteratur. Brikt Jensens lesebok for de tusen hjem*". This is a textbook that largely corresponds to textbooks used in Norwegian schools. However, since it is not made for educational purposes, it could not have been published without acquiring consent.

The provision does not allow reproduction in a machine-readable form. In principle, the provision conflicts with the InfoSoc Directive (Copyright Directive).<sup>2</sup> However, this Directive contains what is called a "grandfather clause", which means that individual countries can continue certain fair use rules that already existed in national legislation before the Directive was adopted. One of the conditions is that reproduction only takes place in analogue form.

## 1.2 Free performance in certain contexts

### 1.2.1 Main rule: religious service and education

The basis is that the author has the exclusive rights for public performance of his/her works. However, this exclusive right does have certain limitations. Initially, I would like to refer to the right of quotation, see Chapter 1.1.5. In education in particular, quotes will often be performed. This provision applies to performance beyond what is established in the right of quotation.

According to Section 21, a published work can be performed publicly in connection with religious services and education. The provision is based on the consideration for religious, cultural and societal interests and has been called a "charitable exclusion".

In this connection, education includes all forms of education, public and private, free or not. Normal informative activities are not included. The preparatory works discuss the use of music in dance schools in particular, concluding that this is also education covered under this provision, and that remuneration cannot be required for music performances in connection with such education.

Singing a song or reading a text aloud constitutes performance. However, "performance" has in practice become an omnibus term which

includes all forms of making something available that is not providing or showing copies.

When something is presented on a screen using a projector, this is a performance, not an exhibition. From a copyright perspective, a film is performed, not exhibited. Furthermore, performance comprises "*broadcasting or other transmission by wire or wireless means to the public, hereunder when the work is made available in such a way that the individual can choose the time and place of access to the work*", see Section 2 (3) of the Copyright Act. In practice, the last formulation includes making works available via the Internet. Section 21, cf. Section 2 (3), thus states that works can be made available via, e.g., the Internet as a part of education, etc. This is probably an unintentional consequence of making works available in this way being defined as performance. However, this does not apply without modifications.

In practice, however, you will need to have a copy of a work in order to make it available via the Internet. If you have a copy that can be made available, one will generally be able to make this available via the Internet. It is for example possible to make a CD available via the Internet by inserting it in a CD player that can be reached via the Internet. However, this is not particularly practical. A copy will usually be produced for this purpose. Section 21 does not authorise production of such copies.

An extended collective licence is generally used for producing copies for use in education. In its agreements, Kopinor has allowed for works within their agreement scope (books, articles, etc.) to be made available through closed learning systems such as Fronter and corresponding systems. However, the agreement does not authorise making the copies openly available via the Internet.

If the author consents to making his/her work available to download for free via the Internet, this will entail having the right to produce a copy of the work. This right is based on consent from the party that made the work available, either explicitly or implicitly. If terms are stipulated for the use of a copy produced in this manner, such that it can only be used privately, this restriction must be respected. If there are no such terms, copies produced in this manner can be used on par with other legally acquired copies. However, this issue involves a lot of open and unanswered questions, which I will not discuss here. Podcasts are practically significant in this connection. NRK and many others make many of their radio and television

<sup>2</sup> The European Parliament and the European Council (2001) *Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society.*

programmes available for download as podcasts. NRK writes the following about use of podcasts:<sup>3</sup>

Warning. All programmes available for download here are copyright protected. They are only intended for private use.

According to this provision, the performance right does not include a broadcasting right. The opportunity for performance within education also does not cover performance within the framework of organised concert activities. This is relevant for student concerts at the Norwegian State Academy of Music.

### 1.2.2 Performance of films in education

The right to performance in education does not cover audiovisual works according to Section 21. In order for something to qualify as an audiovisual work, the actual film production must be intellectual property. It is of no significance whether what is shown in the film is intellectual property. Simple video recordings made with a fixed camera, will be films, but not audiovisual works.

Films can be quoted in accordance with the quotation rule in Section 22 of the Copyright Act. This means that film clips can be used in connection with what is said in the lecture. This will apply both when discussing the performed film clip, and when the film clip is used to illustrate or highlight a point in the lecture.

You cannot publicly perform an entire or large parts of a film for educational purposes without consent (which in practice often means without paying remuneration). This raises the question of when such performance is considered public. The limit of the private sphere is wider when it applies to performance than when it applies to making copies.

A relevant question is the use of film clips from the Internet in the form of web TV, etc. This could to some extent be considered quotation. Beyond this however, potential use, if the clip could be considered an audiovisual work, must be substantiated with an implicit consent based on the fact that the person who chose to make this freely available to everyone also allows for it to be used for education. One can relatively safely assume that NRK and online news services that also publish video clips, have thereby also consented for

the clips to be used in education. In practice, implicit consent is difficult and uncertain.

NRK has a separate service, NRK Skole (NRK School),<sup>4</sup> where they make archive material available in a manner which is especially suited for use in schools. Though it is not expressly stated, there is no doubt that this can be used for education.

Furthermore, there is an exemption for stage performance of stage works. Firstly, the work must be created for the stage, for example a theatre play. A novel or novella is not a stage work, and can be dramatised and performed for education. Secondly, it must be a stage performance, which means in a dramatised form with costumes, etc. One can perform songs from a musical in a concert programme, as this will not be a stage performance.

The final exemption applies to performance of databases in for-profit education. This is unlikely to have major significance in traditional education. However, there may be an issue for web-based education as to what extent you can grant access to databases.

Databases cannot be performed in for-profit education. In this context, for-profit means that the education is provided in order to make money from the activity. Charging money to cover costs without the goal of making a profit, is not considered for-profit education in this context.

The individual teaching service, not the institution's purpose, determines whether or not education will be considered for-profit. If a higher education institution provides continuing and further education in addition to ordinary education, such continuing and further education will be considered for-profit if the institution intends to operate the activity at a profit.

## 1.3 MOOCs and other methods for making education and education materials available on the Internet

As mentioned earlier, the provisions discussed above generally apply for use in normal education activities. When education is made available online in the form of MOOCs or in another manner, the education and thus also the material presented in the education is published.

As long as it is only your own material, and others' material is only used within the framework of the general right of quotation, right to use photos, etc., this is unproblematic with regard to cop-

<sup>3</sup> NRK (2014) Podcasts. Available from: <http://www.nrk.no/podkast> (Retrieved: 23 April 2014).

<sup>4</sup> NRK (2014) NRK Skole. Available from: <http://www.nrk.no/skole/> (Retrieved: 23 April 2014).

yright. However, the special provisions that allow use of copyrighted material in education, generally do not allow for making this available to the general public outside the class room or auditorium. The moment you publish a presentation containing other people's photos, an audio recording containing someone else's music or other copyrighted material from a third party, you are publishing someone else's material. You do not have the right to do this without consent from the author.

The practical consequence entails clarifying the rights of the copyrighted materials used, i.e.

obtaining consent and potentially paying remuneration when required.

You must also enter into an agreement with the person or people making the education materials, to secure the necessary rights to make this available in a MOOC. I will not discuss the issue of whether remuneration should be provided for this. However, the agreements should ensure the person or people who are responsible for the academic content also have academic control over the result. This should mean you have the right to update and the right to withdraw something you potentially believe you can no longer vouch for.

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## Appendix 2

# Memo from Assistant Professor Gisle Hannemyr (UiO)

## 1 Handling copyright and licensing course materials for MOOCs

### 1.1 Handling copyright

Course materials are intellectual property, and the rights to course materials are regulated by the Act relating to copyright in intellectual works (Copyright Act).

The basic principle in the Copyright Act is that the person who creates intellectual property, owns the rights to this intellectual property. This principle naturally also applies if the course materials are openly available on the Internet. A new technology for distributing works does not create a new state of law.

However, new technology could cause new problems associated with handling copyrights. As long as intellectual property is generally distributed in the form of physical copies, the licensee can handle his/her rights by charging for copies. Such copyright handling is not immediately applicable when the physical distribution is replaced with online distribution.

### 1.2 User payment solutions adapted to the Internet

In 2014, licensees within the entertainment industry have succeeded in adapting to the Internet. Many different models are being used. You can for example charge for downloads of individual works, where the copy is owned permanently, for example via the iTunes Store, or a subscription service which, for a fee, gives you access to all of the material the distributor has the rights to for as long as you subscribe, for example Netflix.

In order for such payment solutions to function, however, resources cannot be openly available on the Internet, but placed behind a so-called paywall.

But the solutions do exist and they work. There is thus nothing preventing the distributors of course materials for MOOCs to adapt some of

the copyright handling solutions employed by the entertainment industry.

### 1.3 Extended collective licensing

In the Nordic countries there is already a well-functioning system for extended collective licensing, which is particularly beneficial for the education sector. The scheme is called “Extended Collective Licensing” and is explicitly regulated by the Copyright Act (Sections 30-38b).

In brief, extended collective licensing entails that an organisation representing licensees, in Norway this is Kopinor, registers the extent to which works are copied in various institutions, including schools and higher education institutions. Based on these registrations, the organisation will collect a fee for copies from the institutions.

Extended collective licensing was established in part because cheap photocopying technology resulted in photocopies to some extent replacing purchases of original copies.

The advantage of extended collective licensing over the user fee solutions discussed in the previous paragraph is that the resources can be published openly on the Internet, instead of hidden behind a paywall.

There is likely nothing preventing an expansion of the extended collective licensing scheme to cover downloading of course materials and use of digital course materials entailed by the use of MOOCs. The parties, i.e. Kopinor and user representatives, have already attempted to adapt the system to digital downloading and use through negotiations. However, if the aim is for the copyright handling in connection with web distribution of educational resources to be linked to extended collective licensing, the legal basis will have to be revised in order to better reflect this.

### 1.4 Public licences

Despite both user payment and extended collective licensing being potential solutions when it

comes to handling resources associated with MOOCs, it is very common to handle the rights to course materials in a MOOC through a “public licence”.

Copyright handling through a public licence entails that the licensee makes the licenced material publicly available, along with a licence indicating the terms of use. The purpose of this licence is partially to ensure that the use is lawful, i.e. with a basis in the Copyright Act, and partially to publicly clarify the terms of lawful use. Unlike the copyright handling models discussed in the two previous paragraphs, it is not common in public licences to link payment terms to lawful use, nether user payment nor collective payment.

A public licence is not an exemption from the Copyright Act. On the contrary, a public licence is founded in the autonomy the Copyright Act grants the author as regards how the works are made available to the general public. By using a public licence, the author chooses to make the work available to everyone. It follows from this that only the author can choose a public licence for the work.

### 1.5 Scientific production and open access

In recent years, Open Access has become increasingly common in connection with making scientific production available. This was initiated in particular by university libraries, which believe the costs of subscribing to and handling scientific publications on paper have become disproportionately high.

The term Open Access entails that peer-reviewed scientific articles will be made available for free via the Internet, in return for the publishers making them available being compensated for the loss of potential subscription income.

Furthermore, there are currently two variants of open access:

- *OA journals* (“Gold” OA) are when the material is freely available from the moment it is published for the first time in an (electronic) scientific publication.
- *OA repositories* (“Green” OA) are when material is supplied to, or made freely (free of charge) available in archives (these are usually institution archives) immediately, or shortly after publication in a (closed) scientific publication.

As regards “Gold” OA, the publisher’s business model is often some type of author charge, for example in the form of an APC (Article Processing

Charge), where the author pays for peer review and the editorial staff’s work. Work is under way to establish grant schemes that cover APC in connection with introducing this model. In other words, academic authors will not have to pay a potential APC themselves, but the funds released because the libraries no longer pay for subscriptions will be reallocated to cover the APC.

An author charge is not required for “green” OA. These archives are operated by the academic institutions. In Norway, CRISTin (administratively under the auspices of the University of Oslo) is responsible for ensuring that such an archive exists.

In addition, to “Gold” and “Green” OA, there is also a distinction between “Gratis” and “Libre” OA.

As regards traditional publishing of academic articles, there is both a price barrier (subscriptions cost money) and an authorisation barrier (generative reproduction is limited to the right of quotation; indexing and searching is not permitted in accordance with the Copyright Act). The OA community uses the following definitions as a basis:

- “Gratis” OA removes the price barrier.
- “Libre” OA removes the authorisation barrier.

“Gratis” OA is naturally important in order to ensure the broadest possible impact for scientific material. This is perhaps particularly relevant in poor countries, where “gratis” OA gives academics access to literature which the libraries previously could not afford to subscribe to.

However, “libre” OA allows for using the resources in ways which the traditional copyright mindset does not authorise, by using the text as raw material for derived works where the text is updated, further developed, adapted, derived, remixed and in other ways adapted to usage situations and target groups.

In order for MOOCs to be able to use material freely available under OA in the most flexible manner possible, it is desirable for OA to take place under terms that are not only “gratis”, but also “libre”.

### 1.6 Licensing course materials in Norway and the need for coordination

As follows from Chapter 1.2 above, it is technically feasible to handle copyright in a manner where the user pays for access in ways corresponding to those in the entertainment industry.

However, I do not believe this is a desirable solution for MOOCs. Firstly, a paywall between course materials and the audience will be a barrier for what I consider one of the most important qualities of MOOCs, which is making knowledge and education as accessible as possible to the general public. Secondly, this approach to handling copyright is unnecessarily complicated and costly, and also depends on technical platforms that often restrict distribution to a few closed playback platforms.

Excluding the option to put the material behind a paywall, there are two possibilities for handling course material copyright for MOOCs: Extended collective licensing and public licences. These are mutually exclusive, since they both licence the same basic rights (reproductions, etc.).

Extended collective licensing has a long tradition within the education sector in Norway, and, through Kopinor, already has an established apparatus for collecting information on the use and distribution of remuneration which could likely be easily adapted to MOOCs.

However, there is one consideration arguing against extended collective licensing. Extended collective licensing does not have the “libre” characteristic (cf. Chapter 1.5). Extended collective licensing therefore does not allow for generative reproduction of learning resources.

If you want to facilitate generative reproduction of learning resources, you need to make the resources available under a “libre” licence. In practice, this means there are only two relevant licences from the Creative Commons organisation:

- CC Attribution.
- CC Attribution-ShareAlike.

It must be noted that the Creative Commons organisation has developed many different public licences adapted to various purposes; six in total. The two mentioned above, however, are the only ones approved for “free culture” by the Creative Commons organisation (the other four have not been approved):

Both mentioned licences thus allow both changes and commercial exploitation.

“CC Attribution” is also downstream-compatible with “CC Attribution-ShareAlike” (licence compatibility discussed below), but not vice versa.

The biggest difference between them is that the former does not require potential adaptations to be made available under an identical Creative Commons licence, while the other assumes that

all adaptations are subject to the same Creative Commons licence.

When the Creative Commons organisation uses a term like “free culture”, they do not mean “free of charge” culture. “Free” refers to “freedom”, and in particular the freedom these licences give to users of the resources, as they can be updated, developed, adapted, derived, remixed and in other ways adapted to various usage situations and target groups. Because the word “free” in English is ambiguous, the French word “libre” has been adopted to distinguish between “freedom” and “free of charge”.

I believe that this freedom aspect is key in connection with MOOCs, and it is important that framework conditions and incentive schemes in connection with publishing course materials for MOOCs ensure these freedoms are safeguarded, for example that when projects are financed to develop such course materials, there is a requirement that the result is made available to the general public under a licence approved for “free culture”.

If you are concerned with this freedom, two more considerations must be emphasised:

- Keeping free culture free.
- Being able to remix resources with other resources without restriction.

As mentioned, there is a licence element within the Creative Commons licence framework called “ShareAlike”, which assumes that all adaptations (regardless of the number of steps) are subject to the same Creative Commons licence. In practice, this element entails that all adaptations to the resource must also be equipped with the same Creative Commons licence, and can thus in turn become subject to further development and adaptation, regardless of how many times the resource has been adapted. This licence element is thus a legal instrument which ensures that everything that has been made freely available, will remain free, even in adapted versions. If this element is missing, it is possible for an adapter to allow an adaptation to become “unfree” by making an adaptation and equipping it with a copyright notice which instead reads: “All rights reserved”.

Furthermore, it is important to note a practical coordination problem when remixing free resources: Licence incompatibility. It is easiest to explain this problem with an actual example. In its original web edition, Store Norske Leksikon (SNL) used a DIY licence where the intention was likely to make some material relatively openly available to the general public, which for example

Wikipedia also does. However, because Wikipedia licenses its material under “CC Attribution-Share-Alike”, while SNL had another licence, it was impossible to make a remix using both material from SNL and Wikipedia. Both provided material under free licences, but the licences were nevertheless mutually exclusive because minor details in the licence terms deviated from each other.

This is fortunately no longer the case. The current edition of SNL uses “CC Attribution-ShareAlike” for all new material, and is thus compatible with Wikipedia and the other players that use this licence.

It would be very unfortunate if public funds were used in Norway to develop free course materials for MOOCs, and then to discover that they were in “licence silos” which made it impossible to use them together with other free course materials because the different projects had chosen incompatible licences.

We also know that international MOOCs widely use either “CC Attribution” or “CC Attribution-ShareAlike”. In order to use such international course materials together with Norwegian materials, at least one of these licences should be used for Norwegian course materials for MOOCs.

I therefore propose that the MOOC Commission recommend that course materials for MOOCs be preferably licensed under “CC Attribution” or “CC Attribution-ShareAlike”.

### 1.7 Financing schemes

MOOCs are not free. Though it is assumed that elements such as pre-recorded digital media, self-evaluation, gamification and social platforms are used to a greater extent than in traditional courses to relieve staff functions and traditional adviser functions, MOOCs do require infrastructure in the form of computers, storage media, production equipment and software. Daily operation of MOOCs also requires funding to pay for technical and educational resources.

A business model has been found within OA where an Article Processing Charge (APC) replaces user fees when the material is made openly available on the internet. This business model is not feasible for MOOCs for the following reason: Having your paper published in a recognised peer-reviewed publication is very important for the career of an academic. This means that the publication is in the author’s self-interest, regardless of which way the money flows. There is currently no corresponding incentive associated with the development of course materials.

A business model has not yet been established for MOOCs. In addition to some education institutions’ experimentation with MOOCs within existing budgets, so far the authorities, private risk capital and philanthropic institutions have contributed financing for various MOOC projects. A sustainable business model for MOOCs has, however, proved elusive.

As is evident from the above paragraph, I would not recommend user fees for access to the course materials and extended collective licensing as potential business models for MOOCs.

Possible financing schemes include:

- Public financing: MOOCs are financed over the national budget, in line with a lot of other public education.
- Student fees: The course materials are freely available and it is free to participate, but access to other services, such as debate forums and advisory groups, cost money, and/or you must pay a fee for the certificate of achievement/examination certificate.
- Premium licensing: Adapted versions of MOOCs that are available to the public for free can be purchased by companies and other institutions that want bespoke education.
- Sponsor financing: Sponsors pay to have their name or brand exposed in connection with a special MOOC.
- Personal data mining: In order to participate, students must consent to their personal data being collected (like Facebook and Google does to their users), and that this data can be sold to recruiting companies, marketing companies and others who are willing to pay.

The MOOC Commission discusses student fees in the interim report (Chapter 6.6), and concretely proposes allocating public funds “to develop important aspects of MOOCs” (Chapter 7 of the interim report).

These are the most probable financial schemes in Norway. However, it would hardly be realistic to charge student fees until Norwegian education institutions provide MOOCs of a recognised quality, and it is generally accepted that completing such a course will benefit the participant in the job market or otherwise. This means that, over the short term, public financing is necessary in order to develop this field in Norway.

I believe that premium licensing and sponsor licensing, in the best case scenario, will only provide the field with marginal income. There is no tradition for this in Norway, and I believe that Norwegian higher education institutions are not

strong enough brands to attract major sponsor income.

Out of consideration to personal data protection, I cannot see personal data mining becoming a relevant financing method in Norway.

### **1.8 Open learning resources (OCW and OER)**

The MOOC Commission's interim report from December 2013 briefly discusses OpenCourseWare (OCW) and Open Educational Resources (OER).

The interim report e.g. states (p. 21) that "The rights to OER are regulated through open licensing, most commonly through Creative Commons, which makes this use free of charge".

It must be noted that there is no direct connection between Creative Commons licensing and free of charge use. It is correct that resources licensed in this manner are usually free of charge, but this is not something that necessarily follows from the mentioned Creative licences. It follows from the resource being published openly on the

internet, without including a system that charges for access. However, there are exemptions from this rule, for example by charging for printed editions even though the online version is free of charge, or charging for the collective works even when the material in the collective works is available with a Creative Commons licence.

When the Creative Commons organisation uses a term like "free culture", they do not mean "free of charge" culture. "Free" refers to "freedom", and in particular the freedom these licences give to users of the resources, as they can be updated, developed, adapted, derived, remixed and in other ways adapted to various usage situations and target groups, cf. the licence discussion in Chapter 1.7 above.

OCW, OER, as well as open access scientific articles (OA), will presumably become important components in MOOCs. The reason for making such material available under a Creative Commons licence, is that it makes it much easier to link OCW, OER and OA-published articles from multiple sources (cf. Chapter 1.7).



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