



JRC SCIENCE FOR POLICY REPORT

# Validation of Non-formal MOOC-based Learning

*An Analysis of  
Assessment and  
Recognition Practices in  
Europe (OpenCred)*

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**Abstract**

This report presents the outcomes of research, conducted between May 2014 and November 2015, into emerging practices in assessment, credentialisation and recognition in Massive Open Online Courses (MOOCs). Following extensive research on MOOCs in European Member States, it provides a snapshot of how European Higher Education Institutions (HEIs) recognise (or not) non-formal learning (particularly MOOC-based), and how some employers recognise open badges and MOOC certificates for continuing professional development. We analyse the relationship between forms of assessment used and credentials awarded, from badges for self-assessment to ECTS credits for on-site examinations, and consider the implications for recognition. Case studies provide deeper insights into existing practices. The report introduces a model which guides MOOC conveners in positioning and shaping their offers, and also helps institutions and employers to make recognition decisions. It concludes with a set of recommendations to European HEIs and policy makers to enable wider recognition of open learning in higher education and at the workplace.

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## Preface

The report "Validation of non-formal MOOC-based learning: An Analysis of Assessment and Recognition Practices in Europe (OpenCred)" is an outcome of the OpenCred study, which was carried out collaboratively by the ICT for Learning and Skills team of JRC IPTS, researchers of the University of Leicester, and consultants.

OpenCred is a qualitative study based on in-depth interviews and extensive desk research. It brings an analysis of current practices for the assessment and recognition of non-formal learning via MOOCs, providing examples of how recognition is dealt with in particular cases. The research was conducted between May 2014 and November 2015.

An important outcome of the OpenCred study was the 'Open learning recognition traffic light model'. This model, based on making transparent a number of factors of non-formal learning provision (such as identity verification, supervised assessment, quality assurance, etc.), aims to allow higher education institutions and employers to make an informed decision on whether to recognize achieved learning outcomes. It can also be used to guide a discussion about which elements are most suitable for a strategic provision of open learning. Furthermore, the model can be used by learners to guide them on opting in or out of a MOOC if recognition is desired.

OpenCred is part of a broader research project (OpenEdu) JRC IPTS is conducting on behalf of DG EAC which explores the drivers and barriers for universities to open up education [OpenEdu Project]. It has been designed to support the Opening up Education Communication (European Commission, 2013).

Besides the OpenCred study, OpenEdu has carried out another 4 studies in collaboration with external partners:

- *Moocknowledge*: a survey on MOOC learners (ongoing).
- *OpenSurvey*: a representative survey of higher education institutions in 5 European countries to enquire about their openness strategies (to be published March 2016).
- *OpenCases*: case studies on openness in higher education (to be published April 2016).
- *BMOpen*: case studies on business models for open education (ongoing).

Each of these studies aims to provide essential data to build an evidence-based picture of the trends of open education in European Member States, and also to show what is needed to encourage opening up education in Europe.

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## Executive summary

The OpenCred study is part of the OpenEdu Project, carried out by DG JRC IPTS on behalf of DG EAC. It supports the 2013 European Commission's Communication 'Opening up education: Innovative teaching and Learning for All through New Technologies and Open Educational Resources'<sup>1</sup>. It focuses on one of the core dimensions of the OpenEdu framework for openness in higher education institutions, which is *recognition*. It is a key aspect of opening up education which supports the transition from non-formal to formal education.

The OpenCred report analyses current practices for the assessment and recognition of non-formal learning via MOOCs, and presents examples of how recognition is dealt with in formal higher education and continuing professional development. Currently only a small subset of MOOC provision awards ECTS credits to learners but with the continuing rise in the offer of MOOCs, recognition is a key issue that needs to be dealt with.

Recognition is an important topic in the European Agenda for modernising higher education. It is also a key objective of the 2012 Council recommendation on validation of non-formal and informal learning, which asks Member States to have national arrangements for validation by 2018. The present report uses the term recognition, as it has been used in the context of higher education (in the Bologna process and recognition convention, for example) more often than validation. Within this perspective, the purpose of validation and recognition are the same: both confirming certain learning outcomes against specific standards, providing proof of learning that can potentially be exchanged into future learning and/or work.

This study deals with credentialisation, which will afterwards enable the recognition of learning both by an educational institution or employer. It documents the validation and recognition of open learning via MOOCs, providing an analysis of current practices and a tool for promoting transparency in the open education offer aiming to facilitate the recognition process. It also makes recommendations to European Higher Education institutions (HEIs) and to European policy makers.

OpenCred is a qualitative study based on desk research and six in-depth interviews: two with MOOC learners, two with MOOC teachers from higher education institutions and two with staff from employer bodies. This triangulated data collection method aimed to increase understanding of stakeholder perspectives on the credentialisation and recognition of non-formal learning via MOOCs.

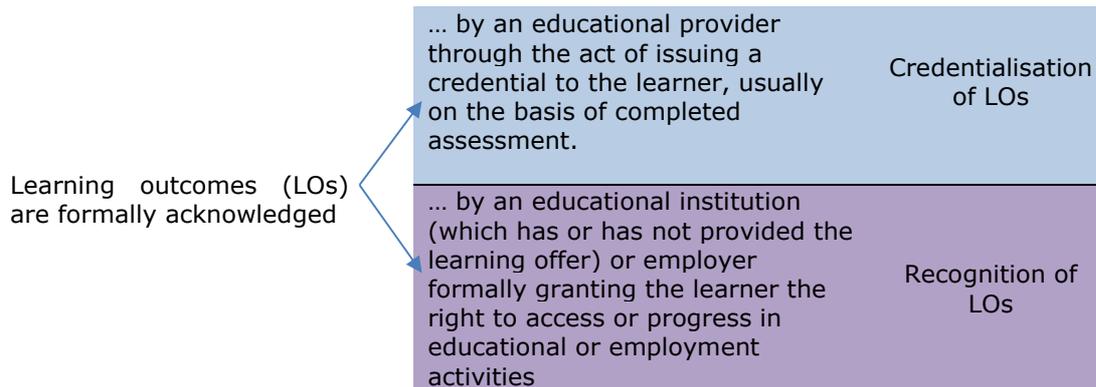
### **Key concepts– recognition and credentialisation**

For the present study, recognition involves two separate processes – firstly, credentialisation of a learner's learning outcomes or achievements, and secondly, recognition, sometimes by the same institution that awarded the credentials, but often by a different institution or an employer. The table below clarifies this distinction.

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<sup>1</sup> [http://europa.eu/rapid/press-release\\_IP-13-859\\_en.htm](http://europa.eu/rapid/press-release_IP-13-859_en.htm)

## Credentialisation versus recognition of learning outcomes



For the sake of clarity, the terms “credentialisation” and “recognition” are used to refer to these two separate processes in the study.

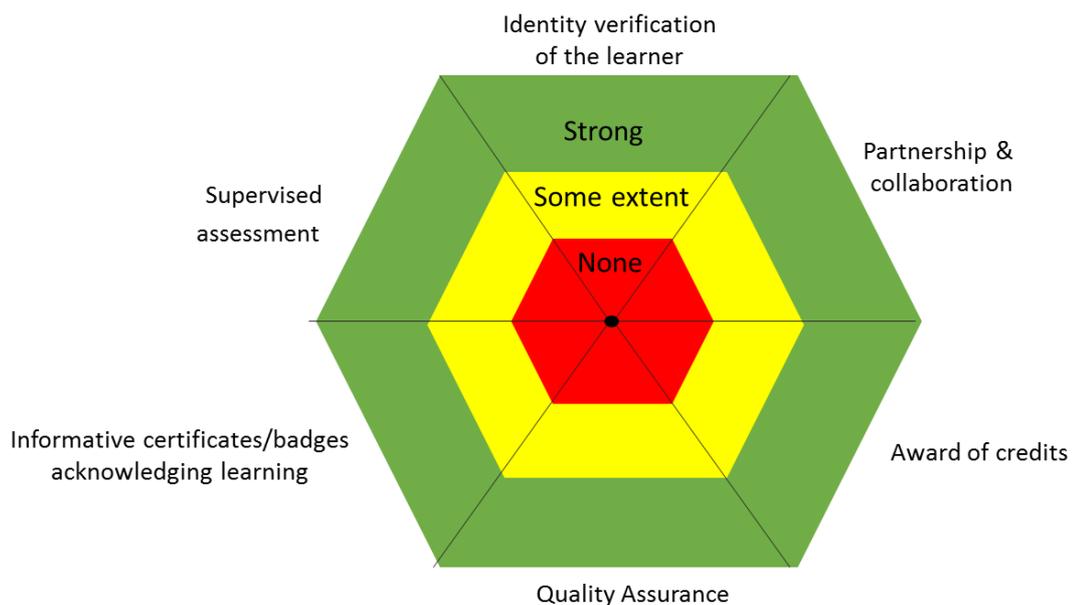
### The aims of recognition

In the context of higher education, the aims of recognition of non-formal learning – whether open or not are:

- Access: through recognition of non-formal open learning individuals can gain access to programmes offered by educational institutions.
- Progression: registered students can be exempted from part of the programme in order to be fast-tracked through their studies
- The award of a full HE qualification

One of the main outcomes of the OpenCred study was the *open learning recognition traffic light model*. The model describes elements of non-formal, open learning assessment using a “traffic light” metaphor:

### Open learning recognition traffic light model



The elements depicted in the model can be strongly present (the green rim around the edge of the hexagon), present to some extent (the intermediate, yellow band) or not present at all (the red segments in the centre of the diagram) in a particular open learning offer (e.g. in a MOOC). The model therefore shows whether a particular open learning course is more or less suitable for future recognition.

The model can be used by:

- 1) **Providers of non-formal, open learning and MOOCs** to design their offers in such a way that credentials awarded to learners are more easily recognised in the future.
- 2) **HEIs and employers** to help them in their strategic planning as regards their recognition of credentials from any given MOOC or open learning offer.
- 3) **Learners**, who wish to gain recognition for their learning, to help them decide whether a given open learning offer is suitable.

The OpenCred research identified a number of barriers to recognising non-formal, open learning:

- Perceived lower value of online assessments and proctoring
- Lack of integration of open learning with existing mechanisms and strategies for student mobility and recognition of prior learning (RPL)
- Tension between affordability and future recognition in the provision of open learning
- Unbundling of learning provision, (supervised) assessment and credentialisation pose a challenge to existing HEI regulations
- Little guidance for MOOC learners on potential recognition options

Finally, based on the OpenCred research, some recommendations are offered:

#### **To higher education institutions**

- Validate open learning by offering credentials for MOOCs and free and open online courses
- Provide flexible options for 'free elective courses' or 'self-study courses' in the curricula, including open learning for study progression

#### **To institutions offering MOOCs or other forms of open education**

- Provide transparent information to learners and potential recognising institutions/employers that could recognize this type of learning using the OpenCred model.
- Join European consortia and build partnerships with HEIs and employers/employment bodies
- Explore ways in which (open) learners can become eligible for assessment and ECTS credits through non-bureaucratic procedures

### ***Recommendations to European and Member States policy makers***

#### **Foster dialogue and collaboration between actors in HEI internationalisation, student mobility and the validation of non-formal and informal learning**

- Foster closer dialogue between actors involved in internationalisation, student mobility and open education.
- Disseminate good practice on the integration of open learning into regular HEI programmes.
- Ensure that Member States policies on validation and recognition of non-formal learning embrace open education and MOOCs, removing discrimination between 'how' and 'where' the learning takes place. MS can also promote policies that

encourage and facilitate both learners and employers to explore open learning recognition further

- Ensure that an in-depth exchange on ECTS for open education is stimulated. This should focus on the ECTS User Guide and how tools such as transcript of records and learning agreements could be deployed for recognising learning outcomes achieved through MOOCs, free and open online courses, open courseware and OER. This should be linked also to the mechanisms that are established for the validation of non-formal and informal learning.

**Further research is needed**

- In order to foster open learning recognition in Member States, regulatory enablers need to be defined.
- Research into the Member States' regulations and practices would enable the setting up of specific strategies for advancing the recognition of open education in Europe.

# 1. Introduction

## 1.1 Aims of the study

This study aims to inform the debate on the recognition of MOOC-based learning and to offer guidelines and recommendations to both convenors of open learning and higher education institutions working towards a better bridge between formal education and non-formal learning.

It will also identify ways in which European policy can enable the recognition of non-formal open learning on a wider scale.

## 1.2 Methodology

The study was carried out in four stages, following technical specifications from IPTS. The study was set up on a qualitative basis and had a limited scope due to the requirements for in-depth interviews and analysis. Six in-depth interviews were carried out in total: two higher education institutions, two employer bodies and two MOOC learners. This triangulated data collection method aimed at increasing the understanding of all perspectives involved when credentialisation of non-formal learning via MOOCs, as well as recognition, are concerned.

Specifically, these four stages were:

1. Desk research: this focused on the identification of initiatives that included recognition of non-formal, open learning achievements, and went on to look at related issues faced by learners, higher education institutions and professional bodies in different EU Member States. It also examined the guidelines provided by the platforms and portals that offer open educational courses and examples of national position statements. Learners' perceptions of the value associated with different types of award were also gathered. The review included examples of massive open online courses (MOOCs) publicised on the Web, many of which were hosted on large MOOC platforms, and others which were hosted on institutional platforms. In addition, the authors contacted colleagues and acquaintances in a number of different Member States to request further information.
2. Case studies: Four case studies are presented with six interviews carried out – two with providers of MOOCs, two with learners on MOOCs, and two with employers who are beginning to recognise open learning achievements for Continuing Professional Development (CPD) and recruitment purposes.
3. Analysis of the data gathered:
  - Developing a matrix to show the relationship between assessment robustness and credentialisation formality, with concomitant implications for recognition.
  - Developing a “traffic light” model to describe the recognition of open learning in particular instances, and applying it to one of the case studies.
  - Identifying general principles regarding recognition of learning that emerged from the study, and further research questions arising out of the findings.
4. Drawing conclusions:
  - Summarising the key insights gained from the desk research.
  - Providing recommendations to institutions/ organisations offering, or planning to offer, recognition for open learning.
  - Providing recommendations to policy makers on further action needed to enable the recognition of non-formal open learning on a wider scale.
  - Identifying questions arising from the study where further research would benefit the field.

The remainder of this section gives background information on key terms used in the report, the rationale for recognition of non-formal open learning, and existing European policies and tools for this recognition.

### 1.3 Key terms: open learning, OER, MOOCs, non-formal learning, learners, recognition

There are three types of **open learning** in the field of online and distance learning, and the meaning of “openness” currently differs for each of them.

	Open Education, Open Universities	Massive Open Online Courses	Open Educational Resources
<b>Definition of open</b>	No start qualifications	No course fees	Free to (re)use and (re)distribute
<b>Certificates</b>	Yes	Yes	No
<b>Degrees</b>	Yes	No	No
<b>Target group</b>	Students, learners	Learners	Learners and educators
<b>Main objects</b>	Programmes	Courses	Learning objects

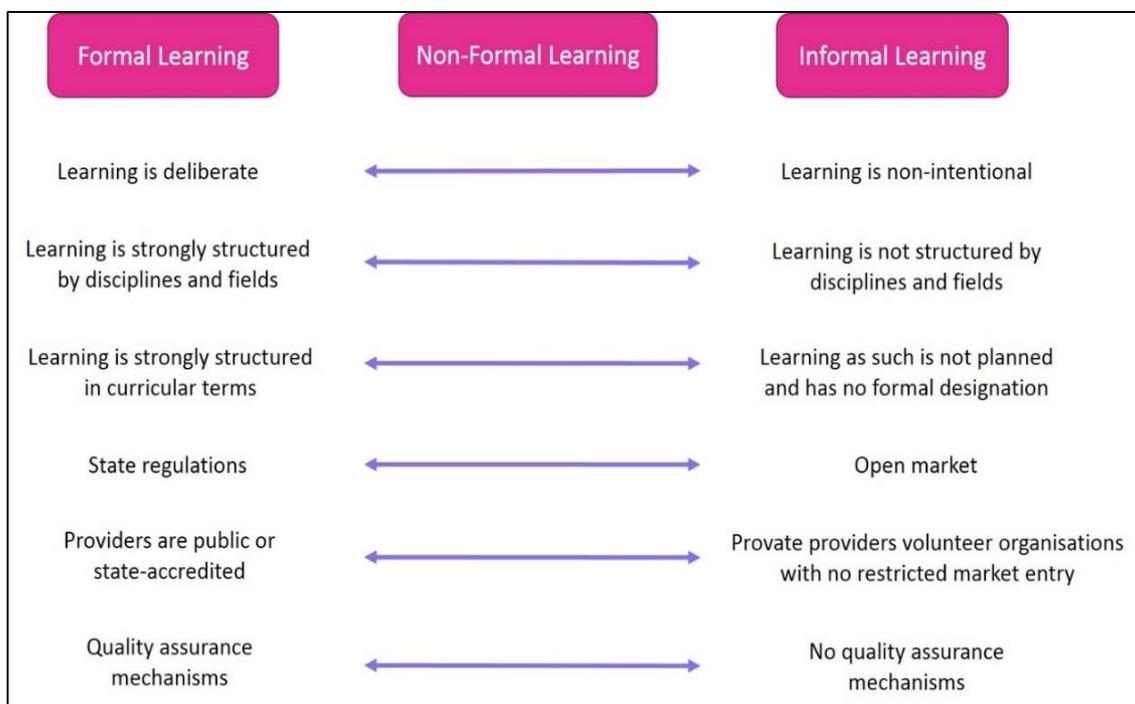
Figure 1: Types of open learning (Based on de Langen & van den Bosch, 2013)

Open learning at open universities is accessible to everyone, with no requirements for qualifications in order to register. It is therefore fully open in terms of educational entry requirements.

**Open educational resources (OER)** are “teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge” (Hewlett Foundation, n.d.). OER can serve as self-study material for learners or complement/expand the teaching material provided by educators.

**Massive Open Online Courses (MOOCs)** are online courses designed for a large number of participants that can be accessed by anyone anywhere, as long as they have an internet connection. They are open to everyone without entry qualifications, and offer a complete course experience online for free. They are led by subject matter experts from higher education or industry and hosted by learning management systems or dedicated MOOC platforms. Two forms of MOOCs have emerged. In cMOOCs, learners are encouraged (though not required) to contribute actively via blog posts, tweets or other social media posts that are aggregated online by course organisers and shared with all participants via email or newsletters. The “c” stands for “connectivist” and the course approach is typically that learners pursue their own learning outcomes with a focus on community and connections. xMOOCs, on the other hand, resemble traditional courses and more traditional higher education teaching methods are used. Pre-recorded video lectures and scalable forms of assessment are provided to learners who can interact in pre-set forums in a single platform rather than creating and/or sharing distributed content on the Web outside the platform.

**Non-formal learning** is the “concept on which there is the least consensus” (OECD, n.d.) and lies somewhere between formal and informal learning. Hence it makes sense to take a brief look at two broadly accepted definitions of the latter two terms. *Formal learning* is learning that occurs in an organised and structured environment and is explicitly designated as learning (in terms of objectives, time or resources). It is intentional from the learner’s point of view and typically leads to validation and certification (Cedefop, 2008). Typical examples are learning that takes place within the initial education and training system or workplace training arranged by the employer (Werquin & Patrick, 2010). *Informal learning* is learning that results from daily activities related to work, family or leisure. It is not organised or structured in terms of objectives, time or learning support. It is in most cases unintentional from the learner’s perspective (Cedefop, 2008). There is also a definition of non-formal learning by CEDEFOP (2014), which is "learning embedded in planning activities not explicitly designated as learning (in terms of learning objectives, learning time or learning support). Non-formal learning is intentional from the learners' point of view.[...]Non-formal learning outcomes may be validated and may lead to certification.



**Figure 2: Continuum of formality: formal, non-formal and informal learning (Based on Werquin & Patrick, 2010)**

This report follows the approach of Werquin & Patrick (2010) though, and describes non-formal learning in degrees of formality of key aspects of learning as shown in Figure 3. Learning with MOOCs and OER fall within the range of non-formal, whereas open universities clearly offer formal learning.

In OpenCred, the term open **learner (or just learner)** is used to refer to a non-formal learner, while **student** is used to refer to someone who is enrolled in a formal education programme.

For a good understanding of the term **recognition** in the educational context, it is best to specify “recognition of what” and “recognition by whom”. The Council of Europe refers to foreign qualifications/degrees or periods of study abroad (what) by national HEIs and employers (who) and defines recognition as follows:

*Recognition: A formal acknowledgement by a competent authority of the value of a foreign educational qualification with a view to access to educational and/or employment activities (Council of Europe, 1997).*

Recognition in this sense concerns the outcomes of formal education and for the purposes of our report becomes relevant if open learning offers carry European Credit Transfer and Accumulation System (ECTS) credits. The **recognition of prior learning (RPL)** stands for assessment of knowledge, skills and competence that an individual possesses by a competent authority or education institution extending beyond the formal context to include learning

- acquired in a non-formal or informal setting;
- that did not lead to a qualification;
- acquired through professional experience;
- acquired through unfinished studies at a recognised institution.

The UK Quality Assurance Agency for Higher Education, for example, defines RPL as:

*the process for recognising previous learning that has taken place in informal, formal or non-formal contexts: for example, in the workplace and through life experiences. Once recognised through this process, prior learning can be used to gain credit or exemption for qualifications, and/or for personal and career development (UK Quality Assurance Agency for Higher Education).<sup>2</sup>*

CEDEFOP (2008), on the other hand, defines **formal recognition**<sup>3</sup> as the process of granting official status to skills and competences either through the:

- award of qualifications (certificates, diploma or titles); or
- grant of equivalence, credit units or waivers, validation of gained skills and/or competences.

Recognition is often used interchangeable with validation; however, they differ in that validation normally does not include the recognition of formally acquired competences. Validation is defined by the recommendation of 2012 as 'a process of confirmation by an authorised body that an individual has acquired learning outcomes measured against a relevant standard'. It consists of four phases: identification, documentation, assessment and certification. For the present report, the term recognition is used, as it has been more commonly used within the context of higher education.

Recognition comprises two different processes with potentially different consequences. For the sake of clarity this report differentiates between the two, by referring to the first as **credentialisation**, and the second as **recognition**:

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<sup>2</sup> See <http://www.qaa.ac.uk/about-us/scotland/development-and-enhancement/recognition-of-prior-learning>

<sup>3</sup> CEDEFOP differentiates formal recognition from social recognition as "the acknowledgement of the value of skills and/or competences by economic and social stakeholders."

**Table 1: Credentialisation versus recognition of learning outcomes**

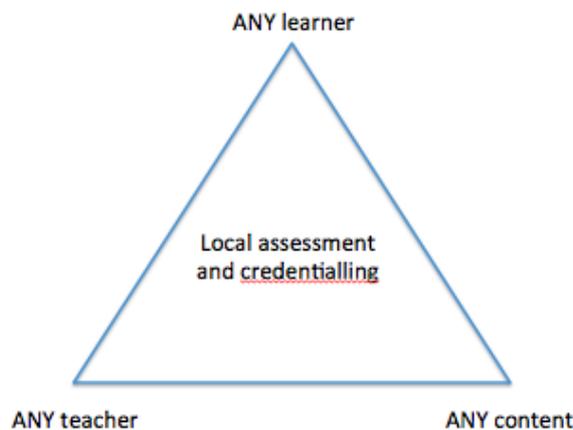
Learning outcomes (LOs) are formally acknowledged	... by an educational provider through the act of issuing a credential to the learner, usually on the basis of completed assessment.	Credentialisation of LOs
	... by an educational institution (which has or has not provided the learning offer) or employer formally granting the learner the right to access or progress in educational or employment activities	Recognition of LOs

Both processes, credentialisation and recognition, are mainly related to the process of documentation and certification of a validation process. The documentation of the learning outcomes aims at making visible individual experiences. For the purpose of this report: open learning. Documentation places no major emphasis on assessment, but rather on creating proof of one's skills. Certification occurs after the individual skills have been assessed against certain standards. In this sense, they relate more to our interpretation of recognition.

This study deals with the credentialisation as part of the validation of non-formal learning process, which will afterwards enable the recognition of learning both by an educational institution or employer.

This approach adheres to the continued unbundling of educational provision. In traditional higher education, local students are taught by local faculty or instructional personnel, using contents produced by the same institution or a faculty member. Subsequently, assessment and credentialisation takes place locally (Friesen & Murray, 2011). The credentials are then recognised by the same institution and allow students to progress in their study.

According to Friesen and Murray (Ibid, p.4) in unbundled provision, any learner can access any learning content, facilitated by different educators. Assessment can take place at different locations and the body that credentialises learning can be different from the educational institution of the teacher. Different educational institutions or employers would decide to recognise or not recognise the learning outcomes.



**Figure 3: Model of "Open Learning 2.0:" any student, content or teacher (Source: Friesen & Murray (2011), p.4.)**

In the OpenCred study, we did not find many examples of unbundled provision of exactly this nature, although several examples were found where the assessment and/or credentialising are also done by a “non-local” institution (i.e. an institution that the learner is not enrolled in for a mainstream degree programme).

#### **1.4 Why is it important to recognise non-formal, open learning?**

A recent report by the UK Department for Business Innovation and Skills (2013) observed that the development of massive open online courses (MOOCs) in the Higher Education (HE) sector is reaching a point of maturity, where “after a phase of broad experimentation [...] MOOCs are heading to become a significant and possibly a standard element of credentialed University education” (Ibid, p.5). According to the report, although credit for completion has not been a major motivation for learners up to this point, “there are clear signs that this will change” (Ibid, 5), and there is an increasing demand for the higher education sector to provide “flexible pathways to learning and accessible affordable learning” (Ibid, p.6).

In the context of higher education, the aims of recognition of non-formal learning – whether open or not, are:

- Entry: through recognition of non-formal open learning individuals can gain entry to programmes offered by educational institutions
- Progression: registered students can be exempted from part of the programme in order to be fast-tracked through their studies
- The award of a full HE qualification

In 2012, the OERtest initiative carried out interviews and led focus groups with 26 higher education representatives in five different European countries. Among other things, they were asked whether they perceived potential value for their institutions in recognising learning outcomes achieved through Open Educational Resources. In general, their answers were positive and the benefits of OER mentioned most often (Tannhäuser, 2012) were that they:

- Widened the provision and learning experience for registered students,
- Reached more non-traditional learners,
- Increased visibility of the higher educational institution offering OER,
- Complemented traditional university funding through assessment and certification,
- Fulfilled demand to explore an emerging area of innovation in higher education.

In the world of employment, the recognition of open, non-formal learning is also valuable for entry and progression purposes: it can play a role in recruiting new employees for jobs, and it can also aid career progression of working professionals.

#### **1.5 European policies and tools for the recognition of learning outcomes**

In this section, a brief overview is given of existing policies, tools and procedures in Europe which facilitate the recognition of learning achievements. First, we look at formal learning carried out by visiting students at European HEIs, and then at non-formal learning. The aim is to provide a starting point for looking at the recognition of learning achievements in a non-formal, open learning context, rather than to present a full account of achievements, challenges and history of student mobility and validation of non-formal and informal learning Europe.

### 1.5.1 Formal learning

The Lisbon Convention of 1997 was an important step of the Bologna process towards the creation of a European Higher Education Area. Its main concern was the recognition of qualifications, the broad principles being:<sup>4</sup>

- Holders of qualifications issued in one country should have adequate access to an assessment of these qualifications in another country.
- No discrimination should be made in this respect on any grounds such as the applicant's gender, race, colour, disability, language, religion, political opinion, national, ethnic or social origin.
- The responsibility to demonstrate that an application does not fulfil the relevant requirements should lie with the body undertaking the assessment.
- Each country should recognise qualifications – whether for access to higher education, for periods of study or for higher education degrees – as similar to the corresponding qualifications in its own system unless it can show that there are substantial differences between its own qualifications and the qualifications for which recognition is sought.
- Recognition of a higher education qualification issued in another country should have one or more of the following consequences:
  - access to further higher education studies, including relevant examinations and preparations for the doctorate, on the same conditions as candidates from the country in which recognition is sought;
  - The use of an academic title, subject to the laws and regulations of the country in which recognition is sought;
  - In addition, recognition may facilitate access to the labour market.

The Lisbon convention laid the groundwork for the Bologna process.

The European Credit Transfer and Accumulation System (ECTS) in higher education was driven by the Lisbon Convention and the Bologna process, and has been incorporated into the higher education legislation and regulations of almost all the countries participating in the Bologna Process (European Commission, 2006c).

The following information on ECTS is largely based on the ECTS Users' Guide (2009) and the recently published revised guide (ECTS Users' Guide 2015). The system is "used in the European Higher Education Area, involving all countries engaged in the Bologna Process". It makes learning outcomes transparent and sets the rules for calculating their value. ECTS credits are based on the amount of work students need to do in order to achieve expected learning outcomes. ECTS as a common credit currency and grading scale in Europe aids recognition (and credit accumulation, mobility etc.).

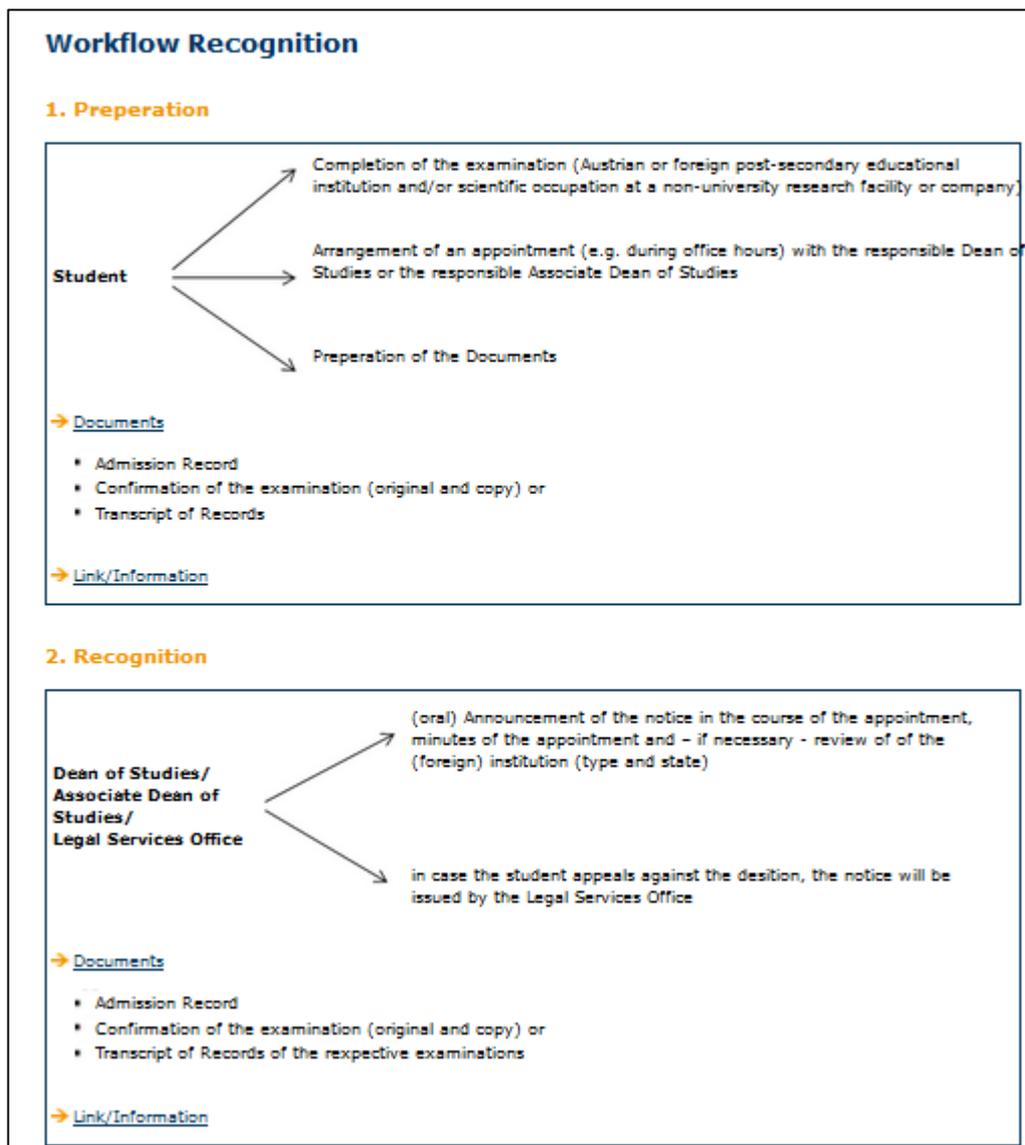
*Recognition of credits is the process through which an institution certifies that certain learning outcomes achieved and assessed in another institution satisfy certain requirements of one of the programmes they offer.*

The University of Innsbruck, for example, states that "examinations taken at a domestic university or a university in the European Union or European Economic Area shall be recognised for further study of the same subject at another domestic university provided that the number of ECTS credits is the same or only slightly different."<sup>5</sup> The university makes the recognition procedure transparent on its website.

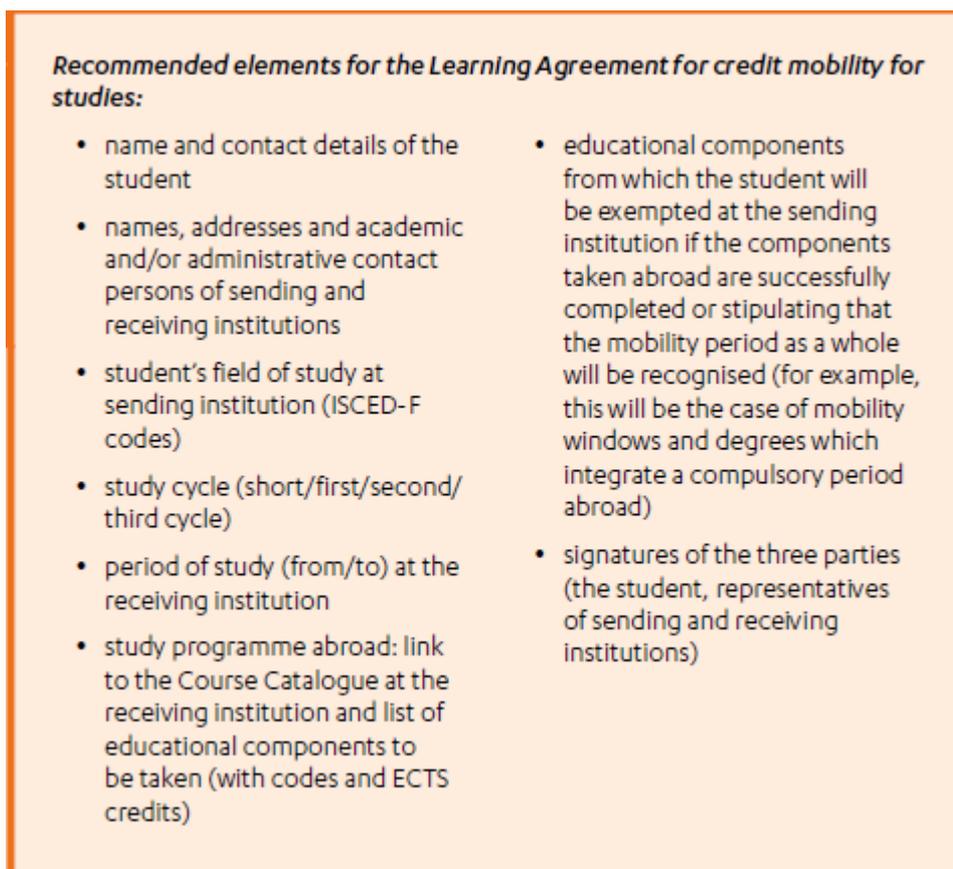
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<sup>4</sup> [http://www.coe.int/t/dg4/highereducation/recognition/lrc\\_EN.asp](http://www.coe.int/t/dg4/highereducation/recognition/lrc_EN.asp)

<sup>5</sup> <http://www.uibk.ac.at/studium/organisation/anerkennung-und-ects-zuteilung/index.html.en>



**Figure 4: Example of a formal recognition procedure: workflow at the University of Innsbruck (Steps 1 to 2). (Source: University of Innsbruck’s website)**



**Figure 5: Recommended elements for the Learning Agreement for credit mobility (source: ECTS Users' Guide, 2015)**

As the figure shows, the University of Innsbruck makes use of one of the ECTS key documents which has become the standard tool for facilitating the recognition of credits, namely the Transcript of Records. This transcript is issued by the host university, listing the educational components the student has taken, the number of ECTS credits s/he has achieved, the awarded grades and an explanation of the host institutions' grading system.<sup>6</sup> It should be noted that ECTS do not oblige institutions to recognise the ECTS credits a student presents if these are not subject to a previously signed Learning Agreement. Learning Agreements are made between the home institution, the host institution and the outgoing student. They list all the learning components that should be followed during the period of study. Allocating ECTS credits to an open learning offer in the design process and subsequently awarding ECTS to successful learners could facilitate the recognition decision at the home university of registered students, but the decision about recognition remains with the home institution. The ECTS user guide recommends a flexible approach:

*Given the diversity of programmes and higher education institutions, it is unlikely that the credits and learning outcomes of a single educational component in different programmes will be identical. Therefore, a flexible approach to recognition of credits*

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<sup>6</sup> Another key tool is the Diploma Supplement which is issued upon graduation and comprehensive course catalogues at HEIs.

*obtained in another context is recommended. "Fair recognition" rather than perfect equivalence is to be sought.*

Within the UK, the Higher Education Achievement Report (HEAR) "is designed to encourage a more sophisticated approach to recording student achievement, which acknowledges fully the range of opportunities that higher education institutions in the UK offer to their students. In 2013, 88,743 HEARs were issued to students (from across 27 institutions)" (HEAR 2014a). A reference pack is available to support institutions in implementing the HEAR (HEAR 2014b), which aims to help institutions provide "sufficient recognition of qualifications (diplomas, degrees, certificates etc.)".

The European Qualification Framework <sup>7</sup> aids the recognition of diplomas and qualifications among EU Member States by establishing eight common European reference levels that are described in terms of learning outcomes: knowledge, skills and competences.

*This allows any national qualifications systems, national qualifications frameworks (NQFs) and qualifications in Europe to relate to the EQF levels. Learners, graduates, providers and employers can use these levels to understand and compare qualifications awarded in different countries and by different education and training systems (European Commission).<sup>8</sup>*

For the Vocational Education and Training (VET) sector, a similar European credit system was introduced in 2009 (European Parliament, Council of Europe) called the European Credit System for Vocational Education and Training (ECVET). It aims to aid the transfer, recognition and accumulation of assessed learning outcomes of individuals who are trying to get a qualification, promoting learner mobility and lifelong learning. However, different national developments have been triggered in different states. The recommended phase of gradual implementation ended in 2014 and an analysis of measures taken and experimentations carried out by the Member States is foreseen.

### **1.5.2 Non-formal and informal learning**

The recognition of non-formal and informal learning outcomes is high on the political agenda and has been promoted by the Organisation for Economic Cooperation and Development (OECD), and the European Commission via the European Centre for the Development of Vocational Training (CEDEFOP), which revised European guidelines for validation non-formal and informal learning in 2015 (CEDEFOP, 2015).

At the end of 2012, the Council of Europe highlighted the value of validation of non-formal and informal learning for promoting employability and mobility, particularly for the socio-economically disadvantaged with few qualifications. In the recommendation, the Council invited all EU countries to establish validation systems that would allow individuals to obtain recognised qualifications on the basis of non-formal or informal learning (Council of the European Union, 2012, emphasis added):

*The Member States should, with a view to offering individuals the opportunity to demonstrate what they have learned outside formal education and training – including through mobility experiences – and to make use of that learning for their careers and further learning and with due regard for the principle of subsidiarity:*

- 1. have in place, no later than 2018, in accordance with national circumstances and specificities, and as they deem appropriate, arrangements for the validation of non-formal and informal learning which enable individuals to:*

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<sup>7</sup> <http://ec.europa.eu/ploteus/recognition-qualifications>

<sup>8</sup> [https://ec.europa.eu/ploteus/search/site?f\[0\]=im field\\_entity\\_type%3A97](https://ec.europa.eu/ploteus/search/site?f[0]=im field_entity_type%3A97)

- (a) *have knowledge, skills and competences which have been acquired through non-formal and informal learning validated, including, where applicable, **through open educational resources**;*
- (b) *obtain a full qualification, or, where applicable, part qualification, on the basis of validated non-formal and informal learning experiences, without prejudice to other applicable Union law [...]*

Furthermore it is recommended that the arrangements should link to the European Credit Transfer and Accumulation System (ECTS) to facilitate transparency and transferability between Member States. As emphasised by the authors of this report, the Council explicitly mentions learning through open educational resources as one type of non-formal learning that should be recognised.

In the next section, we will look at how a few countries have interpreted these recommendations from the Council of Europe, and are implementing or planning to implement them.

## **1.6 Two national perspectives on recognition of MOOC-based learning**

The International Council of Open and Distance Education (ICDE) published a briefing on regulatory structures and legal frameworks related to open and distance learning with a view to informing policy making. The authors state:

*The regulatory framework itself is complex and multi-level covering acts of parliament, policy, rules, governance and funding structures and operating at international, regional, national and local government levels and even at institutional levels (ICDE, 2013).*

It is beyond the scope of this publication to examine the existing regulatory frameworks set out by national government and other bodies (such as quality agencies, recognition bodies and accreditation agencies) in the different EU Member States that affect or impede the formal recognition of open learning. Instead, two examples will be presented for which a national position on the credentialisation and recognition of learning outcomes attained through MOOCs or other forms of open learning could be identified.

### **France**

In France, the National Ministry of Education launched a national platform for MOOCs through its Digital University, namely France Université Numérique (FUN),<sup>9</sup> in October 2013. MOOCs that are offered on this platform must adhere to a set of quality standards, and FUN provides guidelines to institutions and teachers on how to attain these standards. The guidelines suggest that credentials should be given for attendance and contribution, but not for meeting learning objectives, citing the difficulties involved in supervising online assessment. The perspective of FUN is that learning in MOOCs can only be assessed through automation or peer assessment. Automation only assesses superficial information, and the answers can also be easily shared amongst participants thus facilitating plagiarism. Peer assessment, however, "is a trade-off between workload imposed on participants and the precision of the evaluation" (Cisel 2013, pp.19-25). MOOC providers on the platform are advised to issue digital badges, mainly as a way of encouraging participation, and to introduce an element of gamification to increase learners' motivation. Badges can be awarded automatically for completing tasks and so can act as a gradual record of completion, rather than a statement of learning outcomes achieved.<sup>10</sup> Cisel (2013, p.28) concludes that badges "are mainly used today to

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<sup>9</sup> <http://www.france-universite-numerique.fr/>

<sup>10</sup> This view on the role of badges is not undisputed and more information on digital badges is presented in Section 4.2.2.

encourage participants to interact in forums, but could have a growing importance in the process of reward for work done over the years.” In actual fact, many of the MOOCs on the platform now offer completion certificates rather than badges, but in accordance with the guidelines, none were found to be offering ECTS credits.

### **The Netherlands**

In Dutch universities, exemption from certain courses within a degree programme can be allowed if the student has a recognised qualification in that subject area from another institution. This requires the institution to be provided with the following information:

- An authenticated certificate from an accredited body,
- An acceptable mark/grade,
- Information about the institution,
- The contents and level of the completed course, including course description and the relevant bibliography.

The Minister of Education, Culture and Science has stated that there will be no changes to legislation to account for recognition of learning via MOOCs and that current mechanisms for accrediting and assessing non-formal and prior learning should be sufficient to meet the needs of learners in MOOCs (Verstelle et al 2014, p.28). Dutch Policy Rules for Effective Higher Education stipulate that “in principle, one-third of a programme, including work placements and final projects, may be completed at a location outside the institutional premises without need for the Ministers’ permission”, and may include curricular components developed (wholly or in part) by other institutions (Beleidsregel Doelmatigheid Hoger Onderwijs, 2012).

The Accreditation Organisation of the Netherlands and Flanders (NVAO) published a memorandum on online/blended learning (including MOOCs) and the formal recognition of this learning by universities of applied sciences and research universities “for the purpose of assuring the value of qualifications awarded by their accredited programmes.” (NVAO, 2013).

The NVAO states that MOOCs can contribute to Dutch higher education programmes, highlighting that accreditation by the agency takes place at programme level, rather than the course level where MOOCs are located.

*Following this discussion of MOOCs and credits, the NVAO wishes to emphasise that our programme accreditation activities always look at the final level achieved. Knowledge acquired through an MOOC can contribute to this, but apart from credits obtained on the basis of MOOCs, it is the final level as such that will always be the focus of the programmes’ assessment of the student, as well as of subsequent external accreditation assessments (NVAO, 2014, p.7).*

Consequently, the document provides a mix of descriptions and recommendations rather than prescriptions, advising on internal and external quality assurance for different recognition scenarios.

*The request is judged on the basis of all the criteria customarily applied to comparable request relating to non-online courses. In addition, since it concerns an online course, the request should also be judged on the acceptability of the online nature of the education in relation to the programme as a whole (the blend). Where the course is an MOOC, the decision to grant or reject the request will depend in part on the type of certificate (NVAO, 2014, p.8).*

The certificate, and the information contained in it, are considered central to the recognition process, and the NVAO recommends that a MOOC certificate:

- (a) *formally and clearly states on whose authority it was issued, provides information on the content, level and study load, states that the holder has achieved the desired learning objectives, provides information on the testing methods employed and lists*

*the credits obtained, according to a standard international system or in some other acceptable format.*

*(b) is demonstrably based on authentication;*

*(c) states that the examinations have been administered under supervision and specifies the nature of this supervision (NVAO, 2014, p.9).*

It is worth noting that the NVAO makes no qualitative distinction between physical and online learner authentication and exam supervision. Nevertheless, some Dutch institutions would not accept online proctoring as a qualifying examination environment. Also, in some cases (for example, within the Law subject domain), only awards that have a minimum of 5 ECTS credits would be admissible.

In this section, we have presented the European policy and regulatory context in which institutions make decisions to recognise (or not recognise) learning achievements carried out via non-formal, open learning, particularly in MOOCs. It is clear that existing policies for the recognition of prior learning should be able to accommodate the recognition of non-formal, open learning. However, as one of the primary goals of open education is to provide education on a large scale, the knock-on effect for both assessment and recognition is that these processes should also be done as such. But this generates practical challenges for institutions. In the following section, we discuss a number of examples of emerging practices relevant to the recognition of learning achievements. These practices are primarily related to assessment and credentialisation of MOOC-based learning – and their associated costs for learners. We also look at the role that collaboration between institutions can play in facilitating recognition.

## **2. MOOC provision in Europe and beyond: practices relevant to recognition**

This section provides a brief overview of the provision of MOOCs in Europe and then discusses new forms of digital credentialisation, namely digital certificates and digital badges. Practices for assessment and the verification of learners' identity are then considered, along with some of the issues involved in the awarding of ECTS credits. A case study of a German MOOC that offered ECTS credits is presented. Finally, we look at some emerging collaborative initiatives where the recognition of MOOC-based learning is either under consideration or already a reality.

### **2.1 Overview of selected MOOC platforms**

Most Massive Open Online Courses are offered through dedicated platforms which are owned by either for-profit or not-for-profit organisations. Below we give an overview of some of the multi-partner platforms that are used by European institutions, based on information available on their websites.

**Coursera**<sup>11</sup> is a US-based for-profit educational technology company that offers MOOCs from higher education institutions around the world, including many in EU Member States, such as the University of Edinburgh in Scotland, Università Bocconi in Italy, Erasmus University Rotterdam in the Netherlands, Ludwig-Maximilians-Universität München, Germany, CentraleSupélec in France and Universitat Autònoma de Barcelona, Spain.

**EdX**<sup>12</sup> is a non-profit MOOC platform, also primarily populated with courses from US-based institutions. The platform makes the underlying software available as open source for use by others. European partners on the platform include TU Delft and Wageningen

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<sup>11</sup> <https://www.coursera.org/>

<sup>12</sup> <https://www.edx.org/>

University in the Netherlands, a cluster of seven French universities under the banner of Sorbonne Universités, Sweden's Karolinska Institute, Technische Universität München in Germany and Belgium's Université catholique de Louvain.

**FutureLearn**<sup>13</sup> is a private company wholly owned by The Open University (UK), comprising invited universities, mainly from within the UK.

**Iversity**<sup>14</sup> is a MOOC platform set up with sponsorship from a German regional government, offering online courses by institutions that are mainly but not exclusively based in German speaking countries. The platform has more than half a million enrolled users.

**Miríada X**<sup>15</sup> was started in 2013 by the Santander Bank and the Spanish telecom company, Telefónica, through the RedUniversia (a network of universities in Latin America) and Telefonica Digital Education. It is based on the open-source platform, WEMOOC. Miríada X offers courses from 45 universities based in nine countries (Spain, Colombia, Chile, Argentina, Peru, Mexico, Brazil, Puerto Rico, Dominican Republic and El Salvador). More than 1,000 teachers are involved and 195 courses are offered.

### **2.1.1 MOOC platforms aiming to enable employability**

Some MOOC platforms in Europe have been specifically set up to provide courses that will increase learners' employability. Ideally, successful learners should have their credentials for these MOOCs recognised by employers.

The initiative **MOOCs for Web Talent Network** was launched in 2014 as part of "Startup Europe",<sup>16</sup> the European Commission action plan that aims to strengthen the business environment for Web entrepreneurs in Europe. Activities include networked discussions around the topic of certification and recognition of MOOCs to increase the employability of the European workforce.

The French MOOC platform **Unow**<sup>17</sup> was launched in 2012. It offers project management and support to academic institutions and businesses wishing to run MOOCs. According to their website, they have partnered with 18 schools and companies, for example Ecole Centrale de Lille, Université Montpellier 2 and Telecom Bretagne.

In Germany, **openHPI**<sup>18</sup> was launched in 2012 as an initiative of the Hasso Plattner Institute at the University of Potsdam (Allgaier, 2013). It offers courses in both German and English, and according to their website, has around 200,000 learners worldwide. The MOOCs are intended to help learners progress in their careers.

In Spain, a public-private partnership resulted in the launch of **Google Actívate**<sup>19</sup>, an initiative providing a series of MOOCs to teach digital skills to young unemployed people in Spain. The aim is to contribute to solving the unemployment problem in the country. The lead partners in this initiative are Google Spain, the Spanish Ministry of Industry, Energy and Tourism, their business school EOI, and a public corporate entity promoting the development of the Information Society, Universidad Complutense de Madrid and Interactive Advertising Bureau (IAB). Google announced towards the end of 2014 that "more than 148,000 people have registered for Actívate with 13% of participants earning

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<sup>13</sup> <https://www.futurelearn.com>

<sup>14</sup> <http://un.iversity.org>

<sup>15</sup> <https://www.miriadax.net/home>

<sup>16</sup> [http://europa.eu/rapid/press-release\\_IP-14-335\\_en.htm](http://europa.eu/rapid/press-release_IP-14-335_en.htm)

<sup>17</sup> <http://www.unow.fr/>

<sup>18</sup> <https://open.hpi.de/>

<sup>19</sup> <https://www.google.es/landing/activate/>

a certificate<sup>20</sup> and that more than 19,000 learners are already certified in the area Digital Marketing, Big Data, Ecommerce, Mobile App Development or Cloud Computing. The certificate is obtained after passing 13 examinations and is awarded by either the EOI, Universidad Complutense de Madrid or the Interactive Advertising Bureau. The certificates can be displayed on the awardees' LinkedIn profiles.

**OpenClassrooms**<sup>21</sup> is a French provider of open, online learning that enables learners to accumulate certificates towards degrees in IT and business topics that are recognised by the French State. "Premium" membership costs 20 EUR per month, but is free for job seekers in France. It offers access to all courses, exercises and paths, certificates of achievement, self-paced courses, videos and e-books to download, and priority support via email.<sup>22</sup>

## 2.2 New forms of digital credentialisation

### 2.2.1 Verified digital certificates and related costs for learners

MOOCs on the above platforms offer two tiers of digital **certificates**:

- Certificates that confirm participation in/ completion of a course,
- Certificates that verify the learner's identity and confirm attainment of learning outcomes.

Digital certificates typically include a URL which leads to the course information and/or the display of certificate information at the website of the course provider to prove the authenticity of the credential. Some examples are given below.

Some **Coursera** courses offer Statements of Accomplishment<sup>23</sup> to learners who successfully complete course requirements. These are signed by the course instructor and include the learner's name, the title of the course, and a brief course description. These certificates are intended to be more a "memento"<sup>24</sup> than a credential. Coursera also offers the option for learners to receive a Verified Certificate when they complete a course using the Signature Track<sup>25</sup> software. Coursera encourages learners to use their Verified Certificates on their résumés and social media/ career profiles, in order to enhance their chances of career progression. Verified certificates include the following information (See Coursera website "Help" section<sup>26</sup>):

- University and Coursera affiliation (with a caveat to learners that this does not make them learners of the issuing institution).
- Learner's name and identity: Coursera confirms learners' identity on the Verified Certificate.
- Certification code URL: This unique certificate code lets others check the authenticity of the Verified Certificate on Coursera's website.

For example, the Copenhagen Business School offers a MOOC on Social Entrepreneurship via Coursera which awards this certificate.

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<sup>20</sup> <http://googleresearch.blogspot.co.uk/2014/12/learning-digital-skills-online-with.html>

<sup>21</sup> <https://openclassrooms.com/>

<sup>22</sup> <https://openclassrooms.com/premium#discover-premium-offer>

<sup>23</sup> <https://courserahelp.zendesk.com/hc/en-us/articles/201523145-Statements-of-Accomplishment>

<sup>24</sup> <https://www.linkedin.com/groups/Withdrawal-statements-accomplishment-on-recent-4613607.S.5901435069662269442>

<sup>25</sup> <http://blog.coursera.org/post/40080531667/signaturetrack>

<sup>26</sup> <http://help.coursera.org/customer/portal/articles/1167998-what-is-a-verified-certificate-how-can-i-use-it->

**EdX** offers three types of certificates: Honour Code Certificates (similar to Coursera's Statements of Accomplishment), Verified Certificates and XSeries Certificates. The latter is issued for passing a series of courses<sup>27</sup>, and displays similar information to the Coursera's verified certificates. TU Delft offers a certificate of this kind for a series of three courses on "Water".

Coursera and EdX collaborate with the business-oriented social networking service LinkedIn so that learners can display MOOC certifications. Upon course completion participants receive a link via email to their certificate, complete with the details of the course, that can be saved with a click to their professional profile.<sup>28</sup>

MOOCs offered by **FutureLearn** issue Certificates of Participation. Statements of Attainment are also available for some courses upon taking an on-site examination. This certificate states the final exam score, the exam conditions ("invigilated") and carries the logo of the institution offering the course. According to the FutureLearn website:

*A Statement of Attainment can serve as a good way to show evidence of formal or informal Continuing Professional Development (CPD), commitment to a career path, or your understanding of a particular subject. A Statement of Attainment verifies your identity, but does not imply the award of credit points or the conferment of a university qualification.*<sup>29</sup>

At least one FutureLearn course, "Discovering Business in Society", is recognised by an employer body, the Association of Chartered Certified Accountants. (This is discussed as a case study in Section 5.)

The University of Strathclyde (UK) offers a MOOC on the FutureLearn platform called "Caring for Vulnerable Children".<sup>30</sup> Learners on this MOOC can receive a Statement of Attainment for successfully taking an onsite exam, at a cost of 119 GBP – approximately 167 EUR.

**Iversity** issues ungraded Statements of Participation if the learner following the free-of-charge "audit track" has passed the progress threshold established by the instructor. Certificates of Accomplishment are graded, identity-verified, include a short description of the course content, and are signed by the instructor. If the learner's grade is in the top 10% of the cohort, this will be also stated on the certificate. It is noteworthy that iversity appears to be the only MOOC provider that issues a separate document – a Certificate Supplement – which contains detailed information about the course content and structure, learning objectives and grading scheme. Notably, learners who followed the "ECTS Track" and passed an on-site exam will receive credits issued **by the instructor's teaching university** on top of the Certificate of Accomplishment and a Certificate Supplement from iversity. This is the case for example in the University of Osnabrück's MOOC on Data Structures and Algorithms. (See Section 5 for more discussion on this MOOC.)

The French MOOC platform **Unow** advertises that it has provided over 65,000 awards for learning since its inception in 2012. Learning outcomes are credentialised through both certificates of completion and Canvabadges<sup>31</sup> (badges created within the Canvas Learning Management System in collaboration with Mozilla open badges<sup>32</sup>).

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<sup>27</sup> <https://www.edx.org/xseries>

<sup>28</sup> <http://blog.linkedin.com/2013/11/14/introducing-a-new-way-to-add-certifications-to-your-linkedin-profile/>

<sup>29</sup> <https://about.futurelearn.com/about/faq/?category=exams-and-statements-of-attainment>

<sup>30</sup> <https://www.futurelearn.com/courses/vulnerable-children/0/steps/5876>

<sup>31</sup> <https://www.canvabadges.org/>

<sup>32</sup> <https://badge.unow.fr/about>

According to the **openHPI** FAQ page, a “graded record of achievement”<sup>33</sup> is offered to candidates on successful completion of openHPI courses. The certificates indicate whether the learner’s results fall within the top 5, 10 or 20% of the class (Meinel and Willems 2013, p.6) and lists topics covered on the course.

Table 2 presents an overview of the costs to learners for verified certificates at four MOOC providers.

**Table 2: Sample costs to learners for Verified Certificates**

	Credential as acknowledgement of attendance	Costs	Identity verified credential and acknowledgement of learning	Costs
Coursera	Statements of Accomplishment	free of charge	Verified Certificates (Signature track)	49 USD, approx. 46 EUR varying fee by course for Signature Track: 30-100 USD, or 28-93 EUR. <sup>34</sup>
EdX	Honor Code Certificates	free of charge	Verified Certificates of Achievement	Varies by course: 25 to 100 USD <sup>35</sup> , approx. 23 to 93 EUR
Future Learn	Certificate of participation	34 GBP, approx. 47 EUR	Statements of Attainment	119 GBP, approx. 167 EUR
Iversity	Statement of Participation	free of charge	Certificate of Accomplishment and Certificate Supplement	Online examination 49 EUR On-site examination 149 EUR (also for ECTS track, see below)

### 2.2.2 Digital badges

Another emerging form of credentials for open learning is digital badges. According to The Mozilla Foundation’s Open Badges website:<sup>36</sup>

*A digital badge is an online record of achievements, tracking the recipient’s communities of interaction that issued the badge and the work completed to get it.*

A collection of badges can make visible a more granular set of skills than a single degree or course certificate. They can serve multiple purposes: “small” badges can be designed for the purposes of motivation and formative feedback, whereas “larger” badges can be used for certification and “may have more rigorous or defined assessments and be endorsed by organizations or other authorities” (The Mozilla Foundation, 2012, p.7). Poldoja (2014) differentiates between several types of badges:

- composite badges can be achieved by completing multiple assignments, e.g. each badge is issued after writing a forum entry or blog post on a specific topic;
- activity-based badges can be awarded automatically based on measurable learning activities, e.g. a certain number of tweets or wiki entries;
- grade-based badges reflect the grades that the learners have received; e.g. a bronze, silver or gold badge based on the overall grade average;
- hierarchical badges are divided into several levels, some of which may be composite badges based on lower level badges.

<sup>33</sup> <http://blog.ricardogomes.me/wp-content/uploads/2013/12/hpi-certificate.png>

<sup>34</sup> <https://courserahelp.zendesk.com/hc/en-us/articles/201223379-Signature-Track-Pricing-Payments>

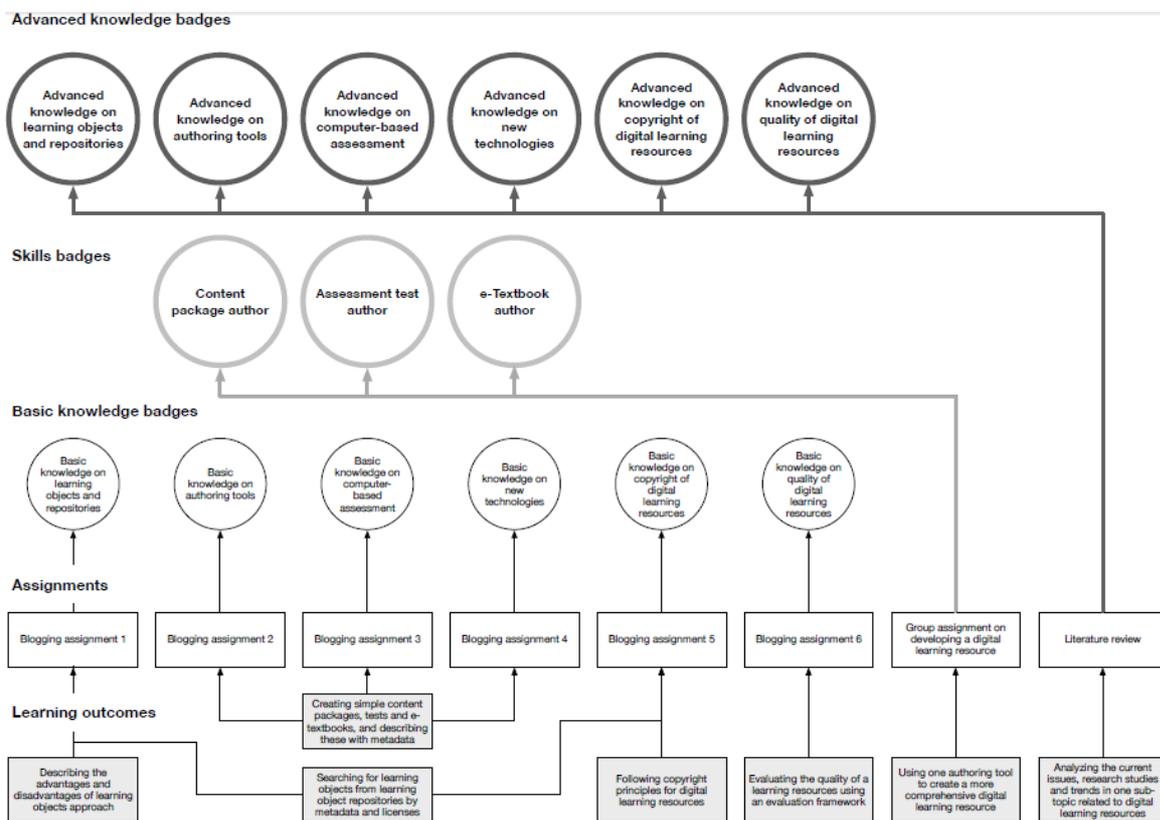
<sup>35</sup> <http://www.thecrimson.com/article/2013/10/2/edx-id-verified-certificates/>

<sup>36</sup> <https://wiki.mozilla.org/Badges>

A digital badge is a gateway to further information, since it contains metadata on how and when it was earned, the badge issuer and a hyperlink to an artefact created by the learner, demonstrating evidence for the award of the badge: for example, a website created during the course, or a collection of published blog posts. The French national MOOC platform, FUN (see Section 1.5 above) provides a set of quality standards and guidelines for institutions and teachers, which include the recommendation to award badges to encourage learners.

The Institute of Informatics at the University of Tallinn in Estonia offered an open course on preparing digital training materials issuing badges created through the Mozilla Open Badging system<sup>37</sup>. The course instructor designed a badge system connecting the seven learning outcomes of the course and eight assignments were connected to 15 possible badges. To complete the course, learners had to earn the following badges:

- six basic knowledge badges for completing a blogging assignment for each of the six main topics of the course.
- one of three skills badges for a group assignment on creating a digital learning resource (e.g. an e-textbook or e-assessment).
- one of six advanced knowledge badges for a literature review on a selected topic.



**Figure 6: Badge system linked to learning outcomes for an open online course at the University of Tallinn, Estonia (Poldoja, 2014)<sup>38</sup>**

<sup>37</sup> <http://openbadges.org/>

<sup>38</sup> [http://www.hanspoldoja.net/wordpress/wp-content/uploads/2014/12/obie2014\\_figure1.png](http://www.hanspoldoja.net/wordpress/wp-content/uploads/2014/12/obie2014_figure1.png)

The Swedish Digitala Skollyftet<sup>39</sup> (“the digital School lift”) initiative ran a MOOC for school teachers, librarians and school leaders to share good practice and thereby improve educational provision. The course was open, in that it was free to anyone working in the school system in Sweden after registering, and was carried out by a series of regulated discussions. A “Digital School Initiative Badge” (DSIB)<sup>40</sup> was awarded on completion of the course to participants who made sufficient contributions to the community. The participants selected what they considered to be their most valuable contributions, and grouped these together into an example of a digital badge: DS badge of the Swedish Digital School Initiative (Source: Mozilla Backpack website) single URL. The evidence was then assessed by a panel of experts. Subsequently, the badge was awarded via the Mozilla open badge initiative. Badge holders could continue to participate in the community, taking a greater role in its activities.



Figure 7: Example of a digital badge: DS badge of the Swedish Digital School Initiative (Source: Mozilla Backpack website)

The **Open University in the UK** promotes several of its courses on the OpenLearn<sup>41</sup> platform via the OpenUpEd portal. These cover a range of subjects including writing, Gaelic, and learning. They are described as comprising high quality educational material with learning objectives, study guidance and advice, self-tests, summaries, etc. There is also an online learning community, which anyone can join for free via a comments function on each course site. OpenLearn is also piloting a badging initiative for courses that increase employability. The OU explains its cautious approach to badging as follows (Law et al, 2014, p.1):

*To mitigate perceived risks to the sector and the University of providing a badged OU curriculum on a bite-sized scale, badges are limited to employability and skills development. Those achieving badges will be encouraged to display them through a public-facing profile on the OpenLearn website. In addition, registered students will be able to display both their informal learning and formal learning achievements together. In order to monitor impact, badged open content will be evaluated for its efficacy to motivate and develop informal learners and in providing employability skills for our students, which will form part of a longer term study.*

At Beuth University, Berlin, a research and development project called **Beuth Badges**<sup>42</sup> has been established to develop pedagogical, design and technology concepts and prototypes. Beuth University leads the **Credit Points**<sup>43</sup> project, which is funded by the German Ministry of Education and Research, the Ministry of Labour and Social Affairs and the Federal Agency of Labour. The project aims to improve academic and career opportunities of migrant academics (academics from other countries who have settled in

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<sup>39</sup> <http://www.digitalaskollyftet.se/>

<sup>40</sup> <https://backpack.openbadges.org/share/7383d93e9a56e8be99e9c6cbbc58ad48/>

<sup>41</sup> <http://www.open.edu/openlearn/>

<sup>42</sup> <https://beuthbadges.wordpress.com/>

<sup>43</sup> <http://creditpoints.beuth-hochschule.de/>

Germany) with technical degrees. After agreeing on an individual study plan, learners can earn digital badges, for example, for their German language skills, or for research skills. Beuth Badges integrates Open Badges into the learning management platform Moodle and the portfolio platform Mahara: Moodle is the issuer and Mahara is the displayer. Furthermore, participants in the Credit Points qualification scheme accumulate their achievement records in an online portfolio and receive ECTS points for their completed modules.

Two case studies involving digital badges are provided in Section 5.

The next section looks more closely at the assessment of learning in MOOCs.

### 2.3 Assessment practices in MOOCs

The traditional approach to educational assessment appeared at the beginning of the 20th century, based on the principles of psychometric research. According to this approach, assessment tries to measure the quantity of knowledge acquired by the learner (Mateo & Sangrà, 2007). Assessment with roots in classical testing is generally referred to as “summative”, or “assessment **of** learning”. A new approach was developed in the 1960s, namely “formative assessment” or “assessment **for** learning” that is designed to aid the learners’ construction of knowledge and development of skills and competences. From this perspective, assessment is an ongoing process, which aims to improve learners’ understanding and learning. It involves making expectations explicit and public; setting appropriate criteria and high standards for learning quality; systematically gathering, analysing, and interpreting evidence to determine how well performance matches those expectations and standards. The resulting information is used to document, explain, and improve performance (Angelo, 1995). Whereas formative assessment forms a basis for adjustments to ongoing instruction, results of summative assessment are the ones that play the largest role in recognition.

**EdX** states on its website that in order to pass and qualify for a Verified Certificate of Achievement, learners will need to “watch the videos, participate in the discussion forums, take exams and pass (the) course”.<sup>44</sup> The platform offers closed and open assessment options to the instructional designers/educators of the courses. Closed assessments are multiple-choice questions. Typical open forms of assessment, for which the platform provides online tools, are peer- and self-assessment. These rely on the creation of “rubrics” by course creators which include criteria that each response should meet, such as topics the response should cover, and “options” for how well each response satisfies the criteria. These rubrics function as guidelines for MOOC participants to assess themselves and others.

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<sup>44</sup> <https://www.edx.org/verified-certificate>

2 | Learn to Assess Responses IN PROGRESS (0 OF 2)

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**LEARNING TO ASSESS RESPONSES**

Your assessment differs from the instructor's assessment of this response. Review the response and consider why the instructor may have assessed it differently. Then, try the assessment again.

TRAINING ESSAY # 1 OF 2

(optional) To train students to perform peer assessments, replace this text with your own sample response for this assignment. Below, list the names of each of the criteria for this assignment, and then specify the name of the option that you would select for this response. Students will assess this response and compare the rubric options that they select with the rubric options that you specified.

If you don't want to provide sample responses and scores, delete the entire "assessment name"/"student training" element.

▼ **DETERMINE IF THERE IS A UNIFYING THEME OR MAIN IDEA.**

---

**SELECTED OPTIONS DIFFER**

The option you selected is not the option that the instructor selected.

<input checked="" type="radio"/> Poor	Difficult for the reader to discern the main idea. Too brief or too repetitive to establish or maintain a focus.	0 POINTS
<input type="radio"/> Fair	Presents a unifying theme or main idea, but may include minor tangents. Stays somewhat focused on topic and task.	3 POINTS
<input type="radio"/> Good	Presents a unifying theme or main idea without going off on tangents. Stays completely focused on topic and task.	5 POINTS

▼ **ASSESS THE CONTENT OF THE SUBMISSION**

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**SELECTED OPTIONS AGREE**

The option you selected is the option that the instructor selected.

<input type="radio"/> Poor	Includes little information with few or no details or unrelated details. Unsuccessful in attempts to explore any facets of the topic.	0 POINTS
<input type="radio"/> Fair	Includes little information and few or no details. Explores only one or two facets of the topic.	1 POINTS
<input checked="" type="radio"/> Good	Includes sufficient information and supporting details. (Details may not be fully developed; ideas may be listed.) Explores some facets of the topic.	3 POINTS
<input type="radio"/> Excellent	Includes in-depth information and exceptional supporting details that are fully developed. Explores all facets of the topic.	3 POINTS

**Figure 8: Example of a rubric for self or peer assessment with two criteria and several options at EdX MOOC platform (Source: edX website)<sup>45</sup>**

EdX discourages course designers/educators from overusing automated, closed assessments and instead recommends:

*the use, whenever possible, of authentic assessments rather than multiple choice questions for graded problems. Authentic assessments in online courses tend to lead to better learning outcomes. In addition, authentic assessments allow for infinite attempts, mastery learning, and more intellectual risk taking, which lead to substantially better learning outcomes.*

At **Coursera** assessment is done by peer assessment and automated Multiple-Choice Questions (MCQs)/Quizzes. Luo, Robinson and Park (2014) scrutinised peer assessment at a Coursera MOOC “Maps and the Geospatial Revolution”, addressing doubts on the reliability (consistency of scores given by multiple peer graders) and validity (correlation between peer-assigned scores and instructor-assigned scores) of this form of

<sup>45</sup> [http://edx.readthedocs.org/projects/edx-partner-course-staff/en/latest/exercises\\_tools/open\\_response\\_assessments/OpenResponseAssessments.html#pa-rubric](http://edx.readthedocs.org/projects/edx-partner-course-staff/en/latest/exercises_tools/open_response_assessments/OpenResponseAssessments.html#pa-rubric)

assessment. Their study “shows that the peer review system in general can provide grading results similar to those an instructor would provide” (ibid. p. 9) if 4-6 peers are involved in the process and that “the joint efforts of multiple learner graders can produce fairly consistent grading results using Coursera’s peer review system” (ibid. p. 11). They also report high levels of agreement between learner-assigned scores and instructor-assigned scores. In the introduction to their paper, the authors list a number of studies on face-to-face peer assessments that demonstrated benefits for learners, such as sense of ownership and autonomy, increased motivation, enhanced social presence, and the development of higher-order thinking and metacognition skills.

For some **FutureLearn** courses, participants have the option to take computer-based on-site examinations that are delivered at Pearson VUE test centres under invigilated conditions.

At **iversity**, three tracks with different assessment options are available to learners:

- Online proctored examinations based on MCQs which are graded automatically by software,
- On-site final examinations offered at a range of testing centres,
- Final course projects.

The second and third options are graded by the course instructor and/or the teaching assistants.

**Miríada X** works with either peer assessment or multiple-choice quizzes with automated feedback.

Assessment at **openHPI** typically combines homework and a final exam. The final exam consists of multiple-choice questions. To pass, learners are required to earn “at least 50% of the sum of maximum possible points for homework and the final exam. The final exam will weigh 50%.”<sup>46</sup>

## 2.4 Practices for verifying learners’ identity

The identity-verified tracks of MOOC providers typically work with a combination of learners’ ID photographs and live webcam images that the course participants are asked to present at various points throughout the course.

Upon course registration at **edX**, learners are requested to submit a photo and a photo of an official ID via their webcam. As the course progresses, they will be asked to re-verify their identity.

Online **iversity** examinations are proctored by a third party service called Remote Proctor NOW. The learner needs to provide snapshots of both a photo ID and him/herself and records a 360-degree scan of his room. Remote Proctor NOW furthermore “captures the entire exam session which is later reviewed by certified proctors. A report is provided to the institution with links to the actual video of any suspicious behaviour.”<sup>47</sup>

The identity of learners at **Coursera’s** “Signature Track” is confirmed through a series of webcam images and an analysis of keystroke dynamics. At the very beginning of the course and after every quiz, assignment, or exam submission, learners are asked to type a specific sentence to verify their identity through their unique typing patterns and take a photo of themselves through their webcam.

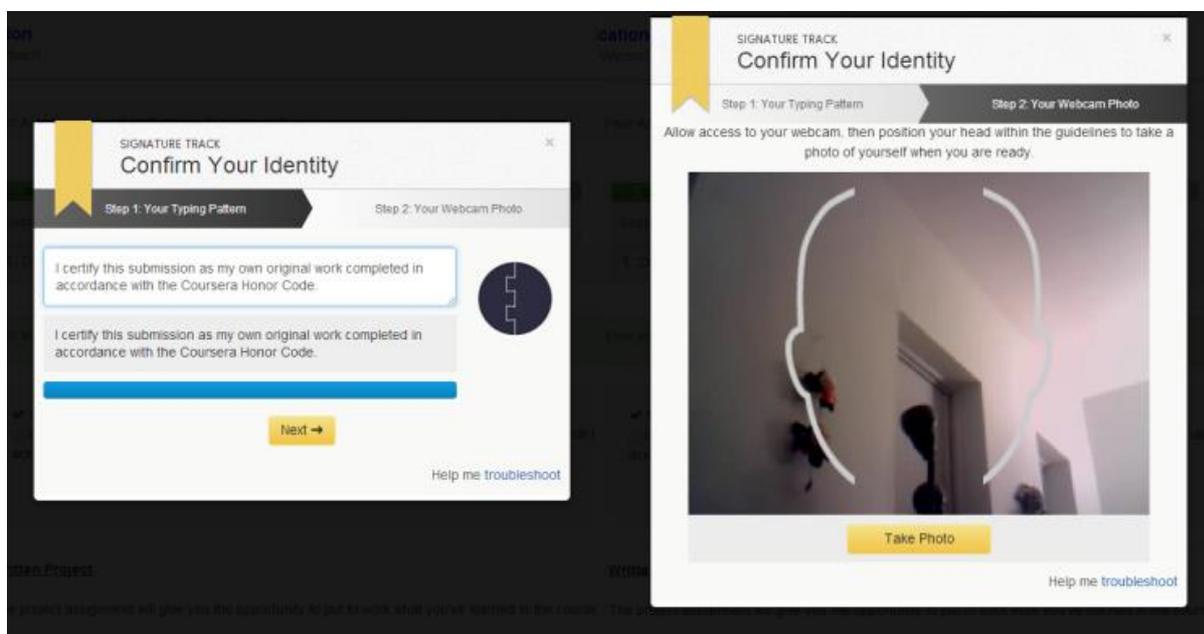
Learners who take an on-site exam for a **FutureLearn** course need to verify their identity by presenting two forms of non-expired, photo- and/or signature-bearing ID.

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<sup>46</sup> [https://open.hpi.de/pages/certificate\\_guidelines](https://open.hpi.de/pages/certificate_guidelines)

<sup>47</sup> <http://www.softwaresecure.com/product/remote-proctor-now/>

**OpenHPI** learners are expected to commit to a “code of honour”<sup>48</sup> when handing in assignments/course projects to preclude cheating.



**Figure 9: Identity verification through keystroke analysis and live webcam photo for a MOOC offered at Coursera (Source: Coursera website)**

## 2.5 ECTS credits to “take away” and related costs for learners

A number of open learning offers allow learners to carry ECTS for potential recognition by other higher education institutions through existing credit transfer arrangements. The maximum transfer limit varies from institution to institution in Europe. Cedefop (2007) reports that in one Slovakian institution, recognition of prior experiential learning can contribute up to 80% of ECTS credits required to complete study programmes. This represents a much higher limit for recognition of prior learning than is usual in European countries, and in theory, means that students registered at this institution could obtain 80% of their qualification via MOOCs or other open learning. A more typical example comes from the Open University in the UK, which allows up to 50% credit transfer on their Certificate of Higher Education in Environment (T16).<sup>49</sup>

Some examples follow of ECTS credit-bearing MOOCs.

Portugal’s open university, Universidade Aberta, offers a course via the OpenUpEd portal on the topic of climate change. Formative assessment with self-correction is available, and participants are also encouraged and expected to discuss and give feedback to one another throughout the learning activities. Non-fee paying learners receive a certificate of course completion after undergoing peer assessment process. Following a “freemium” model, the MOOC also offers a paid assessment and credentialisation option to

<sup>48</sup> [https://open.hpi.de/pages/honor\\_code](https://open.hpi.de/pages/honor_code)

<sup>49</sup> [http://www.open.ac.uk/study/credit-transfer/sites/www.open.ac.uk.study.credit-transfer/files/files/ecms/credit-transfer-ps/my-ou-qualification/e/Environment%20CertHE%20\(T16\).pdf](http://www.open.ac.uk/study/credit-transfer/sites/www.open.ac.uk.study.credit-transfer/files/files/ecms/credit-transfer-ps/my-ou-qualification/e/Environment%20CertHE%20(T16).pdf)

participants: for a period of up to three months after the course, based upon subsequent formal assessment of the work in the course by a tutor and a face-to-face exam, learners can receive 4 ECTS.

Università Telematica Internazionale UNINETTUNO, Italy, provides the majority of the courses listed on the OpenupEd portal, with a very wide range of subject areas across an arts, science, IT, humanities and business curriculum. All include self-evaluation exercises and peer-to-peer reviewing of exercises, and a "Students Activities Tracking" system that generates graphics, reports and statistics on learners' activities, use of learning materials, time spent, self-evaluation grading. According to the UNINETTUNO<sup>50</sup> website, the MOOCs ECTS credits are awarded against a fee, if the learner chooses this option. It should be noted that learners who want to get ECTS credits for these MOOCs need to enrol in the corresponding UNINETTUNO course. Then, a tutor is assigned to the enrolled student, whose learning activities are also recorded. An on-site final exam is administered to the MOOC participants at the UNINETTUNO headquarters and in designated national and international centres. An example that fits under this heading is the MOOC on Measurement Theory,<sup>51</sup> which leads to 2 ECTS credits.

Several MOOCs offered at iversity carry ECTS credits. Learners need to take an on-site exam at the university campus of the institution offering the MOOC in order to obtain the certificate (iversity 2013). It should be noted that "iversity doesn't issue the ECTS credits, they're just the platform provider. The partner universities can offer MOOCs as part of their accredited programmes" (Open Education Europa 2014). The University of Osnabrück offered a MOOC, "Data Structures and Algorithms", on iversity in 2014, and awarded 6 ECTS credits to learners who successfully completed an on-site examination (for more on this case, see Section 5). The cost for learners of the ECTS track for the course is 129 to 149 EUR.

The Lübeck University of Applied Sciences offers distance learning programmes on their oncampus<sup>52</sup> platform and offers the "Principles of Marketing" MOOC through iversity. It is stated on the course site that learners who complete 80% of the course will receive a free certificate of attendance; those who pass a multiple-choice online examination will receive a certificate from the Lübeck University of Applied Sciences and iversity; and those who pass an on-site exam will be awarded 5 ECTS credits – with the latter being "potentially chargeable".<sup>53</sup> This MOOC was previously offered in March 2013, and in this instance, 29 learners took the exam, with 25 passing (Wittke 2014, p.6).

EMLYON Business School offers MOOCs through the French MOOC platform Unow. For a fee, an authenticated certificate is issued carrying one EMLYON ECTS credit. The certificate states that the learner's identity was "remotely monitored"; the learner acquired specific knowledge from the MOOC; and that quizzes and case studies were correctly completed (MOOC EMLYON website).<sup>54</sup> Learners need to sit a final exam approximately 15 days after completion of the MOOC in order to qualify for this certificate. The "premium certificate" costs 300 EUR.

The Spanish Open University, UNED, lists MOOCs on the OpenUpEd portal on a range of subjects, including art history, languages, accounting and business. Most of these courses are described as requiring around 25-30 hours' study, although there is one

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<sup>50</sup> <http://www.uninettunouniversity.net/en/mooc-program.aspx?lf=it&courseid=3568&degree=125&planid=142&faculty=3>

<sup>51</sup> <http://www.openuped.eu/courses/details/4/221-measurement-theory>

<sup>52</sup> [www.oncampus.de](http://www.oncampus.de)

<sup>53</sup> <https://iversity.org/courses/grundlagen-des-marketing>

<sup>54</sup> <http://mooc.em-lyon.com/index.php/mooc-effectuation-2>

which requires 360 hours, and another 960 hours. Three types of awards are available, as noted by Read and Rodrigo (2014, p.286):

- *Badges are free of charge and can be gained automatically as the course progresses, for having achieved specific results, such as finishing an activity in a course, participating a certain number of times in the community, etc.*
- *A type of certificate, defined by UNED as a Credential, that is awarded as a result of a student having finished the majority (80% or more) of a given course and subsequently taking an online test. UNED charges 15 Euro for issuing this form of credential.*
- *Full certificates and ECTS credits, which require a student to undertake a computer-based test similar to the online one in one of UNED’s regional study centres, where proof of identity is required and the test is taken in authentic exam conditions. Prices range between 45 and 70 Euro<sup>55</sup>*

Most of the ECTS-bearing MOOCs we identified also market additional services compared to the free-of-charge option. Table 3 depicts three examples.

**Table 3: Costs and additional, fee-supported services for three examples of MOOCs carrying ECTS credits**

Provider and country	MOOC	Costs for ECTS track	Additional services
UNINETTUNO, Italy	Measurement Theory (Example)	180 EUR	Tutor support and access to live UNINETTUNO online classrooms
University of Osnabrück, Germany, through iversity platform	Data Structures and Algorithms	149 EUR	On-site exam and grade (otherwise non-graded)
EM Lyon Business School, France, through Unow platform	Effectuation - l'entrepreneuriat pour tous	300 EUR	1 hour tutored exam preparation with 2-4 other learners Access to the online community of the Business School LinkedIn recommendation by the course instructor

Some of the practices presented in this section are in line with a report by the UK Department for Business, Innovation and Skills (2013) that notes the centrality of the search for business models amongst institutions offering MOOCs – along with “all the associated sub-issues of scale, sustainability, monetisation, accreditation for MOOC learning and openness” (Ibid, p.5). A sustainable business model “includes, but is not limited to, certification, assessment, employee recruitment, human tutoring, advertising and tuition fees” (Ibid, p.23). The prediction from this UK government department is that a second generation of MOOCs will focus more on the typical student, and be more integrated with established distance and face-to-face programmes. These courses will have some enrolment restrictions, tutorial support and facilitation, and paid routes to enhanced services and assessment, and will result in more tangible recognition for students (Ibid, p.20).

A case study of an institution awarding ECTS credit points to “take away”, the University of Osnabrück, is provided in Section 5.

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<sup>55</sup> See: [http://portal.uned.es/portal/page?\\_pageid=93,48033041&\\_dad=portal&\\_schema=PORTAL](http://portal.uned.es/portal/page?_pageid=93,48033041&_dad=portal&_schema=PORTAL)

## 2.6 Collaborative initiatives working towards the recognition of MOOC-based learning in higher education

European institutions are collaborating with one another and with institutions globally in a range of networks and consortia to support and enable the recognition of MOOC-based learning. In addition to the partnerships between higher education institutions and MOOC platforms mentioned in Section 2.1.1, a number of networks and consortia in Europe are specifically investigating ways to enable credit accumulation and transfer from MOOCs.

**OpenupEd**<sup>56</sup> is an open, non-profit partnership for the provision of MOOCs that contribute to opening up education. It is coordinated by the European Association of Distance Teaching Universities (EADTU) and supported by the European Commission. The partnership's self-understanding is "full" openness, quality and diversity.<sup>57</sup> OpenUpEd is largely European-based, although some non-European countries are involved. The European institutions currently listing MOOCs on the OpenUpEd portal are:

- Kaunas University of Technology, Lithuania
- Ministère de l'Enseignement Supérieur et de la Recherche, France
- Open Universiteit in the Netherlands
- Universidad Nacional de Educación a Distancia (UNED), Spain
- Universidade Aberta, Portugal
- Università Telematica Internazionale UNINETTUNO, Italy
- The Open University, UK
- Slovak University of Technology in Bratislava (FEI)
- FernUniversität Hagen, Germany
- Open University of Cyprus

OpenUpEd is not a MOOC delivery platform - the MOOCs are delivered on a range of platforms. The partnership has established a framework of common features for the MOOCs of all members, which are offered for a diverse range of subjects, to different levels of complexity, workload and attainment. A quality label for MOOCs was developed by OpenUpEd in 2014 that was tailored to both elearning and open education. The OpenupEd label is used as an entry/review procedure for becoming a partner and aims to serve as "an improvement tool, comparing institutional performances with current best practices and leading to measures to raise the quality of its MOOCs and their operation".<sup>58</sup> One of the eight features of the framework is "recognition options", which covers credentialisation certificates of participation, badges for specific activities, overall credentials based on a final online test, and formal credit as a component in a full curriculum.

By November 2013, of the 174 MOOCs offered by the OpenUpEd partners, over 100 offered the opportunity for credentials and ECTS credits (Rosewell and Jansen 2014). Mulder and Jansen (2015, p.11) note that:

*The partnership will intensify its ongoing arrangements towards mainstreaming recognition through formal credit course certificates where the credit value can count for a larger educational program (e.g., a bachelor degree).*

Most of the OpenUpEd institutions require learners to go to an exam centre and take a formal exam if they want to obtain ECTS credits, with the exception of UNED in Spain,

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<sup>56</sup> <http://www.openuped.eu>

<sup>57</sup> <http://www.openuped.eu/openuped-temp/59-about-openuped>

<sup>58</sup> <http://openuped.eu/quality-label>

which provides the option for an online exam as well. At the moment, these credits are only recognised by the issuing institution, but in the near future, OpenUpEd is planning to launch short learning programmes with mutual recognition between partners in 2016 (Jansen, 2015).

The **OER universitas**<sup>59</sup> (OERu) is an international consortium of universities, which aims to enable learners to acquire entire qualifications through open learning, by combining credits achieved at the different institutions in the consortium. There are currently 37 institutions in the partnership, including the following European institutions: Open University of Catalonia (Spain), IT Sligo (Ireland), Open University (UK), University of South Wales and University of Highlands and Islands (Scotland), and a UNESCO Chair based at Open University (Netherlands).

**The Eurotech Universities network**<sup>60</sup> is a network of four technical universities: École polytechnique fédérale de Lausanne (EPFL), TU Munich, Denmark TU and TU Eindhoven. These institutions collaborate on a broad range of matters, including the development and delivery of MOOCs through the edX platform. The MOOCs, which are listed on the Eurotech website,<sup>61</sup> are delivered via Coursera and offer standard Statements of Accomplishment or Verified Certificates. At a recent Eurotech gathering, a debate took place on the subject of MOOCs and the future of education. Recognition of credits was highlighted as one of the key challenges in the EU (Eurotech Universities 2014). It was noted that the idea of formal education institutions or employers within Europe recognising non-formal, open learning was achievable, considering, on the one hand, the long history of RPL in the region and, on the other, the recent proliferation of both OER and MOOCs.

The network has also jointly established a “MOOCs for Continuing Education” initiative covering the broad themes of Green Tech and Life Sciences (EPFL 2013). These courses are intended to be short (3 to 4 weeks, ± 20 hours, and to award 2 to 4 ECTS credits. In some cases, several courses from different Eurotech partners are offered under the same topic, marketed as a cluster and can lead to wider certification (EPFL 2013). According to the Technical University of Denmark (DTU) website,<sup>62</sup> some of these new courses will also be offered via Coursera, which is a particularly interesting development in that these will probably be the first Coursera MOOCs to offer ECTS credits. There is no mention of what kind of assessment will be used, but it seems unlikely that the Coursera Signature Track examinations would in themselves be considered robust enough to enable the issuing of ECTS credits.

An indication that on-site examinations are being considered for the future was found in a presentation<sup>63</sup> used at a Eurotech gathering in April 2013, in which a three-stage business model was proposed:

- Take a MOOC for free,
- Receive a certificate for free,
- Take an on-site course and/or exam leading to professional certification for a fee.

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<sup>59</sup> [www.oeru.org](http://www.oeru.org)

<sup>60</sup> <http://www.eurotech-universities.org/>

<sup>61</sup> <http://eurotech-universities.eu/education-2/#moocs>

<sup>62</sup> <http://toolbox.llab.dtu.dk/toolbox/tool/67/>

<sup>63</sup> [https://documents.epfl.ch/groups/a/ap/ap-enac/www/Associations\\_Professionnelles\\_ENAC/Seances\\_AP\\_2013/Seance%20N%C2%B01\\_22\\_avril\\_2013/Pr%C3%A9sentation%20MOOCs%20%20formation%20continue%20par%20Dimitrios%20Noukakis.pdf](https://documents.epfl.ch/groups/a/ap/ap-enac/www/Associations_Professionnelles_ENAC/Seances_AP_2013/Seance%20N%C2%B01_22_avril_2013/Pr%C3%A9sentation%20MOOCs%20%20formation%20continue%20par%20Dimitrios%20Noukakis.pdf)

**VMPass**<sup>64</sup> was a European project that aimed to increase inter-institutional recognition of learning outcomes based on open learning, such as virtual mobility, MOOCs and self-study via open courseware-based courses. The initiative validated a learner-held "learning passport" in five HE partner institutions. The passport contains information from the open learning provider, the learner and the assessing institution, thus facilitating a well-informed decision on recognition. The project proposed that an online recognition clearinghouse where information from the learning passports should be set up by members. Crowd-sourcing techniques should be applied to reduce the workload involved in RPL or challenge examinations to recognise open learning. The objective of the VMPas project was to make open learning pathways more visible and build trust in recognition among a community of clearinghouse members.

**eMundus**<sup>65</sup> was an initiative supported by the European Commission which aimed to support long-term, balanced, inter-cultural academic partnership for improving learning and teaching through Open Education approaches. According to the eMundus activities Roadmap,<sup>66</sup> one of the aims of eMundus was to foster sharing of knowledge, tools, practices around MOOCs and virtual mobility, and their impact on HE internationalisation, and the issue of credit recognition. This project culminated in March 2015 with the dissemination of their findings via a series of webinars

**Kiron University**<sup>67</sup> is a non-profit organisation based in Berlin, Germany, which aims to enable refugees to obtain a degree. According to their website:

*We craft elegant degree programmes that consist of a 2 year online and a 1 year offline part. For the first two years, our students can choose courses out of the whole universe of Massive Open Online Courses (MOOCs)... We take these open source online courses, modify them with the latest e-learning technology and design elegant study programmes with real-life working sessions, projects in teamwork, mentoring, student support and modern, fun ways of learning and testing out of it. All of this is done with the careful supervision of our partner universities as well as experienced professors, experts in education and established educational institutions. For the third year, our students go to a classic university attending regular courses. They can choose out of a variety of well-established institutions like RWTH Aachen, Applied University Heilbronn or Open University of West Africa.<sup>68</sup>*

Kiron launched in October 2015, with funding from the crowdsourcing platform, Kickstarter.

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<sup>64</sup> <http://vmpass.eu>

<sup>65</sup> <http://www.emundus-project.eu>

<sup>66</sup> <http://wikieducator.org/Emundus/Roadmap>

<sup>67</sup> <https://kiron.university/>

<sup>68</sup> <https://kiron.university/about>

### 3. Recognition practices around MOOC-based learning

This section explores how and whether learning outcomes and credentials as digital badges/certificates (carrying ECTS or not) awarded by MOOC providers are acknowledged by:

- universities for exemption or further progression,
- employers or employer associations for recruitment or career advancement.

#### 3.1 Recognition by Higher Education Institutions

There are two ways in which HEIs currently recognise open learning. Firstly, open learners gain access to a higher education programme by exemption from an entrance exam, and secondly, registered students earn credits towards a higher education qualification through open learning offers from institutions other than their home institutions. In the context of the latter, it is worth noting that the American Council on Education (ACE) has assessed some of Coursera's MOOCs and recommended selected ones for college credits in the USA (Ace 2012). Although this endorsement has not (yet) been replicated by a European higher education association, a third of the university representatives surveyed by the European University Association in December 2013 (out of a total number of 31 respondents) said they awarded credits for their own MOOCs under certain circumstances (Gaebel et al. 2014). "There is growing pressure on institutions to recognise learning outcomes and award credits both for their own MOOCs and those delivered by other institutions" (Ibid, p.67). This sentiment is echoed in a report by the UK-based Department for Business, Innovation and Skills (2013), which also notes that there is a need to develop effective business models (Ibid, p.54). The timeliness of the OpenCred study is borne out by these observations in the literature.

Three broad categories of recognition practices in HEIs concerning learning outcomes achieved through MOOCs were identified by our research:

- HEI courses turned open: recognition for own registered students,
- Recognition of MOOC credentials allowing entry into higher education,
- Recognition for registered students who successfully complete externally provided MOOCs.

The following sections provide details on each of these practices.

##### 3.1.1 HEI courses turned open: recognition for own registered students

In this category, students already registered on a programme at a higher education institution may be invited or required to do a MOOC provided by their "home" institution or a specified partner institution. The credits obtained from the MOOC will be recognised as part of the credentials they receive for the total programme.

An example from Austria is the iMooX<sup>69</sup> platform, created by TU Graz and University of Graz, which offered its first MOOC in March 2014. iMooX is funded by the Styrian Provincial Government's Future Fund and is under the patronage of UNESCO because all content is rolled out and available in the form of Open Educational Resources. The platform is intended for use by any institution in the future, especially those in the German speaking area. ECTS credits are awarded for examinations. The MOOC "Social Aspects of Information Technology" is provided through the iMooX platform by TU Graz. Apart from being accessible to the wider public, the course is also a requirement for students in an Information and Computer Engineering programme. Registered students earn 2.5 ECTS for successful completion of an online multiple-choice test and an

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<sup>69</sup> <http://www.imoox.at/wbtmaster/startseite/about.html>

additional essential practical task. External learners receive a certificate of attendance (but no ECTS credits) after passing the same exam. In a recent study it was found that 80% of the students registered at TU Graz successfully completed this MOOC, while 11% of external students obtained the certificate (Ebner, 2015).

The University of Tartu (Estonia) offers "Estimation of Measurement Uncertainty (MU) in Chemical Analysis" as a compulsory part of the Master programme "Applied Measurement Science". In 2014, the course was run as a MOOC on the learning management system Moodle. Each of the six course weeks "ended with a graded test, often composed of several parts and ranging [...] from simple "ticking" tests to complex fully-fledged MU estimation problems" (Leito et al., 2015). These tests were automatically graded from A to F and completing the course required learners to achieve a minimum of 50% or 70% (last 2 weeks) of correct answers. The course is worth 1 ECTS credit point towards the total 45 ECTS of compulsory credits within the programme.

In the spring of 2013, the University of Applied Science, Munich in Germany, offered a MOOC called COER13<sup>70</sup> in a joint venture with University of Tübingen and several non-profit organisations active in this course topic. The main target audience consisted of teachers, and the university agreed to give credits for successful participation in the course – "successful" being defined as getting the badge level II (woERker). None of the participants took up this offer. The experience of running this MOOC is described in a paper by Arnold et al (2014).

### **3.1.2 Recognition of MOOC credentials allowing entry into higher education**

Some MOOCs seem to have been designed with the intention of converting MOOC learners into enrolled students; in other words, recruiting students into a mainstream programme offered by the MOOC provider.

In Finland, the University of Helsinki's Department of Computer Science runs courses in which learners do coding tasks independently and with guidance, a process that the Department of Computer Science refer to as the "extreme apprenticeship method". Initially, assessment of these tasks was done by the instructors; however, the code produced by learners is now automatically assessed using the TestMyCode (TMC) testing system. This made them easily adaptable to a MOOC format, and MOOCs on programming have been running since 2012 (University of Helsinki, Department of Computer Science, n.d.). Of the 417 participants of the first cohort, 38 were subsequently accepted into the Computer Science Department, and the Department is now considering using attendance on the MOOC as an alternative to passing an entrance exam (Vairimaa 2013, pp.3-6).

The University of Nicosia (Cyprus) offered a MOOC on "Introduction to Digital Currencies"<sup>71</sup> in May 2014. The MOOC was taught by an expert on the concept of the Bitcoin and is the first module on the Master of Science in Digital Currency. For registered students on the respective programme at Nicosia, this free-of-cost MOOC contributed 10 ECTS credits towards a total of 90 ECTS credits for the entire Master's degree. All the other 10-ECTS modules on this programme cost the student 1,470 Euro. Members of the public received a certificate from the University of Nicosia through the blockchain technique, i.e. a distributed database, to aid long-term accessibility and authenticity verification of the issuer. The course organisers state on their website that

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<sup>70</sup> <http://www.coer13.de/>

<sup>71</sup> <http://digitalcurrency.unic.ac.cy/free-introductory-mooc>

more than 50% of participants were interested in completing the full Master of Science degree.

In Cyprus, CARDET (Centre for the Advancement of Research and Development Technology) has launched a large initiative that aims to create a process for accrediting and mapping knowledge acquired via non-formal, open learning. They are also collaborating with other stakeholders to examine ECTS equivalence, according to their Executive Director (Vrasidas, 2014).

The Spanish Open University (UNED), which offers many of the MOOCs on Miráda X, is planning to offer a formal certificate in partnership with Telefonica and Universia (Gaebel 2014). Also in Spain, the University of Rioja (UNIR) has indicated that they intend to integrate MOOCs into their formal degree programmes as a pilot for the VM-Pass project<sup>72</sup>.

### **3.1.3 Recognition for registered students who successfully complete externally provided MOOCs**

As noted by NVAO (2014, p.8):

*Where an institution prescribes or recommends a MOOC in the context of blended learning, whether or not in combination with other curricular components of its own, and then administers its own tests on the relevant material, students indirectly receive credits for the MOOC.*

The most consistent integration into a higher education programme with full recognition of MOOC-based learning for progression was found at the University of Salzburg, Austria. Students of the Computer Science programme could opt for MOOCs offered on the Udacity, Coursera and edX platforms (Österreichische Universitätenkonferenz, 2014) as alternatives to attending face-to-face lectures. Local lecturers selected and examined the respective set of MOOCs for their suitability. Feedback on assignments and the final examinations was provided by the local teachers.

In a pilot study conducted by the Technical University of Munich in Germany called "Guided English Self-Study",<sup>73</sup> students enrolled at that institution were able to earn up to 2 ECTS credits for participating in a MOOC of their own choice conducted in English. Students received up to 60 hours' tutorial support to help them get the most out of their chosen MOOC, including assessment and feedback on the texts they submitted (Godwin-Jones 2014). There was no requirement for the chosen MOOC to have any particular type of assessment, since the Technical University staff provided an additional layer of support and assessment (at least in terms of English language).

In the above examples, tutoring and/or summative assessment remains with the home institution of the student. The next practice of open learning recognition that was identified in the OpenCred study is different.

An internal board of the Spanish Open University, UNED, has evaluated a set of MOOCs in order to decide whether and how many ECTS credits can be granted, if the university's own students complete the course. The MOOCs are offered through a collaboratively run platform which has been developed by the initiative "E-Learning Communication Open Data (ECO)". UNED is a partner of the ECO project and has also contributed open courses. UNED learners can now receive 1 ECTS credit for successful participation in the MOOC "Aprendizaje Ubicuo y Alfabetización Digital para personas en exclusión social"

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<sup>72</sup> <http://vmpass.eu>

<sup>73</sup> See:

[https://www.sprachenzentrum.tum.de/fileadmin/w00bjd/www/Academic\\_English\\_Cluster/TUM\\_Academic\\_English\\_Brochure.pdf](https://www.sprachenzentrum.tum.de/fileadmin/w00bjd/www/Academic_English_Cluster/TUM_Academic_English_Brochure.pdf)

(Ubiquitous learning and digital literacy for socially-excluded groups) and “OER y su aplicaciones pedagógicas y comunicativas” (OER and their pedagogical and communicative use)(Jaurena 2014).

A new development at the Open University, Netherlands, will potentially enable registered students to have credits from MOOCs or other open learning offers recognised as part of their BA degrees. Starting in 2016, BA students will be given two “free” 15-credit modules to fill from courses outside the programme they are enrolled on. These credits could come from other courses within the OUNL, or from other universities in the Netherlands, or also possibly from MOOCs, on condition that students obtain institutional approval for the latter. (Lansu, 2015).

### 3.2 Recognition by employers

There are two ways in which employers or employer associations can recognise MOOC-based learning achievements: for their employees’ career progression or as a means of recruiting future employees. They do this by benefiting from other providers’ educational or by being directly involved in the creation, design and promotion of the MOOC, where recognition becomes very straightforward.

When this study was carried out, large-scale research on perceptions of the value of MOOCs among Europeans did not exist. However, a U.S. study surveyed 103 employers in North Carolina, particularly Human Resource professionals. It showed that more than half (57%) of all organizations surveyed could imagine using MOOCs for recruitment, especially for staff with technical skills in high demand. 83% considered using or could see their organization using MOOCs for professional development (Walton Radford et al., 2014).



**Figure 10: MOOC certificates awarded to participants in the Spanish “Actívate” initiative (Source: Google Activate website)**

#### 3.2.1 MOOC completion counting towards professional development

In the Netherlands, “a large number of occupational groups are awarded permanent education (PE) credits as a part of mandatory continued training and lifelong learning programmes” (Verstelle et al 2014, p. 28), which might lend itself very well to the notion of employers recognising non-formal, open learning achievements. Verstelle et al describe the following case: To be featured in the register of the Dutch Bureau for Sworn Interpreters and Translators (Wbtv) interpreters are obliged to take regular refresher courses and engage in training activities accruing at least 80 permanent education credits over a period of five years. Each PE credit represents one hour of training. In 2013, a translator gained a certificate for a MOOC in European Law from Leiden University through the Coursera platform and inquired whether - and if so, how many - PE credits Wbtv could award. Apparently, Wbtv found it difficult to determine the number of hours necessary to complete the course and assessing the quality of the platform

provider. However, Wbtv set out to develop new policies for permanent education extending to MOOCs and online education.

A commercial provider in France, the First Finance Institute, has established a Business MOOC platform,<sup>74</sup> which is aimed at French and English-speaking audiences and claims to have over 50,000 members. The MOOCs are offered free of charge for the first four weeks, after which learners are invited to continue for “an optional week 5” for a small fee (29 USD for students and 59 USD for professionals, or 27 and 55 EUR respectively) – which includes on-site examinations taken at Pearson VUE centres around the world and certification. Because the assessment is done on-site, there is both identity verification and real-time supervision. Some of these MOOCs have laid the groundwork for certain certificates offered by the First Finance Institute, for example the “Financial Analysis” MOOC, which offers an “Attestation of Success” – described as “the first step towards the ICCF® Certificate (International Certificate in Corporate Finance®), which is recognised by many investment banks, Masters in Finance and MBAs.”<sup>75</sup> It seems that learners who want to achieve this certificate still need to sign up for the full course and pay the full 790 USD (approximately 735 EUR) fee.<sup>76</sup> The MOOC is offered as a way of recruiting students for this course and the certificate does not provide exemption from any accredited courses/modules.

The MOOC ‘Discovering Business in Society’ provides an example of non-formal, open learning achievements being recognised by a national professional body, in this case the Association of Chartered Certified Accountants (ACCA), in association with Exeter University<sup>77</sup> in the UK. According to the course website, successful completion of the summative assessment of the course “will lead to exemption from the ACCA paper F1, Accountant in Business”. (For more about how the ACCA approaches recognition of MOOC-based learning, see Section 5.2.4.)

In Scotland in the UK, a number of working groups within the Mozilla Badge Alliance<sup>78</sup> are seeking to identify standards for badging across all sectors. They are also looking at the impact of badging on non-formal learners and recognition by employers. The JISC Regional Support Centre for Scotland has written a case study on the use of Open Badges in Borders College, a Further Education institution (JISC RSC Scotland, 2013). This was the first institution in Scotland to award open badges (Borders College, 2013). According to a presentation by Suzanne Scott of Borders College: “Open badges are now used to engage with staff and have replaced all staff CPD paper certificates” (Open Scotland, 2014). This example is discussed further in Section 5.2.5.

### **3.2.2 MOOC participation as part of corporate training**

160 employees of the French cosmetic company L’Oreal completed the MOOC “Public Speaking” offered through the iversity platform in 2015. The course was developed by a Spanish ed-tech company in collaboration with a lecturer from Universitat Pompeu Fabra (UPF). Overall 25,000 individuals participated in the MOOC. To obtain a certificate, course participants had to submit a video presentation that was peer-reviewed by fellow participants and graded by the instructors. The cost of a certificate was 99 EUR and L’Oreal covered the cost for their employees. The CEO at Homuork, who led the course and moderated the community, stated that “MOOCs are definitely becoming an excellent educational choice for big companies, offering higher quality standards than traditional

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<sup>74</sup> <http://firstbusinessmooc.org/>

<sup>75</sup> <http://firstbusinessmooc.org/financial-analysis/>

<sup>76</sup> <http://first-finance-institute.org/products-page/corporate-finance/iccf-certificate/>

<sup>77</sup> <http://business-school.exeter.ac.uk/mooc/>

<sup>78</sup> [www.badgealliance.org](http://www.badgealliance.org)

e-learning at lower costs". He added that "more and more HR departments are requesting us to plot personalised learning paths through MOOCs for skills acquisition".<sup>79</sup>

The next example comes from outside of Europe and is nevertheless presented here as an instance of a company integrating MOOCs into its corporate training strategy. The US telecommunication provider AT&T in partnership with Udacity invested 1.5 million USD to develop a "nanodegree" programme in a MOOC format to build up technology-related skills. These 6-12 month degrees are on front-end Web development, data analysis, iOS development and introduction to programming, for example. The company recognises the Nanodegree credentials for a range of our software jobs and covers the tuition fee for their managers.<sup>80</sup> It should be noted here that Udacity charges for tuition, but many courses are offered free of charge outside of the degree path.

### **3.2.3 MOOCs used for recruitment and talent pooling**

According to OpenHPI (2014), in response to the question, "Would you add a MOOC certificate to your job application?" most learners said "Yes! ... even just a certificate of participation."

Allowing potential employers to contact successful MOOC participants is part of the business model of Coursera. Through Coursera's Career Service, learners can opt to have their information passed on to interested employers. A similar approach was announced by Udacity and, according to its founder, more than 350 firms — including Amazon, Facebook, Google, and Twitter — signed up to the matching programme (Young, 2012). However, Udacity terminated the programme in 2014.

Recruitment or talent pooling practices through MOOCs by European employers were not identified. However, two instances from the Americas demonstrate this practice. First, AT&T in the USA offers internships to high-performing students of the custom-created MOOCs through its Nanodegree programme. Second, Tenaris, an Argentinian steel manufacturer and supplier, collaborated with edX to offer the MOOC "Introduction to Steel" as part of an initiative of the World Steel Association. The objective of the open online course is "to deliver education and training to current and future employees of steel companies and related businesses".<sup>81</sup>

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<sup>79</sup> <https://iversity.org/en/pages/loreal-iversity-mooc-public-speaking>

<sup>80</sup> [http://www.att.com/Investor/ATT\\_Annual/2014/att\\_launches\\_mooc.html](http://www.att.com/Investor/ATT_Annual/2014/att_launches_mooc.html)

<sup>81</sup> <http://www.tenaris.com/en/MediaAndPublications/News/2015/May/SteelIntro.aspx>

## 4. Assessment and recognition practices for OER-based learning

The **Open Educational Quality Initiative (OPAL)** report (Andrade et al., 2011) found that the existence of national, regional or institutional policies on OER and practices had triggered engagement in the production, sharing and use of OER.

As noted in Section 2.2.2, the **Open University (UK)** is promoting several of its courses on the OpenLearn platform and is trialling the use of badges for learners who successfully complete online assessments related to these OER.

The UK-based **Peoples-uni** offers open courses based on OER, which are delivered via an open-source platform. To access the courses, students must enrol and pay their fees, which are substantially below mainstream university fees. According to the Peoples-uni website, "the total cost of a Peoples-uni Diploma is £240 and a Masters is £500" (approximately 337-703 EUR). The initiative aims to support learners in developing countries. There are "limited opportunities" for learners from designated "high income countries", and these learners are required to pay higher fees (Peoples-uni nd, b). The courses are endorsed by the Royal Society for Public Health (RSPH). To date, no candidates from any EU Member State has taken up the opportunity (Davison, 2014).

In Ireland, under a new government-led strategy for higher education (Department of Education and Skills, 2011), 14 institutes of technology have joined forces and created a shared portal called **Bluebrick**,<sup>82</sup> for all their courses in order to enable flexible learning by part-time learners. The strategy does not itself provide mechanisms for the recognition of non-formal, open learning; however, some of the participating institutions have begun moving in that direction. A draft policy document has been drawn up between the Institute of Technology Sligo (IT Sligo), Galway Mayo and Letterkenny Institute of Technology, that proposes the acceptance of non-formal open learning within RPL procedures. IT Sligo have approved the policy and have also produced a new procedure for RPL, which includes the acceptance of a successfully completed challenge exam as evidence that participants have "achieved the learning outcomes of specified Institute modules" (Institiuid Teicneolaiochta, Sligeach, 2014). IT Sligo is a member of the OERu and is currently developing modules in electronics and engineering for the OERu. They will be piloting the new RPL policy in these modules, and the intention of the challenge exam is to cater for non-formal, open learners, with the expectation that OERu learners will be amongst the first to apply for this option. Challenge exams would significantly reduce the costs involved in conventional RPL processes, which are generally highly labour intensive for the institution's staff. Plans are currently being developed for setting up the challenge exams, and it is likely that some form of supervised, real-time online proctoring will be used (Clinch, 2014).

At **Vytautas Magnus University** in Lithuania, teachers undergoing initial teacher training can have their use of OER included with their theoretical and practical achievements when applying for RPL (Cedefop, 2007, p.31, p.75). This will enable them to achieve exemption from certain courses, thereby reducing the duration of their formal training period. This is a particularly interesting example because of the lack of any formal assessment associated with OER.

In an emerging initiative in the UK, the **University of South Wales** has set up a working group to look at the possibilities of recognition at institutional level, which would include Continuing Professional Development (CPD) for employability and internal staff development, as part of the Open Educational Resources & Practice initiative (Deborah Baff, 2014). Welsh universities have signed a public declaration of intent to increase

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<sup>82</sup> [www.bluebrick.ie](http://www.bluebrick.ie)

access to higher education through open education (OER Wales 2014). The Higher Education Wales declaration can be found at HEW (2013).

## 5. Case studies on assessment and recognition practice

Building on the desk research described earlier, six interviews were conducted to gain deeper insights into recognition practices in open online learning from different perspectives.

### 5.1 Case selection and data gathering

Cases were chosen to explore the diverse contexts in which assessment and credentialisation of MOOCs take place and to look into different approaches in detail for (future) recognition. One of the selected cases is not run in a MOOC format, but offers a limited group (staff of a further education college) training, only part of which is run online. It has been included because it gives valuable insights into the recognition of employees' learning achievements by digital badges, a form of credential awarded for several other MOOCs (see Section 4.2 for examples).

Six individuals were interviewed: i.e. two teachers from HE Institutions who delivered open courses, two learners on MOOCs, and two employers/members of professional bodies. Interviewees completed a consent form (see Appendix B). The interviews were audio recorded and abridged transcripts were written up. These transcripts are available in Appendix B.

The two academics who were interviewed developed the courses that were attended by the two open learners interviewed, which provided two views of the same MOOC in each case. One of these MOOCs was German, the other Croatian. In the quotations, the interviewees are referred to as T1 and L1 for the German MOOC and T2 and L2 for the Croatian MOOC. The representatives of the professional bodies and employers were both associated with educational provision in the UK and are referred to as E1 and E2. These online courses were collaborations between higher educational institutions and either an employer (E1) or a professional body (E2). A brief description of the various contexts of the interviewees is given in the following table.

**Table 4: Summary of interview contexts**

<b>Interview setting</b>	<b>Interviewee code</b>	<b>Courses discussed</b>	<b>Interviewee's organisation and role</b>
A: Higher education institutions	T1	"Data Structures and Algorithms" MOOC <sup>83</sup> , offered via iversity	University of Osnabrück (Germany), Professor of Computer Science. Designer of the MOOC and teacher on this MOOC.
	T2	"Building Modules in MOODLE" MOOC <sup>84</sup>	A staff member from the Croatian Academic and Research Network (CARNet) that taught on the MOOC
B: Learners	L1	"Data Structures and Algorithms" MOOC	Learner on the MOOC and also a full-time student of Business Informatics at a different university in Germany

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<sup>83</sup> <https://iversity.org/de/courses/algorithmen-und-datenstrukturen>

<sup>84</sup> [http://www.carnet.hr/carnet\\_news?news\\_id=3123](http://www.carnet.hr/carnet_news?news_id=3123)

Interview setting	Interviewee code	Courses discussed	Interviewee's organisation and role
	L2	"Building Modules in MOODLE" MOOC	Teacher/Counsellor Horvati Primary School, Zagreb, Croatia who participated as a learner in the CARNet MOOC
C: Professional bodies or employers	E1	- Borders College <sup>85</sup> CPD course on Equality - Borders College/NHS CPD course on Manual Handling	Borders College (Scotland): Technology Enhanced Learning (TEL) Manager
	E2 (two interviewees)	University of Exeter MOOC run in partnership with ACCA (Association of Chartered Certified Accountants): "Discovering Business in Society" <sup>86</sup>	Executive Director of Strategy and Development for ACCA Director of Learning for ACCA

Questions were asked on a range of issues regarding their involvement with the specific online courses, their attitude to and experience of MOOCs in general. Recognition options and the interviewees' stance on these were also explored. Following an overview of the cases, this rest of this chapter is organised according to the following key themes:

- Identity verification and on-site versus off-site examinations,
- Learners' perspectives on achievements, credentials and recognition options,
- Assessment of learning achievements,
- Reflections on results and impact,
- Perceived barriers.

## 5.2 Overview of the cases

In this section, an overview of the cases is provided. The two interviews for the University of Osnabrück are presented together, as are the two interviews for the CARNet MOOC.

### 5.2.1 A MOOC that awards ECTS points: University of Osnabrück (Germany)

The first case we look into is the provision of the MOOC "Data Structures and Algorithms" offered by the **University of Osnabrück** in partnership with iversity. It was launched with a view to facilitating future academic recognition through credit transfer.

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<sup>85</sup> <http://www.borderscollege.ac.uk/>

<sup>86</sup> <http://business-school.exeter.ac.uk/mooc/>

*The idea with the ECTS credits is that once the student has received his certificate, he should be able to submit this certificate at his home university or at any, and then at this university the office should say OK well that's fine, we know this is a well-known standard. You have six credits in Computer Science, so we will add this to your collection of credits, your transcript of records (T1).*

Before the MOOC, the course instructor had been sharing recordings of his lectures on the iTunes platform since 2004, some of which had reached a wide audience and attracted positive comments. This provided the motivation to launch a MOOC even though the University of Osnabrück – like most higher education institutions – did not have a strategy for massive open online courses at the time.

*I think they agreed to start this experiment, mainly because it was my wish, and since I'm a rather well-known professor here ... who is involved in e-learning, I talked to the president last year and he said OK we'll just do it, mainly to find out whether it's a good idea. There is not yet a strategy or policy or concept whether this is now something that we should pursue further or that we should do it all over again (T1).*

The MOOC offered two credentialisation options: learners could either take an online exam for 49 EUR and receive a completion certificate, or an on-site exam at one of several university testing centres for 129/149 EUR (depending on the location), for which they could obtain 6 ECTS credits. The online examination involved answering a series of multiple-choice questions. Proctoring was carried out by a third-party company, Remote Proctor, which verified the candidates' identity with a webcam and required learners to record a 360-degree scan of the room before starting the examination.

The platform university funded a research assistant to support the MOOC leader in course design and delivery. The MOOC was checked by the academic board of the Department of Mathematics and Computer Science at the University of Osnabrück and approved as a 6 ECTS credit course.

Of the 2,000 learners who started the MOOC, 20 chose to take the examination and successfully achieved the 6 ECTS credits. The learner interviewed for the case study was very clear that his rationale for taking the exam was to increase his chances of obtaining recognition from future employers through the ECTS credentials he had achieved.

The OpenCred investigation found no examples of learners obtaining recognition for their credentials on MOOC certificates by either their home institutions or employers – possibly because the issuing of formal credits (in ECTS format) for MOOCs is a relatively recent phenomenon. Nevertheless, both the professor and the learner interviewed in relation to this MOOC were optimistic that this would occur in future. The learner put forward an argument that recognition of learning from MOOCs offered by other universities in Europe via existing credit transfer processes would increase the variety, depth and flexibility of educational provision, and hence the variety in skills that learners would acquire:

*I would like to say that I think all universities throughout Europe should accept credits from MOOCs. That would enable students to study different specialisations from different institutions and have greater variety in the curriculum (L1).*

The learner interviewed for this study also pointed out that a significant disincentive for learners who might otherwise take the face-to-face examinations was the cost, and that many learners would be reluctant or unable to pay 129 EUR for assessment. Further research is needed to identify the extent to which this is actually a barrier to learners achieving credentials – and hence recognition – for their MOOC-based learning.

### **5.2.2 A MOOC that awards badges: CARNet (Croatia)**

The **Croatian Academic and Research Network (CARnet)** runs a professional E-Learning Academy, which offers online courses for a fee. The network is not accredited for teacher training, and so some of the network's courses are offered in partnership with accredited providers for teaching training and count towards CPD points:

*For some courses we co-operate with our partners for teacher training, and they have accreditation on their courses which can lead to promotion and higher salary and for every stage you can collect different types of accreditation. Each accreditation has several points and you collect the points to get promoted (T2).*

However, a partnership of this kind has not been put in place for the MOOC “Building Modules in Moodle”, which was designed as a non-formal offer. The requirements to pass the MOOC are less strict than those for courses provided by CARNet’s E-learning Academy, for which fees are charged. The MOOC is seen as a first step towards reaching more participants and promoting this form of open learning, albeit without granting formal recognition to participants:

*... our remit is to train teachers and support them. (We have) a mandate from the government to teach teachers and on a public budget, with all the resources we have, it would be fair to share it with all teachers. The aim is to help teachers in their use of technology in education. [...] In Croatia there are only two deliverers of MOOCs so we wanted to promote this new innovative way of working. [...] Before the MOOC we had online courses for small groups of learners and each group had 15 or 20 learners to one tutor who was helping the learners to accomplish or cope with the tasks who was assessing their practical work. It was really expensive. We thought the MOOC would be a cheaper way of doing it. For the money we invested the number of learners we could reach would be much better ratio (T2).*

The MOOC<sup>87</sup>, which lasted for 6 weeks, focused on creating courses in the Moodle learning management system for teachers, with a view to fulfilling CARNet’s public value agenda. As a publicly-funded body, CARNet sees its remit as being to help all teachers, irrespective of their ability to pay fees or their membership of an institution in the CARNet consortium.

In total, 440 people took part. The majority were female teaching staff in primary and secondary schools with over ten years’ experience in teaching. A somewhat smaller number of participants were from higher education institutions, and also commercial companies and public institutions. The participants could choose which activities to take part in. Based on this, they could earn one or more of the three badges offered: Attendant, Designer or Distinguished Attendant. 80 participants obtained the Attendant badge, over 70 obtained the Designer badge and around 70 individuals fulfilled all of the requirements for the Distinguished Attendant badge. Information gathered from the evaluation questionnaire indicated that obtaining badges helped motivate the participants to learn, and several individuals obtained all three badges.

The assessment on this MOOC included automated self-assessment tasks (multiple-choice quizzes). The learner interviewed saw these tasks as being useful but requiring a high time commitment:

*I think it’s not difficult – it’s the time is really the enemy for all these things. I think if you have the time you can meet all these things. But you must really create your own time, because if you lose one or two weeks it’s very hard to be on track. You have tutors and every week they email they set you new tasks, but it really depends on you and if you want to do it, you will. But for me the all the assessment tasks were not hard, and it’s really interesting, so it’s OK (L2).*

The mechanism for ascertaining whether participants qualified for badges was peer assessment.

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<sup>87</sup> See: [http://translate.google.com/translate?depth=1&hl=en&prev=/search%3Fq%3Dcarnet%2Bmoo%26client%3Dfirefox-a%26hs%3D571%26rls%3Dorg.mozilla:en-US:official%26channel%3Dsb&rurl=translate.google.co.uk&sl=hr&u=http://www.carnet.hr/loomen/moodle\\_mooc](http://translate.google.com/translate?depth=1&hl=en&prev=/search%3Fq%3Dcarnet%2Bmoo%26client%3Dfirefox-a%26hs%3D571%26rls%3Dorg.mozilla:en-US:official%26channel%3Dsb&rurl=translate.google.co.uk&sl=hr&u=http://www.carnet.hr/loomen/moodle_mooc)

### **5.2.3 Open badges for CPD: Borders College and the National Health Service (Scotland, UK)**

**Borders College** in Scotland has a strong vocational focus. CPD sessions are mandatory for all staff members (approximately 300). These sessions are mainly offered on-site with some online elements for specific courses, and are not open to the public. Borders College has been included in the study, although the courses described here are not open, because they use Mozilla's open badging tools to credentialise employees' learning achievements. The college gathered experience on issuing open badges to learners in the frame of publicly-funded (JISC) project on embedding technology-enhanced learning:

*[...] a chance meeting with our head of HR enabled us to reflect on how Open Badges could be used to add greater value to the mandatory CPD sessions which staff complete as well as producing a more sustainable, cost-effective method of accreditation (E1).*

The college has now completely replaced paper certificates for staff CPD with open badges, and these badges are recognised as meeting the required professional development standards for employees, both by Borders College and the National Health Service, two major employers in the region.

This case study looked at an internal course on equality and diversity for employees at the college, and one on manual handling of patients, which is run in collaboration with the National Health Service (NHS) for NHS staff in the region. The "Equality and Diversity" course is done online and is assessed by means of automated quizzes. The "Manual Handling" course is done face-to-face, and is assessed by means of a practical test which is observed by an expert assessor. There is a formalised procedure for awarding open badges for these courses and attributing value to them. The badges play the role that paper certificates previously did, with the added advantage that they are more easily shared and less easily lost.

A typical assessment scenario is that staff attend a training session, and if the trainer assesses the employees as having satisfactorily achieved the objectives, s/he will notify the HR department of their success. The content of sessions will vary and may include legislative training such as equality and diversity (which can be done online and assessed through online quizzes) or a training session on the use of embedding videos in Moodle where the College's Technology Enhanced Learning (TEL) unit will act as assessor. The HR department then informs the TEL unit, which will issue the open badge to the recipient.

*Staff CPD Open Badges are designed in advance based on a predefined template/style sheet which the TEL team developed. Badges are issued and stored in Moodle, with staff being informed by email they have been awarded a badge and also encouraged to "push" the badge to their independent badge backpack. (E1)*

In the future, Open Badges from either Borders College or NHS Borders will hold equal recognition status in the partnership between the two organisations, in that each employer will recognise badges issued by the other. The intention is to work with other organisations locally to create a "learning passport", and potentially to include MOOC-based learning where appropriate.

### **5.2.4 A MOOC that counts towards CPD: University of Exeter and the ACCA (UK)**

The **Association of Chartered Certified Accountants (ACCA)** is a global body with over 162,000 members. The association offers qualifications developed in collaboration with employers and quality assures their provision. To become a certified accountant, individuals need to have minimum three years of work experience and pass up to 14 examinations. ACCA exempts learners for up to 9 examinations via an established procedure for the recognition of prior learning.

The association approached the **University of Exeter** to co-design the MOOC "Discovering Business in Society", offered on the FutureLearn platform. The MOOC itself, which is free, provides an open set of resources globally to help enhance learning: in this way it meets the ACCA's public value agenda while also raising the profile of both the organisation itself and accountancy as a profession.

Learners choosing the free route are not assessed. They can, however, benefit from their participation in the MOOC via an existing framework for continuing professional development (CPD) in accountancy in the UK. This requires that individuals engage in a certain number of hours of professional development a year.

*... but this is often problematic for them to undertake because of the cost and difficulties in finding the time to attend the courses. MOOCs offer a solution to this, in that a proportion of these credits require no formal assessment of learning (E2).*

In this CPD framework, the learning is not assessed; attendance and submitting a personal statement about what has been learnt to a supervising body (such as the ACCA) is enough.

Learners who want to upgrade their professional qualifications can choose to take an examination at one of the physical examination locations (Pearson VUE centres) for a fee of 119 GBP (approx. 167 EUR). Successful learners receive a Statement of Attainment. This certificate is recognised by ACCA under its established guidelines for the recognition of prior learning (RPL). It exempts the learner from part of the professional qualification. Nine of the 14 modules on the ACCA's programme are exemptible via RPL, and this MOOC covers one of them. A significant portion of the ACCA's resources is already dedicated to identifying whether a learner is eligible for exemption from an examination on the basis of RPL. The fact that this system was already in place has simplified the process of recognising learning from the MOOC.

*This is an established system for accreditation of prior learning and the fact that this system was already in place made the process of incorporating the learning from the MOOC easier. In fact, it would not have been able to take place without this system already being in place. (E2)*

For the ACCA, future open education developments depend on whether their MOOC is successful. If it is, then further MOOCs may be set up, both to market the organisation to more people, and to provide more learning of a non-formal nature globally. Running more MOOCs could also provide additional recognition opportunities for the modules where learners can claim exemption. The ACCA is also interested in exploring the idea of online proctoring as an alternative to being at a physical location for examinations, as they believe that this will make learning more widely accessible.

### **5.3 Verification of identity, on-site versus online exams and perceived value**

The Croatia MOOC "Building Modules in Moodle" run by **CARNet** was the only one of our selected case studies where the identity of the learner was not verified. This impeded the MOOC provider's ability to award CPD points.

*No, there was no validation of identity. I didn't need to prove who I was. It's a really good question. I spoke with our Croatian Agency for education and I know that many teachers are coming to online courses. And all of them said they would like to have some certificate, but our agency said that we must know that [...] it is OK with our curriculum or our plan in schools. And who knows that [it] is me, someone else could put my name on it (L2).*

The other two MOOCs in our sample offered interested participants the opportunity to sit a formal face-to-face examination in a test centre or the providing institution itself.

*When the MOOC is over, everybody who would like to get a certificate can come to... one of the... centres in Germany where a conventional pen and paper exam is written.*

*If the student passes this written exam, he will get a certificate saying that we, the University... and iversity, are assured that this guy has passed the final exam of the course "Algorithms and Data Structures", and that is an equivalent of six ECTS credits (T1).*

*The learning ... is assessed through a proctored exam which students pay for at one of the PearsonVue Centres (E2).*

The MOOC "Data Structure and Algorithm" by the **University of Osnabrück** gave learners the option to take an online proctored exam. However, both the interviewed learner and instructor of the course perceived that option as inferior to the on-site exam.

*There is an additional, cheaper way to do an assessment, and that is a proctored online exam. It is a sequence of multiple-choice quizzes, very similar to the quizzes that the student has already passed during the course. There is some third company outside iversity that provides all the infrastructure that is needed to be almost certain that there is no cheating. For that the student doesn't get credits; it's just a certificate that he has passed the online exam. [...] this proctored exam system requires the student to show his passport or his ID into the webcam. It makes the barrier to cheating rather high, because if there were no kind of supervision it would be very easy just to have a friend answer all the questions. However, if you have all these requirements, you can still cheat but you need more criminal energy to do so (T1).*

*... no-one takes an online exam seriously. If employers see my certificate and it says I did it online, they do not know that the online exam was proctored and my identity was confirmed and so on. But if they know that I went to the University of Osnabrück and took an exam, that is much more serious. Then they know that I have learnt something important. [...] I could have gone to a different examination centre, but I went to (the university) because I wanted to talk to the professor. We talked about his views on MOOCs. It was nice to be able to give feedback to the MOOC makers, and to thank them. (L1)*

The free route of the MOOC offered by the **Association of Chartered Certified Accountants** and the University of Exeter counts towards mandatory CPD, without requiring on-site or off-site assessment. Instead a statement by the learner is sufficient declaring participation in the MOOC and the learning they have obtained. For exemption of the examinations leading to qualification, successful completion of an on-site exam is required. Nevertheless our interviewees from the association wanted to explore online proctoring to increase accessibility:

*ACCA is interested in the idea of online proctoring as an alternative to being at a physical location for examinations, as this will make learning more accessible.*

The **Borders College** course for staff on manual handling of patients culminates with an on-site practical test, reflecting the practical nature of the skill being taught. The "Equality and Diversity" course can be taken online and is also assessed online, with the learner's identity verified through the staff log-in process.

#### **5.4 Perspectives of two MOOC learners on learning achievements, credentials and recognition**

The MOOC participants interviewed had different backgrounds. The Croatian learner was a practicing teacher in a primary school engaged in information technology projects. The German learner, on the other hand, was a registered student of "Business Information Systems" at a private higher education institution in Germany when the interview was conducted.

The Croatian MOOC learner described her MOOC-based learning as a good experience with a positive impact on her professional practice and digital skills. She expressed satisfaction about being given the opportunity to connect with peers.

*I really like MOOCs as a way to learn and they are really useful for teachers. [...] I can get some new materials and new tools and new blogs from the other teachers. This isn't just during the MOOC but after it I have all these materials that I can then use. [...] If I use new tools in the MOOC, I go to my classroom and I will share them. I am using all these things with students in my classroom as I've passed on to them all this knowledge from these MOOCs and this may be the most significant impact of me studying MOOCs. I improve their skills as well and it's a good plus. [...] It's good to make new connections and meet people. I really like to have new connections, it's important to me and it's important for teachers to share their experience, the lessons from courses to be influenced by each other and so on. And I improve my skills, it's very important. I am trying to be an innovator every year so I must be on courses like this to have new things in my classroom. (L2)*

The MOOC learner from Germany experienced a positive impact on his ongoing studies.

*... for me it was important to learn more. I learnt programming from books by self-study, and if you have a teacher you'll learn more and can go deeper, into more detail. [...] It will give me a greater depth of understanding in my current studies [...]*

Although both learners attached importance to the intrinsic value of participating in the MOOC, they appreciated the credential acknowledging their learning achievement and wish for recognition. The Croatian MOOC-participant argued in favour of CPD points or an official certificate, while feeling motivated by the badges throughout the course.

*In all the courses, there were some badges. In some ways we are like children in that badges can be important to us, but as teachers it's important to get some sort of verified certificate at the end, but of course you have to spend money to get these and this is something I don't like. But if you don't want to pay you can also be there and improve yourself, and that's also OK. [...] A badge is a good thing to motivate you, but it's not really the reason for doing the MOOC. The reason is to be there and improve yourself but if I'm spending my free time doing the MOOC it would be good to have a certificate for doing it, or if the teachers' agency would give you one point (points for professional development) for the MOOC (L2).*

The German MOOC learner hoped for an advantage on the job market and chose the verified MOOC track for that reason.

*[...] I hope it will help me find jobs in the future. [...]*

*I also knew that it was possible to get certificates and that's another reason why I started with MOOCs. It's important that I can show future employers a certificate, so they can see that I didn't waste my time. [...] The certificate increases my confidence in applying for jobs. On the other hand, if I could find some MOOCs without certificates, which could help me get better grades in my studies, I would also do these MOOCs (L1).*

He also put forward the argument that recognition of MOOC-based learning by other universities in Europe via existing credit transfer processes would increase the variety, depth and flexibility of educational provision, and hence the variety in skills that students would graduate with:

*I would like to say that I think all universities throughout Europe should accept credits from MOOCs. That would enable students to study different specialisations from different institutions and have greater variety in the curriculum (L1).*

Both learners had chosen to display the awards for their course on their personal websites. The Croatian learner mentioned how online badges raise interest about the MOOC among peer teachers:

*If you put them on your website other colleagues are motivated, because motivated teachers ask me "where is this from?" "I would like to have this one", "I would like to have a link" so it can be a moment for motivation. From this point badges are really OK (L2).*

However, the same learner also pointed out that:

*a badge is a good thing to motivate you, but it's not really the reason for doing the MOOC. The reason is to be there and improve yourself but if I'm spending my free time doing the MOOC it would be good to have a certificate for doing it, or if the teachers' agency would give you one point (points for professional development) for the MOOC. It's not happened yet. Teachers in Croatia like to spend their free time to improve themselves but they would like to get a certificate (L2).*

## 5.5 Assessment of learning outcomes

Assessment of learning outcomes in the cases under review tended to be done in ways that could be easily conducted on a large scale.

The platform used for the Croatian open online course "Building Modules in Moodle" by **CARNet** automatically checked for participation in activities, such as submitting blog posts, or making comments on a discussion board requiring weekly time commitment.

*... tasks like write a description or a blog, then the system can automatically assess these (T2).*

The MOOC "Data Structures and Algorithms" (**University of Osnabrück**) worked with automated multiple-choice quizzes.

*... after about every three minutes in the video where I explain the topic, there are one to three multiple-choice questions related to the last three minutes. The student is allowed to do it several times but must do it correctly before he can proceed. [...] That was really easy for me. You just had to remember what had been said in the last three minutes and you could try several times. There was no way to fail (L1).*

The code that participants were asked to submit for this IT-based MOOC was also automatically checked for correct syntax.

*When the unit (containing content for one week) is over, there will be homework – an assignment to do some programming. They have short exercises that they have to submit to the iversity platform. These programmes will be automatically checked by the software that we have developed. However, the software just checks that the programme is syntactically correct. At this point the student sees whether he has produced a programme that runs (T1).*

Peer assessment was incorporated into both MOOCs, bringing in a more analytical and reflective assessment of work:

*... every student who uploads his programme will be assigned the programmes from five other students. That means that he has to understand what the other students have programmed, whether it was a good idea to have chosen a certain solution. He has to understand what the other students were trying to do and he has to mark the solutions (T1).*

The comments of the Croatian instructor and the German learner below both refer to the higher demands upon learners when assessing peers and the need for proper guidance.

*Each person's programming was checked by other students. It was cool to see other people's solutions and I learnt a lot. But I think it would be very difficult for someone whose programming skills were at a lower level to give correct feedback to someone who had written a very complex programme (L1).*

*The participants found the peer assessment difficult to do. In the future we will give more support for the participants to make it easier for them to do peer assessments and explain why they have to do it and not the moderators. The hope is that they will be less reluctant (T2).*

**Borders College** works with expert assessors for the practical tests on the CPD sessions or provides automated online multiple-choice questions for the online courses.

## 5.6 Reflections on results and impact

The MOOC organised by **CARNet** (without formal recognition opportunities) reached 440 learners. 98 of them achieved badges. Altogether 277 badges were awarded to this group, resulting in an average of 2.83, which is notable as a maximum of three badges could be obtained:

*We created the badges for different kinds of participant but it was very rewarding for them. They very much wanted all three (T2).*

The number of teachers participating in this course was only slightly higher than the small face-to-face classes for typically 15-20 learners. In addition, ongoing activities among the participants after the course will provide the grounds for offering further MOOCs in the future.

*When you calculate the number of hours they spent the cost is much better for us. The learning was much more intensive, but because the learners share, the teachers' participation was much less. [...] The participants have formed a Facebook group and are still active. We will do more of this in the future (T2).*

The MOOC offered by the **University of Osnabrück** started with 2,000 participants and the final assignment was completed by 200 people. 20 of them took the on-site exam held at five different locations in Germany.

*These 20 were the very ambitious students (T1).*

The MOOC provided by **ACCA** in collaboration with the University of Exeter had not been completed when interviews were held.

At **Borders College**, all staff members have obtained at least one badge. The initiators of the badge initiative report good interest in supporting further bodies in issuing badges such as the Scottish Government, Scottish Borders schools, and the NCFE<sup>88</sup> (Northern Council for Further Education - an awarding organisation nationally recognised by the qualification regulators for each country in the UK). The College has approved a three-year project to implement Open Badges across the entire curriculum.

*This reflects the College's belief in the long-term value of Open Badges for staff and students. We are also looking to work with HR [the Human Resources department] to improve the automation of the process and in particular to flag up expiry dates on badges to ensure legislative compliance is maintained (E1).*

## 5.7 Challenges

A number of challenges were discussed by the interviewees, who pointed to possible barriers to the effective establishment of assessment and credentialisation procedures that could be recognised by another HEI or an employer.

The German MOOC instructor perceived the effort of developing the MOOC as being too high in comparison to the number of learners who achieved ECTS-bearing credentials:

*I think the amount of preparation in designing and producing the MOOC actually cannot be justified if finally only 200 people get a certificate for participation and only 20 get a certificate for the written exam (T1).*

He furthermore predicts barriers concerning the acceptance of the ECTS credits at other institutions, mainly related to the lack of awareness around MOOCs:

*[...] probably some of the students that got the credits here in my course, when they tried to present this at their home university then someone might say what is a*

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<sup>88</sup> <http://www.ncfe.org.uk/>

*MOOC? [...] Through the Bologna process I think it has become more difficult to transfer credits from one university to another, because everything now is so well defined. The contents of the lecture are written in detail [...]. Now it turns out that the foreign lecture is of course a little bit different and people start arguing we can't accept this, and I think that is ridiculous. (T1)*

The learner interviewed perceived the fee for an on-site exam as a significant barrier to assessment and credentialisation of MOOCs. The fees for the two options in the German MOOC differed: the proctored online exam with verified certificate cost 49 EUR and the on-site exam conferring ECTS cost 129/149 EUR, depending on location.

*Interviewer: Do you have any thoughts or ideas why only 20 students took the examination? [...]*

*L1: Euros, Euros, Euros! The exam cost 129 Euros. That's a lot for a student to pay. Not everyone can afford that, and if you don't need the credits or you don't want a certificate, you wouldn't pay it.*

However, 200 learners chose the online proctored exam leading to a verified certificate without ECTS. The costs of travel and the on-site examination might have been disincentives for some learners.

The interviewee at Borders College feared that in the longer term, the badges would not change the landscape of recognition. "As with all new technologies, people fear the unknown and worry that it may lead to additional work for those involved". She is trying to raise awareness among staff and employers and states the need for case studies on badges within a community of practice in order to allay learners' concerns:

*... whose first question when being introduced to badges was: "Will companies locally recognise this badge?" (E1)*

She points to a lack of comprehensive guidelines and tools to help those wishing to start creating badges. If the badges are attractive, the UK developer (E1) hypothesises that learners will want to show their badges to their friends on their mobile phones. This in turn should increase the value of badges. One implication of this finding for MOOC providers is that the aesthetic design of the badge may be important. Some basic tools for badge design include the "badges canvas" from Digital Me<sup>89</sup> and the badgemaker tool from Snook<sup>90</sup>. In addition, it was reported that the UK higher education body JISC is currently collaborating with Mozilla in developing more comprehensive ways to support the entire badge-creation process.

## **5.8 The link between assessment, credentialisation and recognition in the case studies**

Each of the cases presented in this section has its own process in terms of the assessment of learning outcomes, the awarding of credentials, and the potential or actual recognition of those credentials further down the line.

In the case of the **Osnabrück-iversity** MOOC, there were three forms of assessment with concomitant credentials.<sup>91</sup> Firstly learners on the "audit track" who completed 80% of the self-assessment and peer assessment tasks throughout the MOOC received a Statement of Participation. Secondly, learners who chose the "certificate track" could take an online, proctored exam at the end of the MOOC. That exam consisted of multiple-choice questions and led to a Certificate of Accomplishment. Finally, learners who chose to take the "ECTS track" took an on-site exam at an exam centre, and

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<sup>89</sup> <http://www.digitalme.co.uk/>

<sup>90</sup> <http://wearesnook.com/snook/>

<sup>91</sup> <https://iversity.org/de/courses/algorithmen-und-datenstrukturen>

received the same Certificate of Accomplishment and also a certificate supplement, awarding the learner 6 ECTS credits. At the time the interviews were conducted, there were no known examples of recognition of any of these credentials by either another HEI or an employer, although both the learner and the teacher interviewed were guardedly optimistic that the ECTS credits would be recognised in future.

In the **CARNet** case, learning outcomes were assessed through self-assessment and peer assessment, with the latter leading to badge awards. The badges themselves were the end point in this process: they were expected to add value to a learner's professional profile, but no formal recognition was anticipated.

In the case of CPD courses offered by **Borders College and NHS Borders**, assessment was carried out via a face-to-face, practical task, or via an online test comprising multiple-choice questions. Learners received credentials in the form of open badges. These badges were recognised by both employers (who also happened to be the providers of the courses). At the time of the interview, plans were being put in place for each employer to recognise badges awarded by the other for a wider range of courses.

In the case of the MOOC offered by the **University of Exeter and the ACCA**, there are two main forms of assessment, leading to different credentials. Learners taking the free track can self-assess and submit a declaration to a supervising body that they have completed the MOOC. This will lead to CPD credits. The second option is for learners to take an exam at a Pearson-Vue centre, and this leads to exemption from one out of 14 required courses for a professional qualification. In both cases, the credentials are recognised by the ACCA, which is the professional body responsible for accounting in the UK.

In the next section, the links between assessment, credentialisation and recognition will be further explored and analysed, with a view to helping MOOC providers to make informed decisions about assessment and credentialisation. This should facilitate future recognition of any credentials awarded to learners on their MOOCs.

## 6. Further analysis and a model for recognition of MOOC-based learning

This section looks more deeply into the link between assessment and credentialisation and offers an analysis of the interviews conducted for the case studies presented in the previous section, along with other open educational offers. A model is proposed to help MOOC providers consider the most significant factors in enabling recognition of their MOOCs by other HEIs or employers in the future.

### 6.1 Robustness of assessment and formality of credentialisation

The research found that open education initiatives that provided more formal credentialisation tended to be associated with more robust forms of assessment. To test this apparent correlation, we assigned levels of robustness to the range of forms of assessment identified in the open education initiatives investigated, in order to plot these points on a graph against the corresponding levels of credentialisation formality. Below is the hierarchy of descriptors for robustness of assessment, drawn up with reference to NVAO (2014) and Verstelle et al. (2014).

**Table 5: Descriptors for robustness of assessment**

Level	Descriptors
0	No assessment
1	Self-assessment (e.g. answering quizzes/MCQs) or peer assessment with no verification of identity.
2	Verification of identity but no real-time supervision (e.g. Coursera's Signature Track exams)
3	Verification of identity and supervision (e.g. an on-site exam or an online exam using remote, proctoring using a system such as ProctorU <sup>92</sup> , Proctor2Me <sup>93</sup> or Remote Proctor <sup>94</sup> ) or recognition of prior learning (RPL) conducted by recognised expert(s)

Below are the descriptors for a hierarchy of formality of credentialisation:

**Table 6: Descriptors for formality of credentialisation**

Level	Descriptors
0	No credentials
1	Completion certificate/ badge showing proof of participation or completion <sup>95</sup>
2	Certificate/ badge providing exemption from a specified entrance exam or part of qualification at the issuing institution
3	Certificate conferring ECTS credits or certificate/badge conferring CPD credits

Sixteen of the initiatives described throughout this report were selected to test the correlation between assessment and credentialisation. The selection was a stratified

<sup>92</sup> <http://www.proctoru.com>

<sup>93</sup> <http://www.procwise.com>

<sup>94</sup> <http://www.softwaresecure.com/product/remote-proctor-now/>

<sup>95</sup> [http://bluebox.ippt.pan.pl/~vkoval/vk\\_files/coursera/Game\\_Theory\\_II\\_130707.jpg](http://bluebox.ippt.pan.pl/~vkoval/vk_files/coursera/Game_Theory_II_130707.jpg)

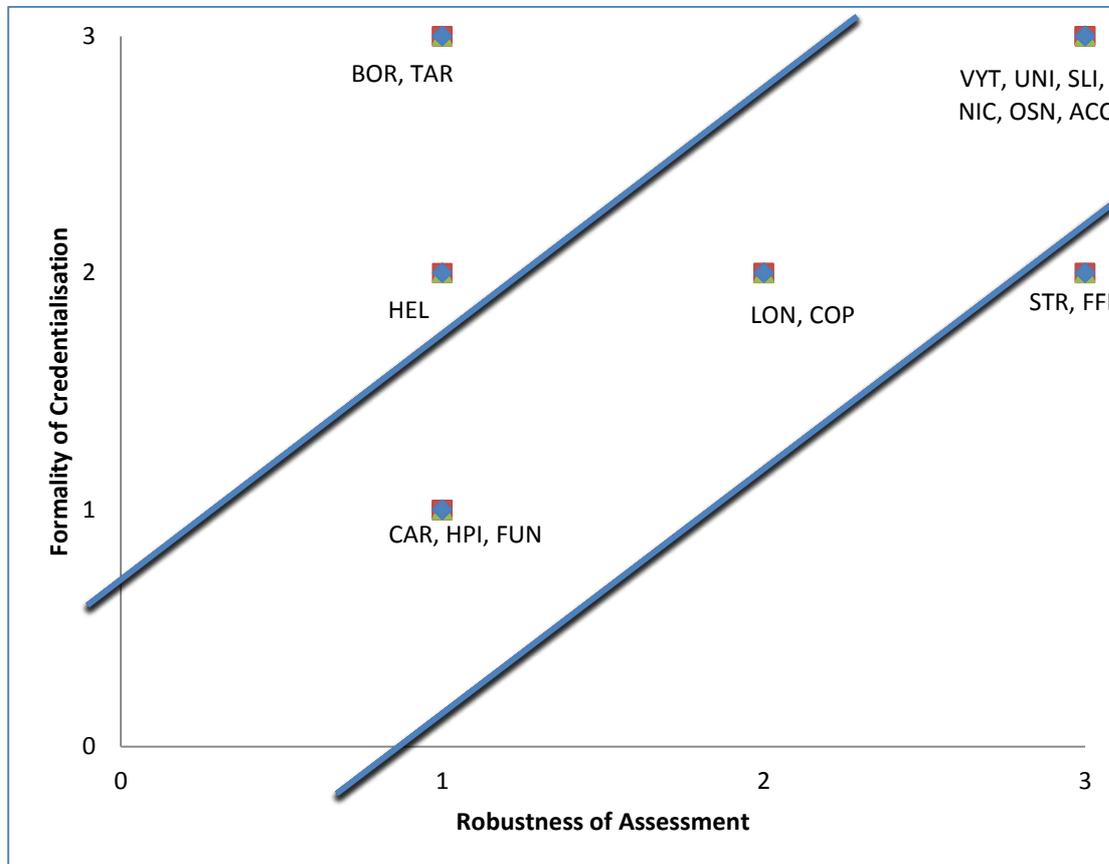
sample, in that it aimed to provide a good range of different combinations of recognition formality versus assessment robustness, but within each stratum examples were chosen randomly. Table 7 shows the relationship between these two aspects in tabular form.

**Table 7: Assessment and credentialisation for a range of open education initiatives**

<b>Convenor of initiative</b>	<b>Code in Figure 12</b>	<b>Robustness of assessment</b>	<b>Formality of credentialisation</b>
CARNet, Croatia	CAR	1 (Peer assessment, no ID verification)	1 (Badges showing proof of participation)
openHPI, Germany	HPI	1 (MCQs & exam, no ID verification)	1 (Completion certificate)
FUN, France	FUN	1 (MCQs & peer assessment, no ID verification)	1 (Badges showing proof of participation)
University of Helsinki, Finland	HEL	1 (Automated code checking, no ID verification)	2 (Exemption from entrance exam)
Borders College, Scotland (Equality course)	BOR	1 (Automated MCQs, no ID verification)	3 (Badges conferring CPD credits)
University of Tartu, Estonia	TAR	1 (Automated MCQs, no ID verification)	3 (1 ECTS credit)
Copenhagen Business School	COP	2 (Signature Track online exam, ID verification but no supervision)	2 (Verified certificate)
University of London	LON	2 (Signature Track online exam, ID verification but no supervision)	2 (Verified certificate)
University of Strathclyde on FutureLearn	STR	3 (On-site exam)	2 (Verified certificate)
First Finance Institute, France	FFI	3 (On-site exam)	2 (Verified certificate)
Vytautas Magnus University, Lithuania	VYT	3 (RPL)	3 (Exemption from courses/modules)
UNINETTUNO (Italy)	UNI	3 (On-site exam)	3 (2 ECTS credits)
IT Sligo, Ireland	SLI	3 (Online proctored challenge exam with ID verification & supervision)	3 (Full academic credit transferrable to other institutions within OERu consortium)
University of Nicosia, Cyprus	NIC	3 (On-site exam)	3 (10 ECTS credits)
University of Osnabrück	OSN	3 (On-site exam)	3 (6 ECTS credits)
ACCA/University of Exeter	ACC	3 (On-site exam)	3 (CPD credits)

The selected initiatives were plotted onto a matrix (see Figure 12 below) with recognition formality on the vertical axis and assessment robustness on the horizontal axis. Each of these axes has a spectrum of values from zero to four, representing the values for the

descriptors above. The intention of creating the matrix was to confirm any correlation between the two axes, and also to enable outliers to be identified so that we could examine whether these had specific contexts which might explain any deviation from the expected correlation.



**Figure 11: the relationship between robustness of assessment and formality of credentialisation for 16 randomly selected open education initiatives**

In Figure 12, the diagonal band shows which open courses fall within the parameter of assessment robustness and credentialisation formality that differ by only one value or do not differ at all in value. Most of the initiatives plotted on this matrix confirmed this expectation. However, there were some outliers that did not fall within the expected parameters – five are shown here. The number of outliers presented here is an unrepresentatively large proportion of the total sample, but they are included for illustrative purposes.

The two outliers in the top left hand quadrant of the matrix have relatively high levels of credentialisation formality for relatively low levels of assessment robustness. In the case of Borders College (BOR), this can be explained by the CPD process, in which the employer recognises the learning achievements of employees without requiring exam-condition assessments. This is typical in CPD, and so if we were to plot further CPD courses on this matrix, we might expect to find them clustered in that quadrant. The University of Tartu (TAR) example is unusual in that ECTS credits are not generally awarded on the basis of self-assessment via multiple-choice quizzes; however, in this case, only 1 ECTS is awarded. The University of Helsinki (HEL) example is also unusual for the same reason: in this case though, it appears that the institution has developed a more sophisticated automated marking system for the purposes of checking programming code, which gives the University the confidence to issue 3 ECTS credits.

One could speculate that this trend might increase as automated marking becomes more sophisticated.

Outside the diagonal band to the right, we have two initiatives that defy expectations in a different way. Here, highly robust assessments are rewarded by relatively low levels of formal credentialisation. The MOOC offered by the First Finance Institute leads to an authenticated certificate, which is only “the first step towards” a certificate offered commercially by the same Institute (see Section 3.2.1) and does not appear to provide any credentials in its own right. It is possible that this free MOOC with low-cost assessment gives learners a “taster” of the commercial course to help them decide whether they are willing to pay the full fee for it. In this way, it adds value to the services offered by the providing institution (and possibly increases recruitment). The rationale for the University of Strathclyde (STR) MOOC’s combination of highly robust assessment (on-site examination) with a low-level award (just a verified certificate that explicitly does not confer academic credits) is a bit more difficult to explain. It is surprising that learners are willing to pay around 150 EUR for an Attainment Certificate that is not recognised.

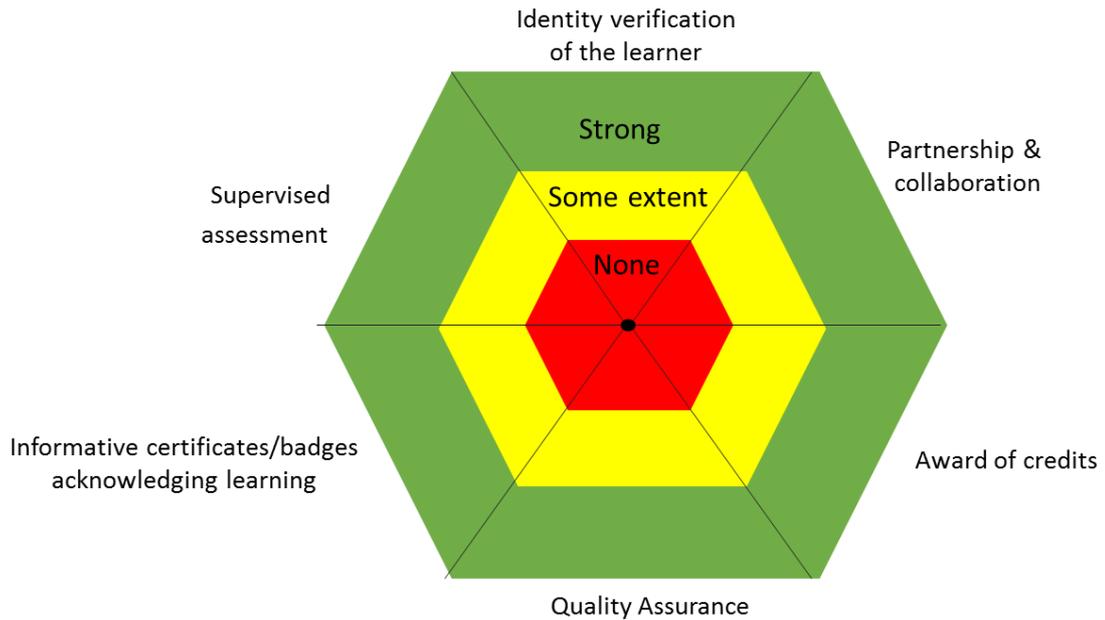
We hypothesise that the more a MOOC (or any other open learning offering) leans towards the top right hand corner of the matrix, the more likely it is that a learner’s learning achievements will be recognised by another institution or employer. This is because, the more formal the credentialisation, the easier it is to transfer credits, and generally, as we have seen, there is a tendency to associate robust assessment with awarding of ECTS points or CPD credits. This hypothesis could be tested as data becomes available on the extent to which recognition is achieved by learners when they present their MOOC certificates or badges to a HEI or an employer for exemption of academic credits or for job recruitment/career progression at the workplace.

## 6.2 A model for guiding the recognition of MOOC-based learning

So far, we have reviewed a range of practices in non-formal, open learning provision in Europe (primarily related to MOOCs) and described examples which demonstrate the link between assessment and credentialisation, and also potentially recognition. In this section, we present a model that describes non-formal, open learning offerings using a “traffic light” metaphor, and suggest that it may be useful for:

- 4) **Providers of non-formal, open learning:** guiding providers of MOOCs and other forms of open learning to design their offers in such a way that credentials awarded to learners are more easily recognised in the future
- 5) **HEIs and employers that need to recognise non-formal, open learning:** guiding HEIs and employers in strategic planning related to the recognition of credentials from any given MOOC or open learning offering

Based on the findings from the desk research and the case studies, we argue that a combination of six elements lend themselves to the future recognition of an open learning offering. In other words, if these six elements are built into the planning of the open course, there is a greater likelihood that learners will have their resulting credentials recognised by another HEI or employer. The six elements are outlined in the “Open learning recognition traffic light” model below, and described in more detail in Figure 13 and the text that follows. A MOOC provider can position its open educational offer in relation to these 6 key elements.



**Figure 12: Open learning recognition traffic light model**

**Key to colours:**

**Red**..... the element is not part of the open educational offer

**Yellow**.... the element is to some extent part of the open educational offer

**Green**..... the element is a strongly addressed by the open educational offer

This model based on transparency aims to allow higher education institutions and employers to make an informed decision on whether to recognize achieved learning outcomes. They can furthermore use the model to guide a discussion about which elements are most suitable for making use of open learning offers more strategically.

Below we describe each of the elements in more detail.

**Identity verification of the learner**

Open learning offers such as MOOCs lend themselves to future recognition if they include mechanisms for ensuring that the learner is who s/he claims to be. Measures like comparing a photo ID with a picture taken via webcam, comparing keystroke dynamics at various points throughout the course, and requesting learners to submit signed declarations of honour (general practice for essays or theses in on-campus education) need to be in place.

**Supervised assessment**

Assessment is a crucial element for later recognition of learning. It needs to be aligned with the learning objectives and be measured by valid means. There are different ways of assessing learners' proficiency in given learning objectives. Table 8 gives examples of types of assessment and the learning outcomes they can measure.

**Table 8: Alignment of learning objectives, assessment and measurement**

Learning outcome	Types of assessment	Analysis of performance
List, state, tell, recall, label	Multiple choice tests, quizzes	Automated
Examine, critically, assess or judge	Essays, reviews, case studies	Peer-/self-assessment, using rubrics Scoring by instructor
Create, generate and produce	Business plans, website designs, prototypes, professional project	Peer assessment Scoring by instructor

Most MOOCs reviewed in this study make use of (a combination of) automation, peer assessments, and scoring by instructors for final examinations.

There are two most used ways of supervising assessment:

- on-site examinations,
- online proctoring using a webcam.

For example, on-site examinations for MOOCs are offered at Universidade Aberta (Portugal), UNINETTUNO (Italy) and University of Nicosia, Cyprus. Exams for the MOOC on financial analysis offered by the First Finance Institute in France take place at Pearson VUE centres. Learners participated in proctored online examinations for the open online courses at the University of London (UK) and Copenhagen Business School (Denmark).

### **Informative certificates/badges acknowledging learning**

Credentials awarded generally take the form of digital certificates or badges. Though certificates have been used for longer for acknowledging skills and competences, badges appear to be emerging as a valid alternative for recognition in the world of employment:

*An open badges system [...] is another possible solution, much more aligned with the open education philosophy than recent developments in the MOOC ecosystem. [It...] offers students the possibility of displaying skills they acquired by showing evidence to back them up (E1).*

The evidence displayed by (sets of) badges can also provide a basis for the recognition of prior learning at higher educational institutions, which is especially relevant if the MOOC does not award ECTS credits (see below).

The information contained in digital badges and certificates issued to MOOC learners varies. For example, the MOOC platform iversity issues an additional "Certificate Supplement" with descriptions of the course content and structure, learning objectives and grading scheme; it also notes whether the learner is in the top 10% of the cohort. Borders College awards online badges to staff who complete professional development accepted by the National Health Service, These badges replace former paper certificates and are more easily shared. The open badges issued to learners in on-campus and online HEI courses at Beuth University (Germany) link to individual achievement records in an online portfolio.

The information contained in the credential provides grounds for future decisions on recognition. It should therefore clearly acknowledge the learning of participants, stating that holder has achieved a list of learning objectives, rather than merely proving participation. The "Information on individual educational components" in the ECTS Users' Guide (2015) (see Figure 14 below) contains a list of elements that should be included

on the certificate for any ECTS credit-bearing course. This information would be particularly useful in the context of a MOOC certificate/badge or certificate supplement in order to facilitate decisions about recognition or transfer of credits.

**Course Catalogue**

**Information on individual educational components:**

- code
- title
- type (compulsory/optional)
- cycle (short/first/second/third)
- year of study when the component is delivered (if applicable)
- semester/trimester when the component is delivered
- number of ECTS credits allocated
- name of lecturer(s)
- learning outcomes
- mode of delivery (face-to-face/ distance learning etc.)
- prerequisites and co-requisites (if applicable)
- course content
- recommended or required reading and other learning resources/tools
- planned learning activities and teaching methods
- assessment methods and criteria
- language of instruction

**Figure 13: Recommended information to include on certificates/ certificate supplements (Source: ECTS users' guide, 2015)**

In addition, both badges and certificates should ideally link to an e-portfolio or other demonstration of learning.

### **Quality Assurance**

Open learning provision can be subjected to existing quality mechanisms for course provision at a higher education institution (e.g. review by a faculty committee). For example, all MOOCs of the University of Edinburgh that are offered through Coursera have undergone institutional quality assurance.

Other means of assuring quality are, for example, peer review by instructional and content matter experts and obtaining a quality label for educational provision, e-learning or MOOC provision in particular. The MOOC-specific OpenupEd label serves as an entry/review procedure for becoming a partner in this European initiative.

### **Award of credit points**

The use of ECTS credits aids student mobility within the European Higher Education Area. Several MOOCs at Open Universities give learners the opportunity to obtain ECTS credits as described in the dedicated sub section above.

Since open learning is also suitable for vocational education and training, ECVET points could also be awarded to the learner where applicable. Some professions have developed credit/point systems for continuing professional development which could also aid future recognition in the employment market if awarded for open learning (although this study did not find any examples of this).

## Partnership and collaboration

The above examples highlight the importance of partnerships with employers or other education institutions. Many higher education institutions rely on bilateral or multilateral exchange agreements which guarantee automatic recognition and transfer of credits for students' physical mobility. Agreements, and involvement in the planning of innovative approaches like open online courses, are crucial for take-up and trust by potential "recognisers".

The case of the MOOC "Discovering Business in Society" run by the University of Exeter is an example of endorsement by an employer body. The Association of Chartered Certified Accountants (ACCA) sponsors the course and successful participation is recognised as part of the continuous professional development required of UK accountants. The iMooX platform, created by TU Graz and University of Graz, aims to help students who are enrolled at either of these institutions to gain formal recognition for their learning achievements by taking on-site examinations at the providing institutions. The OER universitas (OERu) is a large partnership of institutions, which works towards credit transfer among participating institutions. The Institute of Technology Sligo (Ireland) plans to offer online challenge exams for open learning which will be recognised by institutions within the OERu consortium.

### 6.3 The value of recognising non-formal, open learning

The subject of the costs to learners for choosing various forms of assessment has been briefly touched upon in this paper, but the costs to institutions for MOOC production, assessment and recognition has not been discussed. We are aware that the green, outer rim of the traffic light model in Figure 13 represents an approach to open learning provision, assessment and credentialing that is potentially costly to institutions – at least in terms of expertise and institutional resources, if not in purely financial terms.

We would like to argue that the costs involved in providing open learning in formats that lend themselves to recognition, and those involved in being the recognising institution, are a worthwhile investment for the following reasons:

- The collaboration between institutions arising out of the recognition of each other's open learning offerings will add to the richness, diversity, flexibility and choice for each institution's students.
- Open learning offerings such as MOOCs can enable institutions to make their particular areas of expertise visible to the world. Making it possible to accumulate and transfer credits from these courses could allow the providing institution to influence the field in these areas by shaping the learning experience of students across Europe and beyond.
- Offering open learning with the possibility of awarding formal credits and recognising credentials for non-formal, open learning issued by other institutions is a way of helping both students and staff to gain the necessary skills for work and study in the 21<sup>st</sup> century. MOOCs, for example, provide an excellent opportunity for the development of transversal skills such as teamwork, intercultural communication and digital literacy.

### 6.4 Example of the model in use

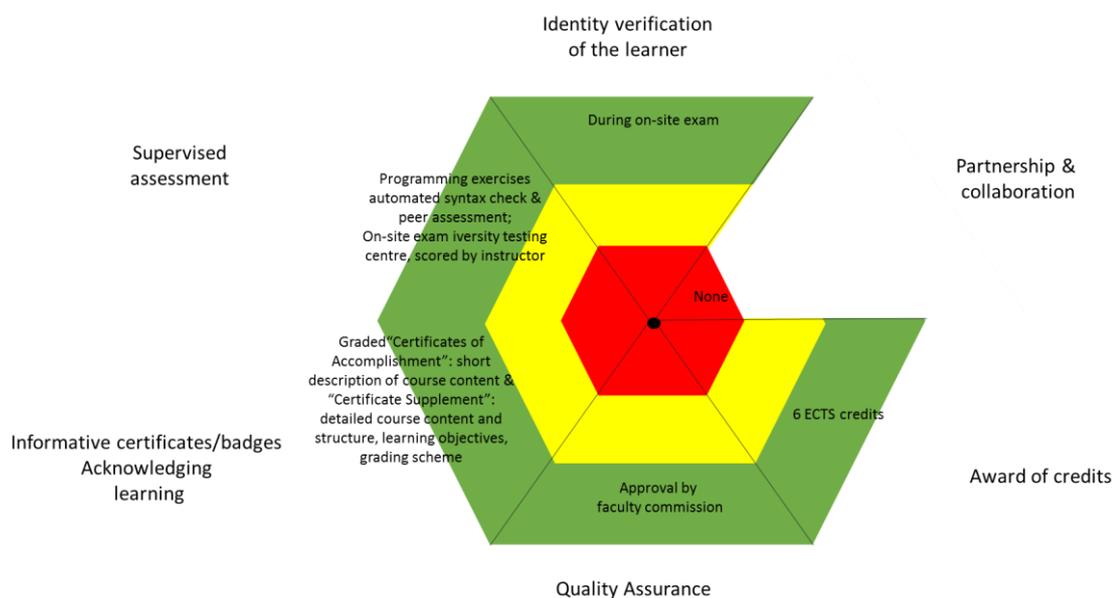
Particular examples of open learning provision can be described using the traffic light model to help the provider reflect on the development efforts needed to facilitate future recognition by other HEIs or employers. The model is intended to be flexible, so that HEIs and employer bodies can decide which set of elements is crucial when a) they are approached with a recognition request by a learner, or, b) they are considering whether to strategically recognise credentials awarded for non-formal, open learning in terms of exemption from the entry criteria for an academic programme, or exemption from a

module on the programme (or in the case of employers, for appointment to a job or career progression).

The cases examined in this report show the diversity of contexts in which assessment and credentialisation of non-formal, open learning can take place. Whereas the CARNET MOOC is designed as a non-formal learning opportunity without any recognition options, the MOOC provided by the University of Osnabrück caters for later recognition through the issue of ECTS credits. The professional body, ACCA, provides this recognition for the MOOC it offers in partnership with the University of Exeter by exempting learners from examinations leading to a professional qualification.

As an example, the MOOC “Data Structure and Algorithms” at the University of Osnabrück can be described using the traffic light model, as follows:

**Figure 14: Open learning recognition traffic light model applied to the University of Osnabrück MOOC, “Data Structures and Algorithms”**



Both the provider (in this case, the University of Osnabrück) and any other HEIs or employers can apply this model when they are looking into recognising the ECTS credits obtained by a learner, who has taken a particular MOOC. They would then be in a good position to instantly see which areas of the MOOC are weak and which are strong, and make decisions accordingly.

Observations that emerge from such a small sample are not, by their nature, generalisable across the whole field, They do, however, give a good indication as to which elements will play a role in future recognition.

## 7. Summary and conclusions

This section summarises the findings and the conclusions of the study. It also makes recommendations to European Higher Education institutions (HEIs) and to European policy makers.

### 7.1 Overview

The OpenCred study investigated how European non-formal open learners are assessed and what credentials they can obtain for their open learning achievements. It focuses particularly on emerging recognition practices in formal higher education and continuing professional development. A recent guideline for institutions is to create a 4-step approach for validation: identification, documentation, assessment and certification (CEDEFOP, 2015). Within this perspective, the purpose of validation is to produce proof of learning, potentially to be exchanged into future learning and/or work. This study deals with the credentialisation part of the validation, which will afterwards enable the recognition of learning both by an educational institution or employer. It looks at the validation and recognition of open learning via MOOCs, providing an analysis of current practices and a tool for promoting transparency in the open education offer aiming to facilitate the recognition process.

#### Key concepts – recognition and credentialisation

Recognition is often used interchangeable with validation; however, they differ in that validation normally does not include the recognition of formally acquired competences. Validation is defined by the recommendation of 2012 as ‘a process of confirmation by an authorised body that an individual has acquired learning outcomes measured against a relevant standard’. It consists of four phases: identification, documentation, assessment and certification. For the present report, the term recognition is used, as it has been more commonly used within the context of higher education.

Recognition involves two separate processes – firstly, credentialisation of a learner’s learning outcomes or achievements, and secondly, recognition, sometimes by the same institution that awarded the credentials, but often by a different institution or an employer. The table below clarifies this distinction.

**Table 9: Credentialisation versus recognition of learning outcomes**

Learning outcomes (LOs) are formally acknowledged	... by an educational provider through the act of issuing a credential to the learner, usually on the basis of completed assessment.	Credentialisation of LOs
	... by an educational institution (which has or has not provided the learning offer) or employer formally granting the learner the right to access or progress in educational or employment activities	Recognition of LOs

For the sake of clarity, the terms “credentialisation” and “recognition” are used to refer to these two separate processes in the study. Both processes, credentialisation and recognition, are mainly related to the process of documentation and certification of a validation process. The documentation of the learning outcomes aims at making visible

individual experiences. For the purpose of this report: open learning. Documentation places no major emphasis on assessment, but rather on creating proof of one's skills. Certification occurs after the individual skills have been assessed against certain standards. In this sense, they relate more to our interpretation of recognition.

### **The aims of recognition**

In the context of higher education, the aims of recognition of non-formal learning – whether open or not – are twofold:

- Access: through recognition of non-formal open learning, individuals can gain access to programmes offered by educational institutions
- Progression: registered students can be exempted from part of the programme in order to be fast-tracked through their studies
- The award of a full degree.

In 2012, the OERtest initiative carried out interviews and led focus groups with 26 higher education representatives in five different European countries. Among other things, they were asked whether they perceived potential value for their institutions in recognising learning outcomes achieved through Open Educational Resources. In general, their answers were positive and the benefits of OER mentioned most often (Tannhäuser, 2012) were that they:

- widened the provision and learning experience for registered students,
- reached more non-traditional learners,
- increased visibility of the higher educational institution offering OER,
- complemented traditional university funding through paid assessment and certification,
- fulfilled the need to explore an emerging area of innovation in higher education.

In the world of employment, the recognition of open, non-formal learning is also valuable for entry and progression purposes. It can play a role in recruiting new employees for jobs, and it can also aid the career progression of working professionals.

### **OpenCred study methodology**

The study was carried out in the following stages:

1. Desk research to obtain a snapshot of how, and to what extent, non-formal, open learning is being assessed, credentialised and recognised in Member States;
2. Case studies involving six interviews – two with providers of MOOCs, two with learners on MOOCs, and two with employers;
3. Analysis of the data, including:
  - The development of a matrix to show the relationship between robustness of assessment and formality of credentialisation, and the potential implications for recognition;
  - The development of a “traffic light” model describing those elements of open learning provision that were found to aid their recognition by HEIs (for example, allowing for exemption from entry requirements to a programme, or enabling credit transfer towards a degree) and employers/employer bodies (facilitating recruitment or career progression).

## 7.2 Key findings

### ***7.2.1 Growing maturity of open learning provision which could allow for future recognition***

The first cluster of findings relate to the growing maturity of open learning provision in terms of recognition potential.

#### **New forms of verified credentials and online proctoring services lend themselves to future recognition on a wider scale**

Many MOOCs now offer credentials for successful learning (as opposed to merely proof of participation) to learners by awarding digital certificates and badges that provide verified information about the learner, issuer and course content/learning outcomes through URLs.

In order to supervise learners and verify their identities, some MOOCs set on-site examinations. Others set online examination and use specific technologies, which match learners' photo IDs with webcam photographs or employ keystroke biometrics and online proctoring services.

#### **At the moment, only a small subset of MOOC provision is quality assured and awards ECTS credits but other MOOC providers have plans to move in that direction**

MOOCs have evolved substantially, and many have a clear curricular structure and present detailed course descriptions and/or information on learning outcomes.

Our research found that learners can obtain ECTS credits for a number of MOOCs offered by open universities and a small number of traditional universities. The case study on the "Data Structure and Algorithms" MOOC offered on the platform iversity exemplifies how ECTS points are awarded. Some fee-charging universities are attempting to attract future students by offering ECTS credits that count towards full programmes if learners successfully complete a MOOC. More MOOC providers plan to work towards providing verified credentials and issuing ECTS points in the future.

### ***7.2.2 Exploiting non-formal, open learning for more flexible, cost-effective professional training and higher education is still in the early stages***

Open education provides learning opportunities for a large number of learners. Recognising the learning outcomes achieved through open learning could help higher education institutions and employers to keep pace with the fast changing demands for skills and competences in the knowledge society. However, recognition of open learning is currently in the early experimental stages. It has not generally been integrated by HEIs into their strategies for mobility and recognition of prior learning, nor has it been widely deployed in professional training or continuing professional development.

#### **Pockets of experimental practice in workplace organisations/ employer bodies**

Our research identified some first cases of recognition of MOOC-based learning by employer bodies for continuous professional development in Europe. One case study revealed insights into how a professional body co-created a MOOC with a university in the UK. The University of Exeter's MOOC, "Discovering Business in Society", was explicitly recognised by the UK's Association of Chartered Certified Accountants.

Strategic use of MOOCs for Continuing Professional Development (CPD) was found only in a few non-European multinationals. It is unknown whether small and medium-sized businesses, which usually do not have large budgets or departments for education and training, have started to exploit MOOCs.

### **Academic recognition for own or partners' MOOC provision**

Where ECTS credits are awarded, MOOC learners can get their achievements recognised at a few European higher education institutions. In most instances, these learners are registered students at the MOOC-providing institutions for which the course counts as part of their regular programme. Some MOOC-providing HEIs exempt successful learners from part of a programme if they decide to enrol after passing the online course. One institution has substituted an entrance exam with a MOOC. In some cases, two education providers have a mutual recognition agreement: for example, TU Graz and University of Graz recognise each other's credits on the iMooX platform.

### **Integration of externally-provided open learning to complement mainstream higher education courses**

Externally-provided MOOCs were found to complement on-site courses at the University of Salzburg and the Technical University of Munich. In innovative practices taking place at these institutions, students participate in MOOCs provided by other higher education institutions as part of their regular programmes. In these cases, students were locally guided and assessed. The Open University in the Netherlands will start implementing a model, in which all BA programmes have two 15-credit "free" electives, in 2016: students will have the option to choose MOOCs for these electives as long as they obtain approval from the University.

### **Building entire degree programmes based on open learning**

This study has found no examples of learners achieving an entire qualification or a substantial part of a qualification via non-formal, open learning, to date of publication. However, two initiatives are working towards this. The first is the international consortium, OER universitas (OERu), which has five member institutions in EU Member States. These institutions are committed to enabling learners to acquire entire degrees through open learning by combining credits achieved at the different partner institutions.

The second is the newly set-up, Berlin-based university, Kiron (which targets refugees and relies on a crowd-funding business model). This institution allows learners to create their own pathways of MOOC-based learning for the first two years of an undergraduate degree, based on a selection of MOOCs which the institution providing the third (in-person) study year has agreed to recognise. Reportedly 1250 students were inscribed with Kiron in the first available semester (start October 2015)<sup>96</sup>.

## **7.3 Six key elements of open, online learning that support future recognition**

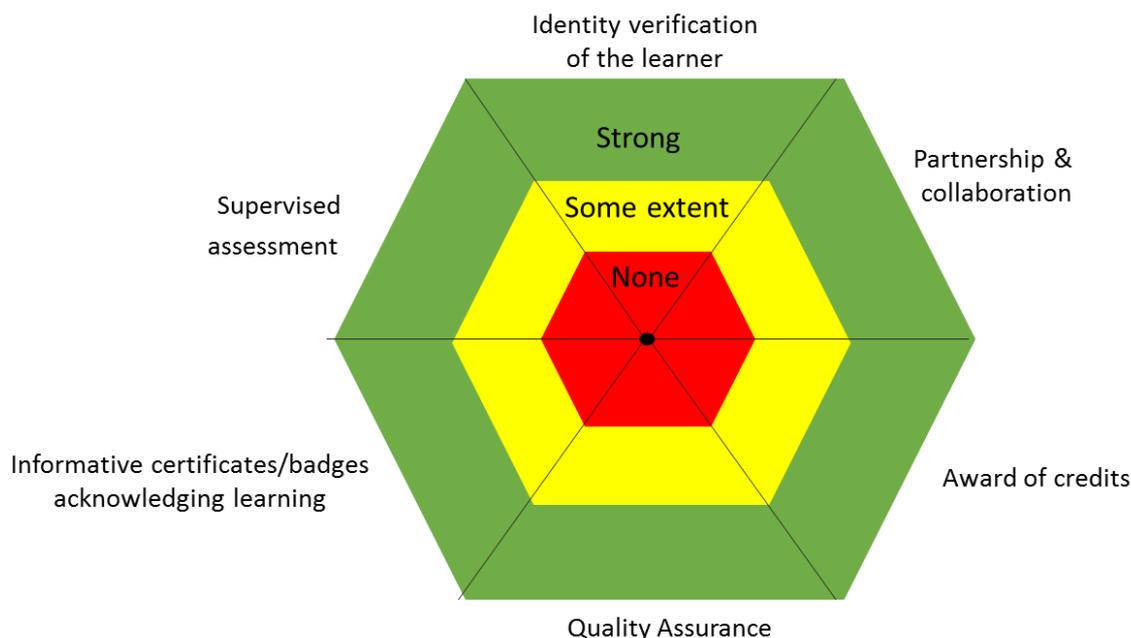
Based on the findings of this study, six elements of MOOC provision appear to be central to facilitating future recognition by other HEIs or employers:

- Identity verification of the learner,
- Suitable supervised assessment,
- Informative credentials such as (digital) certificates or online badges that acknowledge learning,
- Quality assurance,
- Award of credit points,
- Partnerships and collaboration with potentially "recognizing" institutions or bodies.

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<sup>96</sup> <http://www.tagesspiegel.de/wissen/kiron-university-fuer-fluechtlinge-maschinenbau-auf-dem-smartphone-studieren/12784508.html>

These elements are represented in the OpenCred's *open learning recognition traffic light model* as follows:



**Figure 16: Open learning recognition traffic light model**

The elements depicted in the model can be strongly present (the green rim around the edge of the hexagon), present to some extent present (the intermediate, yellow band) or not present at all (the red segments in the centre of the diagram) in a particular open learning offer (e.g. in a MOOC), and therefore be either more or less suitable for future recognition.

The model can be used by open learning providers to help them shape and position their offers for future recognition. It can also be used by institutions or employers that are considering recognising non-formal, open learning outcomes, to evaluate the strength of the credentials awarded to learners. Last but not least, it can help open learners, who want their learning to be recognised, to decide whether a given open learning offer is suitable.

## **7.4 Barriers to recognising non-formal, open learning**

### **Perceived lower value of online assessments and proctoring**

Employers and educational institutions are often reluctant to recognise open online learning. (Department for Business Innovation and Skills, 2013, p.23). One commonly-voiced perception is that online education is still a second-rate form of education. Learners and teachers often report that online courses are taken less seriously by employers and other educational institutions. A recent Gallup/Pearson report (Jaschik and Lederman, 2013) on faculty attitudes to IT echoes this. The aspect of online learning that generates the greatest concern when it comes to recognition is assessment. Concerns about validating the identity of students submitting work are stronger if they are on online courses rather than face-to-face courses. In addition, online proctoring is seen by some as a lesser form of validation than an examination in a physical location.

In order to overcome this resistance, many universities that offer open, online courses require students to take on-site exams for formal credits. For example, a representative of the MOOC provider iversity stated that if ECTS credits are to be offered for MOOCs, “the big catch is that people have to be present to conduct the exam” (Open Education

Europa, 2014). The same concern was mentioned by the German MOOC student interviewed for the case studies and was the main reason he chose to travel to the university for an on-site exam, rather than doing a proctored online exam. Other examples are the ECTS-tracks of the MOOCs offered by Universidade Aberta (Portugal), UNINETTUNO (Italy) and University of Nicosia, Cyprus. Learners, who wish to take an exam and become eligible for a verified certificate for the MOOC on Financial Analysis offered by the French First Finance Institute, have to travel to a Pearson VUE centre.

### **Lack of integration of open learning with existing mechanisms and strategies for student mobility and recognition of prior learning (RPL)**

There has been little discussion across Europe on whether successful non-formal, open learning should be credentialised, and whether it could be related to ECTS. Some MOOCs have only recently introduced the opportunity to obtain ECTS credits – the University of Osnabrück offers a pioneering example.

The study found no examples in European higher education of recognition of prior learning for non-formal, open learning, whether it consisted of examining e-portfolios of open learners, administering challenge exams, or reviewing the information provided on MOOC certificates/ certificate supplements.

In general, there seems to be little knowledge exchange and dialogue between actors concerned with the following strands of HEI: internationalisation, student mobility, recognition of non-formal learning, and open education.

### **Tension between affordability and future recognition in the provision of open learning**

Most MOOC providers charge learners for issuing verified digital certificates and supervised final examinations. ECTS awards typically cost around 150 EUR for an on-site examination. The option to obtain ECTS points allows learners planning to start a higher education programme to transfer credits. Those who are currently enrolled in higher education can use these ECTS points for recognition at their own institution. Costs can be a disincentive for these individuals.

On the other hand, digital badges, that often represent the achievement of granular skills relevant for the employment market, are usually issued free of charge, and can be displayed on professional social networks.

At the moment, it is unclear whether fees are actually being charged to the most appropriate category of learners. It is conceivable that professionals who intend to upskill for their current jobs might be more willing and able to pay for additional services than learners who are trying to start (or complete) their higher education.

### **Unbundling of learning provision, (supervised) assessment and credentialisation pose a challenge to existing HEI regulations**

Members of the Eurotech Alliance (comprised of HEIs from Switzerland, Denmark, Germany and the Netherlands) point out that recognition of open learning is not just an additional element to the established procedures of recognition of prior learning. It requires a substantial mindset change, particularly on the part of educational institutions where traditionally the roles of teaching, content provision, assessment and credentialisation have all been bundled together (Eurotech Universities, 2014). The recognition of non-formal, open learning achievements requires an “unbundling” of the services provided by these institutions (Camilleri and Tannhäuser, 2013, p.96; Gaebel, 2014, p.28), which can conflict with the requirements of national quality bodies. For example, research done into why UK institutions had not embraced the OER university (OERu) concept (Witthaus 2012) found that the requirements of the UK’s higher education quality assurance body, the Quality Assurance Agency, would make it difficult for an institution to provide assessment for a programme if the learning materials for that course were provided by another institution.

In higher education, the HEIs provide assessment and award official certificates/ECTS credits to regular students (they receive this right from a national authority). MOOC learners, however, typically register on an online platform or a dedicated course, either at an external provider or the HEI's own platform. In Austria, MOOC learners interested in ECTS credits for future recognition at their university have to enrol at a second higher education institution which meets the admission requirements and selection criteria for HEI programmes (such as previous qualifications, grade averages and language skills). This is a time-intensive and selective process in stark contrast with the openness of a MOOC. Sometimes, students can register at the university as *extra-curricular students*. Open and distance universities do not usually have the above admission requirements and offer a less time-consuming enrolment process, which might make credit transfers for MOOC-based learning feasible.

### **Little guidance for MOOC learners on potential recognition options**

Very few of the MOOCs reviewed in this study provided easily accessible information as to whether specific HEIs or employers/ employer bodies would recognise the awarded credentials. One notable exception was the University of Exeter MOOC, "Discovering Business in Society", which was explicitly recognised by the UK's Association of Chartered Certified Accountants.

The MOOCs for which learners can obtain ECTS credits did not offer learning agreements as a standard tool to facilitate the acceptance of credits by other institutions (which would be relevant for credit transfer in higher education). No instances were found in which learners were guided towards building e-portfolios to demonstrate their skills (relevant for RPL or future employer scrutiny). Information that could be relevant to HEI recognition offices tends to be quite cumbersome.

## 7.5 Recommendations

### 7.5.1 Recommendations to higher education institutions

#### **Validate open learning by offering credentials for MOOCs and free and open online courses**

Offering learners the option of applying for formal credits from learning achievements via open learning is essential. In addition, designing courses in which syllabus, assessment and credentialing routes are transparent (e.g. by using the OpenCred traffic light model) is a way to help both learners and institutions to move towards open learning recognition.

#### **Provide the option for 'free elective courses' or 'self-study courses' which could include open learning for study progression**

Free electives can be a way of making research projects, practical work or courses outside the modules of a programme components for study progression. MOOCs and other forms of open learning can provide numerous and varied learning opportunities that complement HEI programmes for registered students. They can enable institutions to dedicate more time to areas where they have special expertise, and also allow students a wider range of choice.

It is recommended that institutions formulate regulations for "free electives" or "self-study" in such a way that they neither exclude MOOCs offered within the same or another Member State, nor forbid conditions under which these are typically provided (particularly off-site assessments with remote proctoring).

### 7.5.2 Recommendations to institutions offering MOOCs and free open online courses

#### **Provide transparent information to learners and potential recognising institutions/ employers: the OpenCred model and student mobility options in the EHEA**

The OpenCred traffic light model (Figure 16) was based on our research into assessment and recognition of MOOC-based learning. It is recommended as a tool to guide HEIs in identifying developments to their open learning offers which will help facilitate future recognition by other higher education institutions or employers. The model is also recommended as a tool for making the recognition potential of open learning more transparent to other HEIs and employers, who could recognise the credentials awarded for a MOOC.

In addition, it is recommended that MOOC providers make information available to learners on the options for academic recognition that are likely to exist within higher education institutions in Europe, such as RPL, free elective courses, the transfer of credits in consultation with ERASMUS coordinators, Learning Agreements, and any online resources available for further information.

#### **Join European consortia and build partnerships with HEIs and employers/ employment bodies**

Several European consortia and initiatives have already planned to act on this recommendation (e.g. the OpenupEd initiative and the Eurotech Universities network). Others have developed policies, such as the international OERu initiative, in which European higher education institutions are involved.

In order to increase learners' chances for recognition of their learning for career progression or job recruitment, it is recommended that institutions offering open online

courses consult employment bodies during the design phase of these courses and that they seek, where possible, endorsement of their open learning offers.

### **Explore ways in which (open) learners can become eligible for assessment and ECTS credits through non-bureaucratic procedures**

ECTS credits enable credit transfer to other HEIs. It is recommended that MOOC providers should explore their institutional admission and enrolment procedures for conferring ECTS credits on open learners (standard procedures might entail barriers, in contrast to the openness of the learning offer). In addition, they should look into alternative enrolment options that may be in place (or can be set up), such as enrolment as “extracurricular” or “visiting” students, thereby enabling open learners to participate in exams and obtain credits.

### ***7.5.3 Recommendations to European and Member States policy makers***

#### **Foster dialogue and collaboration between actors in HEI internationalisation, student mobility and the validation of non-formal and informal learning**

Policy makers should foster closer dialogue between actors involved in internationalisation, student mobility and open education. This is so that good practice on the integration of open learning into regular HEI programmes can be disseminated. Member States can ensure that policies on validation and recognition of non-formal learning embrace open education and MOOCs, removing discrimination between 'how' and 'where' the learning takes place. MS can also promote policies that encourage and facilitate both learners and employers to explore open learning recognition further. Also important is to ensure that an in-depth exchange on ECTS for open education is stimulated. This should focus on the ECTS User Guide and how tools such as transcript of records and learning agreements could be deployed for recognising learning outcomes achieved through MOOCs, free and open online courses, open courseware and OER. This should be linked also to the mechanisms that are established for the validation of non-formal and informal learning.

## **7.6 Further research**

### **Regulatory enablers and barriers to open learning recognition in the Member States**

Europe’s history of student mobility and ECTS credits has produced a system in which students receive learning opportunities, assessment and credentials all within the same institution. MOOCs and free open online courses that award verified credentials to successful learners in partnership with non-accredited platform providers and online proctoring services only work in far more unbundled systems.

A more comprehensive overview of national regulations, requirements of quality agencies and institutional rules is therefore needed in the Member States. These can enhance or impede the scalability of solutions for the recognition of non-formal, open learning, and future ECTS credit transfer. Some key questions are, for example:

- Are only regular students eligible for assessment and the award of ECTS credits? (i.e. are open learners excluded?). If so, can learners register as guest students at a MOOC-providing institution, be assessed and receive ECTS?
- Can assessments for ECTS credits be conducted online through remote proctoring or are HEIs obliged to administer exams on-site?
- Is a course required to offer a certain number face-to-face contact hours in order to be part of the standard offer to HEI students?

- What are the perceived enablers and barriers to recognition of non-formal, open learning from the perspective of academics and senior management in higher education institutions?

**Research into the Member-States' regulations and practices would enable the setting up of specific strategies for advancing the recognition of open education in Europe.**

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## APPENDICES

### A. OpenCred Research Consent form

I agree to take part in the OpenCred study which investigates the current status of recognition of non-formal, open learning within the EU Member States. I have had the project explained to me and I have read the information statement about the project which I may keep for my records. I understand that this project will be carried out in accordance with the University of Leicester's Code of Research Ethics which can be viewed at:

<http://www2.le.ac.uk/institution/committees/research-ethics/code-of-practice>.

Material gathered as part of this study will be treated as confidential and securely stored in accordance with the UK's Data Protection Act 1998.

1. I have read and I understand the information about the project.
2. I have been given the opportunity to ask questions about the project and they were answered to my satisfaction.
3. I understand that I can withdraw from the study at any time.
4. I agree to any interview I am involved in being audio recorded and my words being used for research purposes.
5. I agree that my responses and comments in surveys related to the recognition of open learning may be used for research purposes.
6. I agree that my comments may be presented in research reports, blog posts and other publications, and that my institutional affiliation may be mentioned in connection with my comments.
7. I agree that extracts from the audio recording of the interview may be released under an open licence, subject to my approval of the selected extracts.
8. I understand that all materials published as a result of this research will be published under an open licence. While the publications produced within the scope of the project will be attributed to the researcher, the researcher claims no ownership over my contributions, and all direct quotations from me will be attributed to me. **Yes/No** (Selecting 'No' here means that my name will not be mentioned and my contributions will be anonymous.)

Name [PRINT] .....

Signature .....

Date .....

#### OpenCred Study Information Statement

The OpenCred project investigates the current status of recognition of non-formal, open learning within the EU Member States. The study aims to identify the models and frameworks that are being used by institutions and employer bodies for the recognition of non-formal, open learning, and also to ascertain the perceptions of learners who have benefitted from such recognition. It is hoped that the findings from this study will assist Higher/Vocational Education institutions, employers and employer bodies in EU Member States, as well as governments of those States, in making policy decisions around the recognition of non-formal, open learning.

## **B. Abridged Interview Transcripts**

### **HEI Teacher: University of Osnabrück/ iversity MOOC, Germany**

Interview with teacher (referred to as T1)

*What is your role in your institution?*

I have been a professor of Computer Science at University of Osnabrück for about 25 years. I am also director of the Institute of Computer Science and the chair of the E-learning Centre of the university, that is a service institution that provides the new media to faculty and students. The University of Osnabrück. It is a conventional university so everybody is supposed to be on campus, but a lot of material is offered in addition to the real-time lectures. We have also been providing recordings of classroom lectures on the iTunes platform since 2004.

*Who is the audience for these iTunes U recordings?*

When we started this, it was an additional service for a student who might have missed one or two episodes/ lessons – he could watch these while sitting on a train. But once we started this we realised that hundreds and even thousands of students outside of my class in Osnabrück started to watch these special lectures in the iTunes store. These were students from other universities and working people, or retired people. I realised this from just getting mails from people all over Germany who said hey, by the way I am watching your classroom about algorithms and I'm just looking forward to the next episode, and I said, wow, never ever did a student in my class tell me I'm looking forward to the next episode! This was just amazing. This is the best that can happen to a teacher, that someone says I am eager to see the next episode. So there were about 200 people in my classroom in Osnabrück, but there were about 1,000 people somewhere in Germany who watched these episodes very carefully.

*Did that have some impact on your decision to start doing MOOCs?*

Yes. When I realised there were so many students outside I tried to find a way to do my job at Osnabrück but at the same time to offer the material to a wider audience. This was not yet a MOOC – it was simply recording what I did in the classroom. But when I prepared my lecture, I thought about the 1,000 people outside the classroom watching. That meant that when I designed the content of my episode, I focused more on a self-contained subject so that you have a well-defined episode that has a beginning, some content and a closing. It took much more time to design a self-contained learning unit.

*What made you decide to offer assessment of learners' achievements in the 'Algorithms and Data Structures' MOOC and ECTS credits?*

Since I noticed that my recordings on iTunes U were quite well accepted, I thought it would be a good idea to find out whether a MOOC would be even more interesting to the students outside, because right now the students would only be able to watch say a 90-minute video of the lecture in Osnabrück; however there was no opportunity for the participants to submit homework or have discussions or interact with other participants. So last year there was this announcement from iversity and the Stifterverband für Deutsche Wissenschaft. They invited applications to produce a MOOC. Ours was not selected; however, iversity said they would help us to produce the MOOC. They paid the research assistant that I needed to produce the MOOC.

*How did you include assessment in the design of the MOOC?*

There are three components for students to get feedback. First, after about every three minutes in the video where I explain the topic, there are one to three multiple-choice questions. The student is allowed to do it several times but must do it correctly before he can proceed. When the unit containing content for one week is over, there will be an assignment to do some programming. They have little exercises that they have to submit to the iversity platform. These programmes will be automatically checked by the

software that we have developed. However, the software just checks that the programme is syntactically correct. At this point the student sees whether he has produced a programme that runs. The third point is that every student who uploads his programme will be assigned the programmes from five other students. That means that he has to understand what the other students have programmed, whether it was a good idea to have chosen a certain solution. He has to mark the solutions.

*What do the students have to do to get a certificate from the University of Osnabrück?*

When the MOOC is over, everybody who would like to get a certificate can come to Osnabrück or to one of the other centres in Germany where a conventional pen and paper exam is written. If the student passes this written exam, he will get a certificate with six ECTS credits. There is also a proctored online exam. It is a sequence of multiple-choice quizzes, very similar to the quizzes that the student has already passed during the course. There is some third company outside iversity that provides all the infrastructure that is needed to be almost certain that there is no cheating. For that the student doesn't get credits; it's just a certificate that he has passed the online exam.

*What do the examinations cost?*

- 49 EUR: proctored online exam with verified certificate
- 129 EUR: on-site exam in Osnabrück
- 149 EUR: on-site exam in Berlin, Hamburg, Köln, Stuttgart, München
- Future on-site examinations will all cost 149 EUR.

*How do you confirm the identity of the student who is doing the online exam?*

I think that this proctored exam system requires the student to show his passport or his ID into the webcam. It makes the barrier to cheating rather high, because if there were no kind of supervision it would be very easy just to have a friend answer all the questions.

*Is the University of Osnabrück happy to set up these examinations and have outsiders come in to take them?*

I'm not sure whether the University is happy. I talked to the president last year and he said OK we'll just do it, mainly to find out whether it's a good idea. There is not yet a strategy or policy whether this is now something that we should pursue further or that we should do it all over again. It takes a lot of interest and energy from the person who actually produces the MOOC. For the university, maybe it's like a commercial, an advertisement that this is a modern university, saying we know how to handle this social media stuff and so on.

*Do you have any idea how many of the learners have received certificates?*

Yes. It is very, very, very, very disappointing, because 20 people took the final exam and all 20 got the certificate. I think this is very disappointing because when the MOOC started there were 2,000 people watching the first video. (We had 6,000 subscribers, but 4,000 never ever showed up to watch even one lesson.) So, 2,000 started. Over time, more and more students just dropped out of the course. The last assignment was completed by 200 people. So 200 out of the 2,000 actually get a certificate simply because they have worked through 80% of all MCQs and homework, without saying that they did it right. It's just a certificate of participation. I think the amount of preparation in designing and producing the MOOC actually cannot be justified if finally only 200 people get a certificate for participation and only 20 get a certificate for the written exam. I think it is simply a problem that there are not enough potential candidates because it's a difficult subject and you must be able to force yourself, once or twice a week, to watch the episode and do the homework. I think this is energy consuming and there are not enough people for this difficult challenge.

But one interesting thing I found out was that there was a huge diversity of students who applied for assessment. For example there was a medical doctor from Vienna who

was just curious to find out what the essential principle of programming is. This was somebody who just didn't need the credits. He passed the final exam.

*Did any students choose the online proctoring option?*

Yes but that is still in progress. iversity offers this online proctored exam over a period of two weeks.

*How do you think students will use their certificates?*

The idea with the ECTS credits is that the student has received his certificate should be able to submit this certificate at his home university. But this I think is still in the beginning, so probably some of the students that got the credits here in my course, when they try to present this at their home university then someone might say what is a MOOC?

*How do you see the future for MOOCs with assessment such as the one you just offered?*

I think because it took a lot of effort to produce the MOOC, and it got so little response, there is no other teacher here at the university who will produce a MOOC by himself. However, it may be that if somebody has a special topic and that person might in the next year say OK I'll give it a try and produce a MOOC, and maybe he will even try to distribute it through iversity, but it needs a certain amount of familiarity with producing electronic material. That is something that typical a university teacher has.

*If other institutions offer MOOCs with ECTS credits on the same basis that you did, would the University of Osnabrück be willing to accept those credits?*

I'm pretty sure that they would.

*Is the University of Osnabrück working with any other institutions?*

The University of Osnabrück is a member of the so-called ELAN network – E-learning Academic Network – an association of several universities of Lower Saxony. Osnabrück is the leader in this association. There is a sharing of resources and some kind of knowledge transfer. But I don't see any of the others in this network trying to produce MOOCs.

## HEI teacher, Croatian Academic Research Network (CARNet) MOOC

Interview with a teacher<sup>97</sup> on the CARNet MOOC (referred to as T2)

*Can you give me some background as to the kinds of open educational practices your organisation is involved in? Is your institution collaborating with other partners (e.g. other HE institutions or professional bodies) in this initiative? If so, in what ways?*

We have some open courses that we publish on the website about the Internet, about tools you can use in teaching. We have three modules through the E-learning Academy that includes e-learning management, e-learning course design and e-learning tutoring. These are open [only] in the sense that anyone who wants it, a teacher or whoever [can do it], but it is not for free. There is a tuition fee and there is a pre-requisite they have to write an essay. This is for the CARNet provision, when it is run by universities they will probably require an MA or a similar pre-requisite.

This year we have also developed a MOOC which is about developing a course in MOODLE. For the MOOC this is open to anyone who can attend the course in Croatian, and it's free of charge. Before the MOOC we had online courses for small groups of learners and each group had 15 or 20 learners to one tutor who was helping the learners to accomplish or cope with the tasks who was assessing their practical work. It was really expensive. We thought the MOOC would be a cheaper way of doing it. For the money we invested the number of learners we could reach would be much better ratio. We had more than 400 students [on the MOOC] and only a few more teachers [than before].

When you calculate the number of hours they spent the cost is much better for us. The learning was much more intensive, but because the learners share, the teachers' participation was much less. In Croatia there are only two deliverers of MOOCs so we wanted to promote this new innovative way of working.

For the MOOC the assessment is done in two different ways, by assessment that can be done automatically, like tests, or tasks like write a description or a blog, then the system can automatically assess these. The other way was peer assessment.

*What are your institution's aims in doing these things?*

CARNet is an agency under the Ministry of Science and Education and our remit is to train teachers and support them. CARNet has a mandate from the government to teach teachers and on a public budget with all the resources we have, it would be fair to share it with all teachers. The aim is to help teachers in their use of technology in education, but also to set a good example for the use of open educational resources, so we invite them to submit OER to our school portal to create, share and publish OER.

*If a learner wanted to get recognition for their open, non-formal learning achievements through your institution, what would they have to do to get that recognition?*

For some courses we co-operate with our partners for teacher training, and they have accreditation on their courses which can lead to promotion and higher salary and for every stage you can collect different types of accreditation. Each accreditation has several points and you collect the points to get promoted. With the courses we deliver, some of them are accredited by the teacher training agencies. With this MOOC we provide badges which they can publish on their websites but they have no formal meaning. We also have the E-learning Academy. This is a two-semester programme, and we provide a certificate but it has no formal recognition, but we are to collaborate with universities which are going to develop their own programme based on the E-learning

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<sup>97</sup> This interviewee asked not to be named.

Academy which will lead to ECTS points. In general this is an area which is not very well developed.

*In what way are these practices different from previous practices for the recognition of prior learning at your institution?*

[In our previous practices which are still in place for the E-learning Academy courses], for each programme there is some kind of activities that the participants have to achieve. It's strict they have to participate in discussions, they have to submit papers, activities they have to finish in order to be recognised. They have to finish some practical work or some task in order to get the certificate. There are specified criteria that they have to accomplish in order to finish the programme.

For the MOOC we also have activities that they have to finish in order to get the badges. It's important for them to get some feedback, when they have the badge the learners want to print it out and have a hard copy. The badges state what competencies you have so they can put these on their webpage. It's not formal recognition.

*When did your institution start offering this recognition to learners?*

This is the first year of holding the MOOC.

*How many learners have taken this opportunity for recognition?*

For the MOOC we had 440 students. 98 of them achieved at least one badge. Altogether 277 badges were awarded (average of 2.83).

*To what extent do you think recognition is important for your open learning provision?*

The badges were really motivating. We created the badges for different kind of participant but it was very rewarding for them. They very much wanted all three.

*What are the main barriers/ challenges in being able to offer recognition of open, non-formal recognition.*

The participants found the peer assessment difficult to do. In the future we will give more support for the participants to make it easier for them to do peer assessments and explain why they have to do it and not the moderators. The hope is that they will be less reluctant.

*How do you see the future of recognition of open, non-formal learning in your institution?*

We will create more courses because we think it's important to form a community of people. We created a MOOC for people who are creating courses. It was a basis for them to share their experiences and to change their ideas and form networks. The participants have formed a Facebook group and are still active. We will do more of this in the future.

For the future, we have started negotiations with the agency for external evaluation so that the programmes delivered by CARNet can be award-giving for teachers – at the moment only the teacher training agencies can give certificates.

With the MOOCs there is no validation of identity but in E-learning Academy there are face-to-face sessions so the moderators are familiar with the work of the students.

There are no exams at the moment. When adopted by HEIs there will be likely to be exams, but definitely practicals and assignments.

Assessment and accreditation is very important to our practice and based this around tasks and practical work. However we gave just one quiz, even though we didn't think this would test their practical skills, which they liked very much so we will use these more in the future.

## **Learner: University of Osnabrück/ iversity MOOC, Germany**

Interview with a MOOC learner (referred to as L1)

*What is your occupation?*

At the moment I study Business Informatics at the International University Bad Honnef (IUBH). Before I started my studies I did some training as a bank officer and after this I joined the German army as a flight safety controller.

*Would you mind telling me your age?*

30

*I'm going to ask you a few questions about the MOOC 'Algorithms and Data Structures'. How did you know that this course existed?*

When I started my studies I was looking for more explanations for my courses, and I found some videos on YouTube by a professor from the University of Heidelberg. He talked about MOOCs. I started looking for MOOCs and found this one.

*Why did you choose this course?*

I already know a lot about informatics. I did programming science for 11 years. Yet for me it was important to learn more. I also knew that it was possible to get certificates and that's another reason why I started with MOOCs. It's important that I can show future employers a certificate, so they can see that I didn't waste my time. I was looking at job offers in the last few days and there are often requirements for some special knowledge which you need to include in your CV. The certificate increases my confidence in applying for jobs. On the other hand, if I could find some MOOCs without certificates, which could help me get better grades in my studies, I would also do these MOOCs.

*Can you use these six ECTS credits that you've achieved at the University of Osnabrück in your studies at IUBH?*

My problem was that I had already done the course that I could have skipped in my present programme. So I couldn't skip it - it was too late. But I didn't do it to skip this course; I did it to learn more because in this MOOC I learnt deeper things than in my university course. So I didn't ask my university (for exemption), but I think yes, they would have agreed. IUBH is a private university. They are particularly fair and generous.

*Let's talk about how your work in the MOOC was assessed. There were three different levels of assessment: firstly, multiple-choice questions would pop up every three minutes while you were watching a video. What was your experience of that?*

That was really easy for me. You just had to remember what had been said in the last three minutes and you could try several times. There was no way to fail.

*The second level of assessment was peer assessment. How did you find that?*

We had to create some programming script and we could only submit the programme once. Each person's programming was checked by other students. It was cool to see other people's solutions and I learnt a lot. But I think it would be very difficult for someone whose programming skills were at a lower level to give correct feedback to someone who had written a very complex programme.

*The third level of assessment was the examination, and you successfully completed this. Did you take the examination at the University of Osnabrück?*

Yes. Osnabrück is close to where I live. I could have gone to a different examination centre, but I went to Osnabrück because I wanted to talk to the professor. We talked about his views on MOOCs. It was nice to be able to give feedback to the MOOC makers, and to thank them.

*How did the examiners know you were really the person doing the test?*

I had to show my ID card.

*Do you have any thoughts or ideas why only 20 students took the examination?*

Yes, I have 129 ideas!

*Can you tell me the top three?*

Euros, Euros, Euros! The exam cost 129 Euros. That's a lot for a student to pay. Not everyone can afford that, and if you don't need the credits or you don't want a certificate, you wouldn't pay it.

*Why did you choose to pay the 129 Euros?*

Because this was an important course for me. And I wanted to meet the professor. And I thought a presence exam would be better than an online exam.

*Why did you think a presence exam would be better than an online exam?*

Because no-one takes an online exam seriously. If employers see my certificate and it says I did it online, they do not know that the online exam was proctored and my identity was confirmed and so on. But if they know that I went to the University of Osnabrück and took an exam, that is much more serious. Then they know that I have learnt something important.

*You will soon receive a certificate for passing the exam. Have you seen a sample of the certificate, and would you feel happy to include it in your CV?*

Yes it's better than the certificates I've received from the other MOOCs I've done. I've completed six or seven MOOCs via edX and Coursera and other platforms and received certificates for all of them. Those other certificates were just completion certificates. They used things like Signature Track to ensure that it was always me doing the tests. I will include them all in my CV, but the Osnabrück MOOC is the most valuable one because the certificate says that I have done a presence exam. There was one other MOOC on designing programme, run by edX, which was also very important for me because of the knowledge I gained on it. If I could have done an exam for that course, I would have done it, even if I had to pay 129 EUR.

*What do you think is a reasonable fee for students to pay for assessment and certificates?*

I would do the exams for around 200 Euros (maximum) for the really important courses. For the other courses, I would have done exams if there had been no fees.

*How will you display your certificate?*

They will give me a URL online. It is linked to the MOOC platform so future employers can see that I completed the course and did the exam and got the certificate.

*What do you think will be the impact of the certificate on your life?*

It will give me a greater depth of understanding in my current studies and I hope it will help me find jobs in the future.

*Is there anything I should have asked that I didn't?*

I would like to say that I think all universities throughout Europe should accept credits from MOOCs. That would enable students to study different specialisations from different institutions and have greater variety in the curriculum. And in the European Community I think we should do the MOOCs in English.

## **Learner: CARNet MOOC, Croatia**

Interview with L2

*What is your occupation?*

I'm a teacher/counsellor in a primary school. Also I work with older students on information technology projects. I also have experience of being an ICT teacher and although I am not one at the moment, I use those skills in my work.

*Would you mind telling me your age?*

I will be 49 very soon.

*What is your experience of MOOCs?*

My first MOOC was three years ago and was on ICT in Primary Education through Coursera. It was good because it was specifically for primary schools and how ICT makes a difference and some pedagogical changes achieved through ICT. It was really interesting. We learnt how we can use innovation in school. It was also for policy makers in school. The second one was this year, from the University of New South Wales about learning to teach online. That had 20 000 teachers from all over the world. It was excellent. The CARNet one was on building modules in MOODLE.

*How did you know that this course existed?*

I'm always looking for something new so I looked up MOOC courses.

*Why did you choose these courses?*

It looked very interesting. I really like MOOCs as a way to learn and they are really useful for teachers. It's good to make new connections and meet people. I can get some new materials and new tools and new blogs from the other teachers. This isn't just during the MOOC but after it I have all these materials that I can then use. I really like to have new connections, it's important to me and it's important for teachers to share their experience, the lessons from courses to be influenced by each other and so on. And I improve my skills, it's very important. I am trying to be an innovator every year so I must be on courses like this to have new things in my classroom.

Also, it is some moment of prestige. I can be at Stanford or somewhere else from home. I can take Harvard or MIT course and although I've never been there, in this way I can be.

*To what extent did the opportunity for a badge or certificate motivate you to take part and complete the course?*

In all the courses, Coursera and CARNet, there were some badges. In some ways we are like children in that badges can be important to us, but as teachers it's important to get some sort of verified certificate at the end, but of course you have to spend money to get these and this is something I don't like. But if you don't want to pay you can also be there and improve yourself, and that's also OK. I haven't yet paid for a certificate.

A badge is a good thing to motivate you, but it's not really the reason for doing the MOOC. The reason is to be there and improve yourself but if I'm spending my free time doing the MOOC it would be good to have a certificate for doing it, or if the teachers agency would give you one point (points for professional development) for the MOOC. It's not happened yet. Teachers in Croatia like to spend their free time to improve themselves but they would like to get a certificate but the Teachers' Agency don't bother about this.

*How was your work assessed?*

You must be very active on the forums, you must participate, you must do specific tasks, or make contributions on some topics. So you have a lot of tasks.

*How easy/ difficult was it for you to do the assessment?*

I think it's not difficult – it's the time is really the enemy for all these things. I think if you have the time you can meet all these things. But you must really create your own time, because if you lose one or two weeks it's very hard to be on track. You have tutors and every week they email they set you new tasks, but it really depends on you and if you want to do it, you will. But for me the all the assessment tasks were not hard, and it's really interesting, so it's OK.

*How did the examiners know you were really the person doing the test? Did you have to show some ID?*

No, there was no validation of identity. I didn't need to prove who I was. It's a really good question. I spoke with our Croatian Agency for education and I know that many teachers are coming to online courses. And all of them said they would like to have some certificate, but our agency said that we must know that these things are OK that it is OK with our curriculum or our plan in schools. And who knows that it is me, someone else could put my name on it.

*What form of recognition did you get for your learning achievements? E.g. a badge/ a certificate of completion, etc.*

Just badges. Certificates were available but this would have required a fee.

*Did the badges have any impact on your life?*

If you put them on your website other colleagues are motivated, because motivated teachers ask me "where is this from?" "I would like to have this one", "I would like to have a link" so it can be a moment for motivation. From this point badges are really OK.

*What impact did doing the MOOC have?*

Maybe not to change my career, because I have the same job but in that job I am a better teacher, and I can make new projects, and make new connections and maybe I can make the possibility for something new in my professional lives. So I think I may open some doors in the future. Who knows?

*Do you plan to do further MOOCs in the future? Can you tell me a bit about those plans?*

I just realised that I for now have enough knowledge about online courses and ICT as far as all that side of things goes I am "on it" so for now I will now close the door on it. I know for now what I would like to know. My interest is something with space, and something about STEM and something about science and I would like to find on Coursera or somewhere some MOOC about astronomy and space and something like that. I would really like my students from first grade to have more skills about science, because skills are not good especially in upper grades. I think that using space and astronomy would be an interesting way for them to start to learn from the beginning which will mean that they are better by the time they are older. This is something we need in Croatia because our maths and science skills are not good. This will be my next step but for this for I must know something more about all these things. So I will learn them first and then teach my students.

*Is there anything you think I should have asked that I didn't?*

That it is important for me that I can use the means by which I learn in the MOOCs and pass that way of learning. I think students can use this form of learning to make more opportunities for themselves. If I use new tools in the MOOC, I go to my classroom and I will share them. I am using all these things with students in my classroom as I've passed on to them all this knowledge from these MOOCs and this may be the most significant impact of me studying MOOCs. I improve their skills as well and it's a good plus.

## Employer: Borders College, Scotland

Interview with a staff member of employer body (referred to as E1)

*What is your role in Borders College?*

I am the Technology Enhanced Learning (TEL) Manager.

*Can you tell us a bit about Borders College? (E.g. how many employees, how many students, geographic location, and what its main business is)*

Borders College<sup>98</sup> is an FE and HE college in the Borders region of Scotland, which is a very large rural area. There are approximately 300 staff members, and over 1,000 full-time FE and HE students. We have a strong vocational focus, with around 800 work placements per year.

*Borders College is encouraging its staff to do CPD through open, online learning, and has replaced paper CPD certificates with online badges. Can you tell me why the college decided to do this?*

The College completed an extremely successful JISC-funded project in 2013 which aimed to identify the barriers to embedding technology enhanced learning at the core of an organisation. One of the mini projects we undertook was to consider the use of Open Badges in the College environment. The focus was initially on students, but a chance meeting with our head of HR enabled us to reflect on how Open Badges could be used to add greater value to the mandatory CPD sessions which staff complete as well as producing a more sustainable, cost-effective method of accreditation. (There are no printing costs with badges!)

*It seems that the badges are open, but the learning process itself is not?*

Yes, this is true. Within Borders College we have strategies which enable us to encourage open learning, and we are developing our RPL processes. At the moment it is up to the individual lecturer to decide whether RPL should be awarded. I would like to see us awarding badges for prior learning. So Open Badges are a step towards Open Learning. What we need is Open Practitioners, teachers who understand the value of open education.

*Can you take me through a scenario that illustrates what kind of open, non-formal learning achievements Borders College would recognise, and what the process would be/ what the employee would have to do to get that recognition?*

A typical scenario is that staff attend a training session. If the trainer feels the 'learner' has satisfactorily achieved those objectives then they will notify the HR department of their success. The content of sessions will vary and may include legislative training such as equality and diversity (which can be done online and assessed through online quizzes) or a training session on the use of embedding videos in Moodle where the College's TEL unit will act as assessor. The HR department then informs the TEL unit who will issue the open badge to the recipient. Staff CPD Open Badges are designed in advance based on a predefined template/style sheet which the TEL team developed. Badges are issued and stored in Moodle, with staff being informed by email they have been awarded a badge and also encouraged to 'push' the badge to their independent badge backpack.

*It sounds as if the assessment process varies in its level of formality, and there are no examinations?*

Yes, it depends on the course and the lecturer. Some courses have online quizzes. Some courses require students to perform some task under observation. For example, in the

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<sup>98</sup> <http://www.borderscollege.ac.uk/>

'Manual Handling' course that we run with the National Health Service (NHS), students must demonstrate that they can lift a patient. Some other courses, for example the 'Child Protection' course, are mandatory for staff to attend but they are not assessed on them. In those cases they will get a badge simply for attendance.

*When recruiting new staff, would Borders College take into account the open learning achievement of applicants, both now and in the future?*

Although this has not formally been discussed and agreed, as an ambassador in the use of Open Badges it would be hypocritical for us not to take the open learning achievements of applicants into account during recruitment. The College is working hard to increase awareness of the value of Open Badges amongst local employers. We have recently completed a pilot with NHS Borders<sup>99</sup> – one of the largest employers in the region – with the aim of awarding Open Badges to learners irrespective of whether they completed the training onsite at an NHS venue or in a Borders College classroom. In the future Open Badges from either party will be recognised by both.

*In what ways are these practices similar to/ different from previous practices for CPD?*

The main difference is that the paper certificates (that were previously issued) were easily lost or thrown away and subsequently held little value to staff. With an Open Badge which can be stored independently and transferred between employers (if appropriate) the staff now see the value of the training they receive.

*When did Borders College start offering this recognition to employers and how many employees have taken this opportunity for recognition?*

We started issuing open badges to staff in June 2013 and have been working with local employers since around December 2013. As all members of staff must complete at least one compulsory CPD session every year, every member of staff at Borders College (almost 300 individuals) already possesses at least one Open Badge. Also, once we started introducing open badges to our staff, many of them then came to the TEL unit for help in creating badges for their own students because now they saw the value of badges.

*Can you comment on the take-up rate?*

We expect take-up to increase mainly due to the fact that the College has approved a three-year project to implement Open Badges across the entire curriculum. This reflects the College's belief in the long-term value of Open Badges for staff and students. We are also looking to work with HR to improve the automation of the process and in particular to flag up expiry dates on badges to ensure legislative compliance is maintained.

*Is Borders College collaborating with any other partners (e.g. other employers, HE institutions or professional bodies) in this initiative?*

We have had a number of enquiries from interested parties who are keen for us to support them in developing a user-friendly online development and issuing tool, as well as looking for training in the creation and identification of appropriate badges. Such parties include the Scottish Government, Scottish Borders schools, NCFE (previously Northern Council for Further Education - an Awarding Organisation nationally recognised by the qualification regulators for each country in the UK) and NHS Borders. We also receive many invitations to talk at national conferences and to share our experiences with other institutions. So far we have helped several other colleges to consider introducing Open Badges within their organisations and are involved in a number of ongoing projects and groups related to open learning practices. Of particular note are our involvement in the OBSEG (Open Badges Scottish Education Group), our ongoing

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<sup>99</sup> <http://www.nhsborders.scot.nhs.uk/patients-and-visitors/>

discussions with Snook (the Badgemaker project) and recent discussions with the Open University and the Scottish Qualifications Authority (SQA). The SQA is very supportive of open badges: they considered awarding open badges themselves but decided against it because they did not want to stifle the creativity of the colleges in this area. When we design and develop badges, our purpose is to motivate students by seeing their small achievements adding up over time. This role is best carried out by the teachers who work with the students and know where their knowledge gaps are. Nevertheless, discussions between the colleges and the SQA are ongoing.

*In what way is the recognition process you have described built into Borders College's policies and procedures?*

The College has strategic objectives which ensure that all technology enhanced learning feeds into policies and procedures. As we are in the early stages of a three-year project cycle it is hard to cite exactly which policies and procedures will be affected, but it's fair to say they will be!

*What are the main barriers/ challenges in being able to offer recognition of open, non-formal learning to employees?*

Firstly there are concerns that Open Badges will have no long-term impact on the accreditation landscape. As with all new technologies, people also fear the unknown and worry that it may lead to additional work for those involved (not only in creating and issuing badges, but also in terms of what additional work may need to be completed by those hoping to achieve a badge). Other concerns relate to the value of such badges and the need to invest in raising awareness amongst staff and employers generally. Indeed this is possibly the biggest issue for students, whose first question when being introduced to badges was 'will companies locally recognise this badge?'

One of the other issues relates to the lack of comprehensive guidelines and tools to help those wishing to start creating badges. Some useful basic tools include the badges canvas from Digital Me<sup>100</sup> and the badgemaker tool from Snook<sup>101</sup>. More comprehensive attempts to support the entire process are currently under development with Mozilla and Jisc.

A final point relates to a need for more case studies to be available which highlight the use of Open Badges and encourage take-up. Being exposed to such communities of practice, learning and being encouraged by others (particularly in the UK) is extremely important in winning over doubters.

*How do you think the choice to replace paper certificates with open badges will affect the recruitment prospects of employees should they leave the college?*

I would like to think that staff (and students) who leave college with a qualification plus a suite of open badges will be more likely to be shortlisted for jobs. The ideal would be to see CVs appearing which are enhanced with links to Open Badges and images of those badges to accompany traditional text based resumes. This should make the job of the recruiter much easier as it paints a picture of the person as a whole rather than as a list of qualifications.

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<sup>100</sup> <http://www.digitalme.co.uk/>

<sup>101</sup> <http://wearesnook.com/snook/>

## **Employer Body: Association of Chartered Certified Accountants (ACCA), UK**

Interview with staff members of employer body (referred to as E2)

*What is your role in your organisation?*

We are responsible for the design, development and delivery of ACCA's qualifications.

*Can you tell us a bit about your organisation? e.g., how many members/ member institutions, geographic spread, and what kind of services they supply)*

ACCA accredits courses across the world in accountancy which work towards the ACCA qualifications. 70% of the learners are outside UK. No exact number for the number of institutions who prepare students for ACCA awards, but it is thousands. The ACCA enables accountants to become chartered certified accountants through its main ACCA qualification, this consists of 14 exams, three years' experience and the completion of an ethics module. Nine of the exams are exemptible, which means that it is in the interest of universities offering accountancy degrees that their offering provides exemption for these nine exams. The ACCA works with universities to ensure that their provision meets the ACCA's learning outcomes. A large part of the ACCA's work is assessing and recognising prior learning and it has a large unit based in Glasgow with the sole remit of identifying whether the prior learning of applicants meets the requirements for exemption.

*If a learner wanted to get recognition for their open, non-formal learning achievements from your organisation, what would they have to do to get that recognition? (Follow-up question: Can you take us through a scenario that illustrates what kind of open, non-formal learning achievements your organisation would recognise, and what the process would be? What specific benefits does such recognition bring to employees, for example recruitment/ career progression/ other?)*

The learning from the MOOC "Discovering Business in Society", which we have developed with the University of Exeter and which is delivered on the FutureLearn platform is assessed through a proctored exam which students pay for at one of the PearsonVue Centres. If the exam is passed then the learner is exemptible from one of the ACCA qualification exams. This is an established system for accreditation of prior learning and the fact that this system was already in place made the process of incorporating the learning from the MOOC easier. In fact, it would not have been able to take place without this system already being in place.

*To what extent do you think formal recognition is important for inclusion in your open learning provision?*

This differs depending on the type of learner. For those taking the course as part of one of the programmes leading to accreditation it is extremely important. However, it is anticipated that the majority of the learners will be taking part in the MOOC simply to learn about business. The MOOC is intended to fulfil ACCA's public value agenda, providing learning to a wider range of people who may not be interested in an accredited course. For this reason business was chosen as a topic for the MOOC when they approached Exeter, as this would have a widespread and more general interest for a wider population. This is the central reason for setting up the MOOC and was the reason for testing the concepts of MOOCs and how they could meet the ACCA's various requirements. MOOCs are seen as a wave of the future and it was important to experiment with one as a test case.

The rationale for a wider audience is not only to fulfil their remit to contribute to a social agenda, it also makes more people aware of the provision of ACCA and therefore potentially increase the number of people taking their other courses. There is not a likelihood of large numbers translating from having taking on the learning as an open-

access course and then converting to a paid examination route, but this is still attempting to increase numbers to some extent.

A third group of learners at whom the MOOC is aimed are those looking for continuous professional development. There is a requirement for accountancy professionals to obtain a certain number of credits of continuous professional development per year, but this is often problematic for them to undertake because of the cost and difficulties in finding the time to attend the courses. MOOCs offer a solution to this, in that a proportion of these credits require no formal assessment of learning; simply that the learner declaring that he/she has undertaken the required amount of study. This proportion of the CPD requirement is fulfilled by the learner making a statement regarding the courses they have undertaken and the learning they have obtained from this. This is reviewed but not formally assessed. Declaring attendance at a MOOC and itemising the learning obtained as a result of this, would then be sufficient to meet this requirement.

*In what way are these practices different from previous practices for recruitment/ career progression (plus any other applications mentioned in answer to Q2)?*

They do not differ at all. Since the system at ACCA has always provided for the recognition of prior learning, this does not require a change to any practice, this simply forms an alternative means to acquire the prior learning.

*When did your organisation start offering this recognition to learners?*

The MOOC will start on the 8<sup>th</sup> of September, 2014.

*How many employees have taken this opportunity for recognition? Can you comment on the take-up rate?*

The first of the MOOCs to be offered as exemption to one of the ACCA exams is to be started in September 2014. No information on take-up was available at the time of the interview.

*What are the main barriers/ challenges in being able to offer recognition of open, non-formal learning to employees?*

These questions do not apply to the scenario at ACCA. Employers recognise the final ACCA qualification; they are not concerned with the recognition of prior learning. Since ACCA both accredit the original MOOC and provide exemption to their courses on completion, employers are not concerned with the means by which it is attained.

*What partners is your organisation collaborating with (e.g. other employers, HE institutions or professional bodies) in this initiative?*

Exeter University have created the course and it is being delivered through the FutureLearn platform. The exam element is paid for and proctored through PearsonVue facilities. These provide examination rooms, in which identities of examinees can be validated.

*In what way is the recognition process you have described built into your organisation's policies and procedures? (Follow-up question: Are there plans for development of policies and procedures in future?) How do you see the future of recognition of open, non-formal learning in your organisation?*

MOOCs offer an opportunity to enable more people to gain ACCA accreditation by providing access to learning which, following successful completion of an exam, can exempt them from a number of ACCA exams. In this first instance the MOOC was sponsored and publicised by ACCA as a test case for ACCA. It was therefore important that it was open access, since it was also intended to fulfil the ACCA's public value agenda. If it is successful then further MOOCs may be set up, both to market ACCA to more people, and provide more learning of a non-formal nature globally. However, if other institutions wish to set up their own MOOCs and enable learners to gain a

qualification by taking the MOOC, whether requiring them to register or not, this will be an alternative way for MOOCs to provide access without ACCA's direct involvement; any institution is free to do this, if they then meet ACCA's requirements for exemption then they can contribute towards the ACCA qualification. It makes sense that they meet ACCA's learning outcomes for that course, and the requirements for validation of identity. On this last point, ACCA is interested in the idea of online proctoring as an alternative to being at a physical location for examinations, as this will make learning more accessible.

*Is there anything you think I should have asked that I didn't?*

Another important reason for ACCA to engage with a MOOC was because the social learning that takes place in a MOOC, with the discussions and dialogue between learners was seen as a valuable tool to further develop the learning materials within the MOOC.

## List of abbreviations and definitions

These definitions are based on the CEDEFOP guidelines except where otherwise stated.

**Accreditation** is a process by which an officially approved body, on the basis of assessment of learning outcomes and/or competences according to different purposes and methods, awards qualifications (certificates, diplomas or titles), or grants equivalences, credit units or exemptions, or issues documents such as portfolios of competences. In some cases, the term accreditation applies to the evaluation of the quality of an institution or a programme as a whole. (UNESCO, 2012).

**Competences** indicate a satisfactory state of knowledge, skills and attitudes and the ability to apply them in a variety of situations. (UNESCO, 2012).

**CPD:** Continuing Professional Development.

**Credentialisation:** the award of academic credentials of any sort, by an academic institution, usually on the basis of completed assessment (Camilleri and Tannhäuser 2013, p.87).

**ECTS Credits:** The European Credit Transfer and Accumulation System (ECTS) is a tool that helps to design, describe, and deliver study programmes and award higher education qualifications. The use of ECTS, in conjunction with outcomes-based qualifications frameworks, makes study programmes and qualifications more transparent and facilitates the recognition of qualifications (European Commission<sup>102</sup>).

**Formal learning:** Learning that occurs in an organised and structured context (e.g. in an education or training institution or on the job) and is explicitly designated as learning (in terms of objectives, time or resources). Formal learning is intentional from the learner's point of view. It typically leads to validation and certification.

**HEI:** Higher Education Institution.

**Informal learning:** Learning resulting from daily activities related to work, family or leisure. It is not organised or structured in terms of objectives, time or learning support. Informal learning is mostly unintentional from the learner's perspective.

**Learners:** The term "learners" is used in this report to refer to non-formal learners, as opposed to **students**, who, for the purposes of this report are people who are enrolled in a formal programme at an institution.

**Learning achievements:** Same as learning outcomes, but normally self-initiated by the learner, not pre-defined by a set curriculum.

**Learning outcomes:** The set of knowledge, skills and/or competences an individual has acquired and/or is able to demonstrate after completion of a learning process. (CEDEFOP, 2009, from the definition of learning outcomes).

**Non-formal learning:** Learning which is embedded in planned activities not always explicitly designated as learning (in terms of learning objectives, learning time or learning support), but which contain an important learning element. Non-formal learning is intentional from the learner's point of view.

**Open educational resources (OER)** are learning and teaching materials, freely available online for anyone to use. Examples include full courses, course modules,

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<sup>102</sup> [http://ec.europa.eu/education/tools/ects\\_en.htm](http://ec.europa.eu/education/tools/ects_en.htm)

lectures, games, teaching materials and assignments. They can take the form of text, images, audio, video and may even be interactive.<sup>103</sup>

**Qualification** is an official record (certificate, diploma, degree) of learning achievement, which recognises the results of all forms of learning, including the satisfactory performance of a set of related tasks. It can also be a condition that must be met or complied with for an individual to enter or progress in an occupation and/or for further learning. (UNESCO 2012).

**Recognition of learning** is a process of granting official status to learning outcomes and/or competences, which can lead to the acknowledgement of their value in society (UNESCO 2012).

*Formal recognition*: the process of granting official status to skills and competences:

- through the award of qualifications (Certificates, diploma or titles);
- through the grant of equivalence, credit units or waivers, validation of gained skills and/or competences.

and/or:

*Social recognition*: the acknowledgement of the value of skills and/or competences by economic and social stakeholders. (CEDEFOP 2009).

**Recognition of prior learning** RPL is the process for recognising previous learning that has taken place in informal, formal or non-formal contexts: for example, in the workplace and through life experiences. Once recognised through this process, prior learning can be used to gain credit or exemption for qualifications, and/or for personal and career development.<sup>104</sup>

**Validation** is the confirmation by an officially approved body that learning outcomes or competences acquired by an individual have been assessed against reference points or standards through pre-defined assessment methodologies (UNESCO, 2012).

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<sup>103</sup> See:

<http://www.jisc.ac.uk/publications/programmerelated/2013/Openeducationalresources.aspx>

<sup>104</sup> See: <http://www.qaa.ac.uk/about-us/scotland/development-and-enhancement/recognition-of-prior-learning>

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