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Opening up Education

A Support Framework for Higher Education Institutions

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Abstract

Opening up Education: A Support Framework for Higher Education Institutions

This report presents a support framework for higher education institutions (HEIs) to open up education. This framework proposes a wide definition of the term 'open education', which accommodates different uses, in order to promote transparency and a holistic approach to practice. It goes beyond OER, MOOCs and open access to embrace 10 dimensions of open education. The framework can be used as a tool by HEI staff to help them think through strategic decisions: pedagogical approaches, collaboration between individuals and institutions, recognition of non-formal learning and different ways of making content available. Contemporary open education is mostly enabled by ICTs and because of this, there is almost limitless potential for innovation and reach, which in turn contributes to the modernisation of higher education in Europe.

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Foreword

This report is the final outcome of the OpenEdu Project, which aimed to support the Communication 'Opening up Education: Innovative Teaching and Learning for All through New Technologies and Open Educational Resources' (DG EAC, 2013). It presents open education as an umbrella term under which different understandings of open education can be accommodated, such as open educational resources and MOOCs. The report also presents the main outcome of the OpenEdu project, the OpenEdu Framework for higher education institutions.

This Framework identifies 10 dimensions of open education, giving a rationale and descriptors for each. The goal is to promote transparency for collaboration and exchange of practices among higher education institutions. Without a framework, stakeholders could overlook important questions and could put effort into matters that need little further investment. It is a tool to be used mainly by higher education institutions, but it is also very relevant for EU policy makers and other types of educational institutions.

Other reports of the OpenEdu Project are:

- JRC IPTS report (2016) OpenCases: Case Studies on Openness in Education.
- JRC IPTS Report (2016) Validation of Non-formal MOOC-based Learning: An Analysis of Assessment and Recognition Practices in Europe (OpenCred)
- JRC IPTS Report (2016) How are higher education institutions dealing with openness? A survey of practices, beliefs and strategies in five European countries (OpenSurvey)
- JRC IPTS Report (2015) OpenCases: A catalogue of mini cases on open education in Europe.

OpenEdu was carried out by JRC-IPTS (Seville) on behalf of DG-EAC, in collaboration with other experts and organisations.

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Project Leader, ICT for Learning and Skills

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Executive summary

The report '*Opening up Education: a Support Framework for Higher Education Institutions'* is the final outcome of the OpenEdu project carried out by IPTS (2013-2015) on behalf of DG Education and Culture. It presents a support framework for higher education institutions to open up education.

In the OpenEdu project, open education is seen as a way of carrying out education, often using digital technologies. Its aim is to widen access and participation to everyone by removing barriers and making learning accessible, abundant, and customisable for all. It offers multiple ways of teaching and learning, building and sharing knowledge. It also provides a variety of access routes to formal and non-formal education, and connects the two.

Open education is an umbrella term, under which different understandings of open education can be accommodated. In Europe, and particularly in higher education, opening up education does not refer specifically to the opening up of educational materials under an open license. It does not only mean the availability of open access research in repositories either, but these two can and should be included in the broader concept of open education.

Open education is becoming ever more important in European higher education due to the fact that digital technologies are one of the main driving forces behind education modernisation. The use of digital technologies for teaching and learning is no longer limited to open universities or virtual universities, but has spread through all types of institutions, both the more traditional and the *avant-garde*.

Through open education each and every individual, at every stage in their lives and career development, can have appropriate and meaningful educational opportunities available to them. These include access to content, courses, support, assessment and certification in ways that are flexible, and accommodate diverse needs. Barriers, as regards for example entry or cost, are reduced or eliminated.

Policy context

The report supports the Communication "Opening up Education: Innovative Teaching and Learning for All through New Technologies and Open Educational Resources[1]", which was launched by the European Commission in September 2013. The Communication argues for a change in the framework conditions in which Higher Education (HE) institutions operate in Member States, to allow them to grasp the opportunities that ICT provides (p.4). It also advocates that "Europe should act now providing the right policy framework and a stimulus to introduce innovative learning and teaching practices in schools, universities, vocational education and training" (p.3). The OpenEdu framework for opening up education was designed to contribute to this objective. It aims to provide institutions, Member States (MS) and policy makers in the European Union with a tool that helps them think about the different areas in which open education can incite change and innovation, and ensure that appropriate policies and practices are in place.

The OpenEdu framework also contributes to the 2016 Communication 'A New Skills Agenda for Europe – Working Together to Strengthen Human Capital, Employability and Competitiveness'[2], in which it is observed that skills acquisition and development are essential for the performance and modernisation of labour markets. Lifelong learning via open education is expected to be a route for enhancing individuals' employability. In addition, open and innovative education via digital technologies is one of the six new priorities areas for Education and Training 2020[3].

1 http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52013DC0654
2 http://ec.europa.eu/social/main.jsp?catId=1223&langId=en
3 http://ec.europa.eu/education/news/2015/0901-et2020-new-priorities_en.htm

Opening up education is an important item on the European policy agenda for many reasons. First, it can help to reduce or remove barriers to education (e.g. cost, geography, time, entry requirements). This gives learners the opportunity to up skill or re-skill at a lower or nearly no cost, and in a flexible way - important considerations in the economic crisis faced by Europe today. Second, it supports the modernisation of higher education in Europe, since contemporary open education is largely carried out via digital technologies. Finally, it opens up the possibility of bridging non-formal and formal education. This can take place if HE institutions and other accredited institutions recognised the credentials they each issue to learners.

A lot still needs to be done for open education practices to become a strong tool for social and economic development. There needs to be a strategic opening up of education by higher education institutions if they are to address some of the social issues that are important for Europe at the moment, such as enhanced workforce skills, access to job opportunities and personal growth of citizens. This report addresses an important question raised by this complex scenario: i.e. how can higher education institutions engage with open education strategically to help achieve these goals, and cater at the same time for their own institutional and local needs?

The report is mostly aimed at university management and decision makers, that is, anyone who is in charge of open education or who can propose it as an important part of the overall institutional strategy. The report is also directed at those staff members of HE institutions who actually design educational strategy. It offers a framework which can help them think through critical questions, such as: why is open education important and what is it exactly? What benefits can an open education strategy bring to an institution, to students (and to others out there), to a region, country or to Europe as a whole? If one were to design an open education strategy for an institution, or better, re-design a current university strategy to embrace open education and become a more open institution, what should one take into account? What are the main pillars of opening up education? These are questions often asked by HE institutions across Europe; particularly the many which are not yet active on the contemporary open education front[4]. Finally, this report is relevant for policy makers at European level since it can help them formulate policies to encourage institutions to open up education.

The framework presented in this report was based on the results from four studies designed by IPTS on open education. These studies included intensive desk research, reviews of academic and grey literature (websites, blogs, newspapers, reports), and consultation and validation with experts (both in-house and online). The framework also underwent final validation by its target audience, i.e. the decision makers at universities across Europe.

These four IPTS studies were carried out to provide data and information on the state-of-the-art of open education in Europe: OpenCred[5], OpenCases[6], MOOCknowledge[7] and

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4 The OpenSurvey study of the OpenEdu Project brings numbers on open education uptake in 5 European countries.
Castaño-Muñoz, J., Punie, Y., Inamorato dos Santos, A., Mitic, M., Morais, R. (2016) *How Are Higher Education Institutions Dealing with Openness? A Survey of Practices, Beliefs, and Strategies in Five European Countries*. Luxembourg: Publications Offices of the European Union.

5 Witthaus, G., Inamorato dos Santos, A., Childs, M., Tannhäuser, A., Conole, G., Nkuyubwatsi, B., Punie, Y. (2016) *Validation of Non-formal MOOC-based Learning: An Analysis of Assessment and Recognition Practices in Europe (OpenCred)*. Luxembourg: Publications Offices of the European Union.

6 Souto-Otero, M., Inamorato dos Santos, A., Shields, R., Castaño-Muñoz, J., Devaux, A., Oberheidt, S., Punie, Y. (2016) *OpenCases: Case Studies on Openness in Education*. Luxembourg: Publications Offices of the European Union

7 http://moocknowledge.eu/

OpenSurvey[8]. The results from all four studies point to the need to focus on open education strategy, hence the framework. Since most universities in Europe involved in open education in one way or another are experimenting, sometimes in arbitrary and *ad hoc* ways, they do not have a strategy in place. Those that are not experimenting and do not have plans to do so, would benefit from a vision of how open education can help them improve their educational provision. In sum, there is a need for a common understanding of open education in Europe, which would allow higher education institutions to make it a powerful tool for networked practices, learner and institutional development, and a mechanism for social change by providing a bridge between non-formal and formal learning.

Main findings

The OpenEdu framework for higher education institutions presents 10 dimensions for opening up education. Each dimension interrelates with all the others and allows for different degrees of openness. It is a holistic view of open education which includes different areas where universities can be more open. Institutional stakeholders, 43 open education experts from Europe and abroad, and university managers from 19 European Member States have been involved in different phases of both the development and evaluation of the framework.

The 10 dimensions of the framework are divided into two categories: core dimensions and transversal dimensions. There are 6 core dimensions (access, content, pedagogy, recognition, collaboration and research) and 4 transversal dimensions (strategy, technology, quality and leadership). All dimensions are interrelated; the core dimensions are not more important than the transversal ones. Core dimensions represent the 'what' of open education and transversal dimensions indicate `how' to achieve it.

For example, open education is often thought of as relating to content (OER) or research (open access). The framework places opening up education beyond these two aspects, and introduces both content and research as core dimensions ('what' is included), which are supported by means of the 4 transversal dimensions (`how' it is provided). For example, if a university were to decide to focus on the content and research dimensions for the institutional opening up of education, they could use a repository to share content and research (*technology*). This would be supported by a *strategy* to widen access to learners and increase the institution's reputation and reach by enhancing downloads of research and educational material. The process could be led by both a bottom-up and top-down approach of staff engagement (*leadership*) and would seek a high standard of education provision (*quality*). In this example, as previously indicated, the core dimensions also interact with one another, since *content* (courses) and *research* both have an intrinsic relationship to *pedagogy* and *collaboration*.

[8] Castaño-Muñoz, J., Punie, Y., Inamorato dos Santos, A., Mitic, M., Morais, R. (2016) How Are Higher Education Institutions Dealing with Openness? A Survey of Practices, Beliefs, and Strategies in Five European Countries. *Luxembourg: Publications Office of the European Union*

Figure 1: The 10 dimensions of open education

In each dimension of open education in the framework there are descriptors of possible practices and institutional policies[9]. Thus, by presenting the dimensions involved in open education, the framework helps to provide insight and inspiration for institutions when they design how they will open up education.

Those involved in the strategic planning of higher education institutions should contemplate:

- Having a holistic strategy for opening up education that encompasses the 10 dimensions of the OpenEdu framework,
- Making the open education strategy part of the overall institutional strategy,
- Promoting intra, inter and cross-border collaboration and also partnerships to achieve open education goals,
- Exploring new practices and welcoming changes,
- Revising their practices at all levels to embrace openness: mission statement and vision, current organisational management structures and day-to-day policies, and the institution's role in the community and globally.

Related and future JRC work

The project *Policy Recommendations for Opening up Education*[10] follows-up on the framework to help higher education institutions open up education by presenting a set of policy recommendations for Member States and the EU. Opening up education must involve various stakeholders simultaneously: education providers (institutions), teachers, researchers, learners, employers, governments and EU policy makers. Thus, a

[9] The descriptors are presented in full in the annex I of this report.
[10] https://ec.europa.eu/jrc/open-education

comprehensive approach to opening up educational practices and opportunities can be put in place.

Quick guide

The report introduces a rationale for open education. It presents the dimensions of the opening up education framework and a summary of the descriptors in order to facilitate its use by a variety of stakeholders. This includes high-level decision makers, who will be involved in institutional policy support but not directly in (re-)designing the details of the strategies and activities.

The Annex contains a strategic template in the format of a worksheet. This is meant to be used by universities in conjunction with the full framework, to help them plan opening-up education activities as part of their overall institutional strategies.

1. Introduction

The report *Opening up Education: a Support Framework for Higher Education Institutions* is the final outcome of the OpenEdu Project carried out by IPTS (2013-2015) on behalf of DG Education and Culture. It presents a framework that can help higher education institutions open up education.

The report supports the Communication "Opening up Education: Innovative Teaching and Learning for All through New Technologies and Open Educational Resources[11]", which was launched by the European Commission in September 2013.

Opening up education is important in the European policy agenda for many reasons. First, it allows access barriers to education to be reduced or removed (e.g. cost, geography, time, and entry requirements). This can make it possible for learners to up skill or re-skill in a cheaper and flexible way - an important consideration in the economic crisis faced by Europe today. Second, it helps to modernise higher education in Europe, since contemporary open education is mostly carried out via digital technologies. Finally, it can bridge non-formal and formal education, by making it easier for HE institutions and other accredited institutions to recognise certificates of learning achievement (to include badges) they each issue to learners.

In order for this to happen, a common way to refer to the affordances of open education is necessary. This would open up educational practices in a collaborative way among European universities, and therefore serve as a mechanism for non-formal learning validation and recognition. It would also provide a ladder for learners to achieve new and improved career opportunities and personal growth. In addition, it would help to bridge non-formal and formal learning.

Open education is an umbrella term under which different understandings of open education can be accommodated. In Europe, and particularly in higher education, opening up education does not refer exclusively to open educational resources or to the availability of open access research in repositories. However, these two aspects of education can and should be included in the broader concept of open education.

Within the OpenEdu study, open education is seen as:

> *a way of carrying out education, often using digital technologies. Its aim is to widen access and participation to everyone by removing barriers and making learning accessible, abundant, and customisable for all. It offers multiple ways of teaching and learning, building and sharing knowledge. It also provides a variety of access routes to formal and non-formal education, and connects the two.*

Through open education each and every individual, at every stage in their lives and career development, can have appropriate and meaningful educational opportunities available to them. These include access to content, courses, support, assessment and certification in ways that are flexible and accommodate diverse needs. Barriers, for example those related to entry and cost, are reduced or eliminated.

Opening up education is important for universities for various reasons. Besides being a policy priority, it works as a catalyst for teaching and learning innovation via digital technologies. There are advantages for open education in every dimension of openness, for all parties involved. Open education has an 'ethos' which prompts thinking in areas that could otherwise be neglected, or left to one side to be carried out on specific occasions, as exceptions rather than the norm. For example, in terms of the *access dimension*, institutions which embrace open education think further about supporting the adaptation of courses to special needs (e.g. physically-challenged learners). They can therefore widen their reach and increase the opportunities for participation in education.

[11] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52013DC0654

Open education also has advantages in terms of the *content dimension*. Learners can access course materials and knowledge with no need to request prior permission, at no cost (except Internet connections), and are able to study at the most convenient times for them. Universities get to see what types of educational materials other universities use to teach similar subjects. They can also see the *pedagogy* supporting the teaching methods, which would otherwise be restricted to formally registered learners, either within a classroom context or behind the password of a private virtual learning environment. Open education enables universities to openly collaborate, and exchange teaching materials or jointly produce them. This is because content provided as an OER lowers barriers for reuse and adaption. All these aspects add to the 'openness' of education, which allows it to attract new audiences. Openness also allows new ways of teaching and learning and more flexibility in terms of how and when educational materials and teaching can be accessed.

If institutions are to fully embrace opening up education, they should align their strategies with efforts to modernise higher education in Europe. These strategies should be open to new audiences and practices and, at the same time, enable institutions to be eligible for inter-institutional collaboration, both regionally and cross-border. At the heart of higher education provision is the mission to make university knowledge, practices and opportunities available to learners in both local and global communities in order to better educate them and push science forward. Open education lends itself to this mission because it has strong focus on the learners, both remote learners who are not formally registered in a higher institution and learners who are registered and attending classes *on-campus or online*.

Designing an open education strategy for an institution, or better, re-designing a current university strategy to embrace open education and become a more open institution is an important step for a university to take towards modernisation. Opening up education brings opportunities for all involved.

1.1 The concept of openness in opening up education

The concept of 'openness' in contemporary open education is constantly evolving, assuming different meanings in different contexts and discourses (Inamorato dos Santos, Punie and Castaño-Muñoz, 2016). Traditionally, based on a model commonly adopted by open universities in the late 60's, 'open' means open entry, easier access to study. This view of openness, termed as 'classical' by Mulder and Janssen (2013), did not cover all the aspects that openness covers today – free of charge access, choice of start times, global availability, etc. (McAndrew 2010). Over time, the concept of openness has evolved to also mean open availability of content and resources, largely as a result of advances in the digital technologies used for educational purposes. The Cape Town Open Education Declaration (2007) stresses that open education is not limited to "just open educational resources. It also draws upon open technologies that facilitate collaborative, flexible learning and the open sharing of teaching practices that empower educators to benefit from the best ideas of their colleagues. It may also grow to include new approaches to assessment, accreditation and collaborative learning".

Openness is the opposite of secrecy. At a societal level, there is a move towards openness, for example through open government, where public records are open to public scrutiny and individuals have access to information previously available to only a few (UNESCO policy brief, 2014). In education, openness is a concept that advocates transparency and the lowering or removal of barriers at all levels within an institution, including the processes involved in research, teaching and learning.

However, openness does mean different things to different people (UNESCO policy brief 2014). Defining 'openness' would be an ongoing task, since it is a flexible concept which embeds a number of different 'opennesses'. Its definition is therefore contextual, and due to its comprehensiveness, is an umbrella term. 'Opening' up education indicates the process undertaken by educational institutions when they carry out open education.

Mulder and Janssen (2013) argue that the term was well chosen in the sense that it implies movement and indicates that not all education should be equally open in every respect.

The working definition of open education used in OpenEdu is broad enough to encompass a variety of practices and all dimensions of open education, and does not restrict it to opening up content or data.

2. Research design and methodology

OpenEdu, the overarching project which hosts the OpenEdu framework, used a multi-method approach to gathering evidence from a number of sources: i.e. desk research (academic and grey literature), focus groups (face-to-face workshops with stakeholders) and asynchronous online focus groups with experts. The OpenEdu framework was based on the outcomes of this multi-method approach to data collection and analysis, which involved qualitative research methods (case studies, interviews, face-to-face and online discussions and desk research) and quantitative research methods (surveys).

Two workshops[12] (face-to-face focus groups) were held during the project. First, a scoping workshop took place in June 2014 at the IPTS premises. Then, a stakeholder validation workshop took place in November 2015, also at the IPTS. The first workshop ran over 1.5 days and aimed to brainstorm the framework's dimensions of open education, and to help scope the part of the framework related to the recognition of learning achievements. Both practitioners and champions of open education, as well as experts in recognition of non-formal learning (via MOOCs or not) were invited. Participants were mostly academics and members of the Bologna process panel.

The second workshop (face-to-face focus group) also ran over 1.5 days and aimed to validate the full draft framework. The profile of participants was very specific: members of university management boards across Europe (rectors, vice-rectors, presidents, deans and directors). Eighteen European Member States were represented at this workshop. The feedback gathered in both workshops was recorded and at times presented to the IPTS in writing by the participants.

Prior to the second workshop, there was an online validation (online focus group) with open education experts, which ran from September - November 2015. The full draft framework was presented to the experts and specific feedback on definitions, rationale and descriptors for each of the ten dimensions was requested. Participants were divided into ten groups, which worked asynchronously online via wikis (one per dimension). Each wiki had experts in the specific dimension of open education assigned to them. Participants provided feedback and engaged in discussions amongst themselves and with the OpenEdu team.

This online exercise was highly successful. It counted on 43 participants[13] from inside and outside the EU (e.g. from Canada, US, South Africa, Brazil, Australia, among other countries). The wikis were subsequently opened up to the general public for reading only[14]. Overall, the framework counted on input from over 90 individuals (between experts, policy makers and HE institutional managers) during its design and evaluation phases.

2.1 Qualitative methods

The bulk of data input to this framework comes from qualitative data. This is because the framework describes possible open education practices, and evidence from the field was needed. The qualitative methods drawn upon were desk research, case studies, interviews, focus groups (workshops) and asynchronous online focus groups.

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[12] *Workshop* is a typical word used in the IPTS in research for policy-making. It refers to an event of which the main goal is an in-depth discussion of a topic or the research results of a project. It normally takes the format of a focus group with participants divided into groups. There are also plenary discussions.

[13] The participants' names are mentioned in the acknowledgements section of the report.

[14] The URLs to the wikis can be found at the references section of this report.

2.1.1 Case studies, interviews and desk research in OpenEdu

OpenCases[15] is a study on opening up the education practices of nine institutions in Europe which offer open education via MOOCs, OER or a combination of these and other open practices. OpenCases ran during 2015 as part of the OpenEdu project. The study aimed to incorporate examples of openness in teaching, research and strategy. In particular, it aimed to explore how and why higher education institutions, networks and government-led initiatives are dealing with openness in higher education. These kinds of questions can be addressed well through in-depth case studies. Moreover, the study aimed to provide a comprehensive view of how individual institutions, networks and initiatives approach openness, rather than –for example- provide a mapping of the situation regarding different components of openness across the higher education sector. Again, this aim is well aligned with the case-study research method.

The main data collection method for the case studies was semi-structured interviews, followed by desk research. The cases were chosen for their thematic relevance to OpenEdu: there are cases of well-consolidated open education initiatives, a case from a national perspective, cases from institutions which have maturing and evolving open education initiatives, a case from a consortium of universities and a case from a commercial enterprise. The cases are: ETH Zurich, France Université Numeriqué (FUN), OERu, TUDelft, Universidad Carlos III de Madrid, AGH, Virtual University of Bavaria (BVU), OpenupEd and ALISON.

These cases were chosen from fifty mini cases on openness identified via extensive desk research into higher education across Europe. From these fifty cases (published as a sub-product of OpenCases in catalogue format), eight cases were chosen for their approximation to the aforementioned criteria and one was chosen outside of this pool of cases. It corresponds to the private, non-academic educational sector (it is not a university). This number of cases enabled the research team to engage in the analysis of each of them within the time-frame requirements for data collection and analysis. Interviewees were often senior members of staff or staff with a direct role in open education at the institutions.

OpenCred[16] is a study on credentialisation and recognition of non-formal learning via MOOCs. OpenCred was carried out between June 2014 and November 2015 as part of the OpenEdu project. It was based on desk research and in-depth interviews, out of which case studies were produced. The goal was to allow us to better understand the main issues that (open) learners, HE institutions and employers face in the credentialisation and recognition of non-formal learning (which is also referred to as open learning in the OpenCred study).

The triangulation method used for choosing the profile of research participants was done so that a variety of perspectives on recognition from different stakeholder groups could be brought to the fore. The study began with extensive desk research in all twenty-eight European Member States in order to identify cases where institutions offer formal credits for open learning and (open) learners have taken advantage of and/or attempted to get recognition for these credentials by employers. Not much was evident via the desk research, particularly in relation to recognition attempts by learners. As the study went by, it was necessary to discard around eight Member States from the study because little or no information was found on their open education offer and/or on recognition of open learning via open education. However, the OpenCred report does include examples of open education practices from the remaining twenty Member States.

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[15] Souto-Otero, M.; Inamorato dos Santos, A.; Shields, R.; Lazetic, P.; Castaño Muñoz, J.; Devaux, A.; Oberheidt, S.; Punie, Y. (2016) 'OpenCases: Case Studies on Openness in Education'. JRC Science for Policy Report, EUR 27937 EN.

[16] Witthaus, G., Inamorato dos Santos. A., Childs, M., Tannhäuser, A., Conole, G., Nkuyubwatsi, B., Punie, Y. (2016) *Validation of Non-formal MOOC-based Learning: An Analysis of Assessment and Recognition Practices in Europe (OpenCred)*. JRC IPTS Science for Policy Report, EUR 27660 EN

By design, OpenCred carried out six in-depth, semi-structured interviews. The interviewees were two academics from higher education institutions, two MOOC learners and two staff members of employer bodies. There were two interviews for each of the aforementioned profiles. The interviews were transcribed and summarised and three case studies were composed from the information collected.

2.2 Quantitative methods

MOOCKnowledge is an ongoing study of MOOC learners from European MOOC providers, which started in November 2013. It consists of a series of surveys in different time periods (pre-course and post-course, and a follow up questionnaire at least one year after the finalisation of a MOOC). The MOOCKnowledge study was conducted in collaboration with a network of three universities (OUNL, UPM and UOC) and a private organisation (PAU Education).

The research instrument was designed to provide comparable cross-provider and cross-country data at EU level on the demographic and socio-economic characteristics of European MOOCs students; their motivations for and attitudes to taking a MOOC; their perceptions of the learning experience; the behaviour-intention gap (alternative drop out measurement); and the impact of MOOCs on professional and/or academic career and personal life. The study addressed directly the under-representation of learners in current MOOC research by establishing a large-scale cross-provider data collection on European MOOC participants (Kalz et al, 2015).

OpenSurvey[17] was a representative survey of higher education institutions in five EU Member States (France, Germany Spain, Poland and the UK) carried out by IPTS in collaboration with the Academic Cooperation Association (ACA). It took place between November 2014 and July 2015. The survey's objective was to show if, how and to what extent, higher education institutions in these five countries engage in Open Education - and if not, why not. 178 Higher Education institutions (HEIs) from these five EU countries responded to the survey, the main outcome of which was an overview and analysis of the current institutional engagement with MOOCs, OER and other dimensions of openness. The survey team took appropriate measures to avoid selection bias and the overrepresentation of open education early-adopter institutions, therefore its data can be used to describe how the bulk of higher education institutions are dealing with openness.

The OpenSurvey's representativeness, and the fact that it includes novel topics such as collaboration or open science, distinguishes it from other existing surveys on open education topics.

[17] Castaño-Munoz, J.; Punie, Y., Inamorato dos Santos, A., Mitic, M. and Morais, M. (2016) *How Are Higher Education Institutions Dealing with Openness? A Survey Of Practices, Beliefs and Strategies in Five European Countries*, JRC IPTS Science for Policy Report, EUR 27750 EN.

3. Supporting findings to the framework from the OpenEdu studies

Findings from the four OpenEdu studies, briefly presented in this report, provided input to the framework design. Collectively, these studies offer a big picture of the current open education practices of HE institutions in Europe (both the ones that work well and the ones which do not) and food for thought in terms of what is desirable. Interestingly, the findings of the four OpenEdu studies were in agreement, which suggests that the multi-method approach and triangulation of data collection was an appropriate technique to verify the research results.

All the findings were taken into account when designing the framework and served as the main input into the development of the descriptors contained in each dimension of open education. More specifically:

The OpenCases study produced findings in a number of different areas of open education provision. The most important was the public mission of higher education institutions (HEIs) and their enhancement.

The case studies revealed that currently there is a risk that the enhancement of institutions –particularly as regards their reputations and the quality of learning for traditional students- will become the overriding theme in discussions about open education initiatives such as MOOCs (Souto-Otero, Inamorato dos Santos, Shields, Lažetić, Castaño-Munoz, Devaux, Oberheidt and Punie, 2016).

This finding contributed to increased emphasis being placed in the OpenEdu framework on going 'beyond MOOCs' and also beyond open educational resources. The opening up education process needs to be a constant and ever evolving effort towards openness, which consists of a number of simultaneous actions and strategies on different fronts, such as the ones proposed in the framework for each of the dimensions of open education.

The OpenCases study also identified four conditions that enable institutions to become involved in open education, presented below (Souto-Otero, Inamorato dos Santos, Shields, Lažetić, Castaño-Munoz, Devaux, Oberheidt and Punie, 2016):

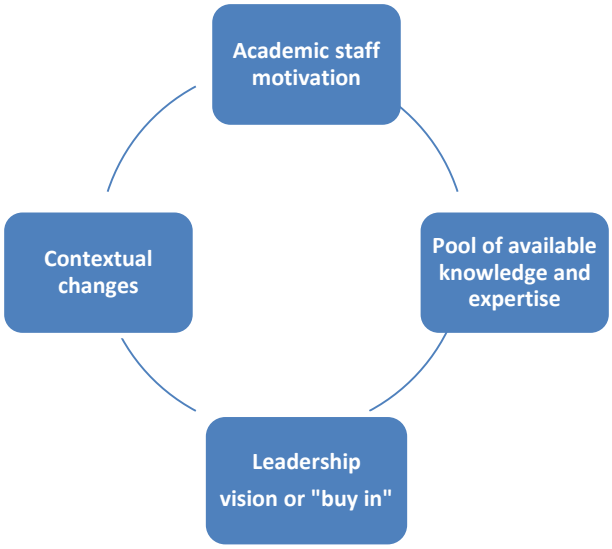

Figure 2: Enabling conditions for involvement in open higher education (OpenCases, 2016)

Academic staff motivation was crucial, given that several institutions reported that involvement in open education is (a) voluntary and (b) rewarded only to a limited extent in career promotion procedures, which tend to prioritise research performance. In one of the case studies (FUN), the reluctance of academic staff to get involved reportedly made it difficult to push the opening up of the institution forward.

This shows that *leadership* is essential, supported by awareness-raising actions. In the framework, leadership is dealt with both top-down and bottom-up, in order to make sure that both staff and learners play a leading role in the design of institutional strategies for opening up education.

The *pool of available knowledge* in the institution (both technological and pedagogical): HEIs that had long-standing experience in the use of electronic learning management systems stated that this facilitated the transition to open education initiatives. The existence of specific staff with expertise in open education helped to convince management and colleagues of its advantages, and also helped them to adopt it.

However, many traditional institutions do not feel they are equipped with the necessary know how in open education that would allow them to come up with valuable provision and make wise decisions. One of the main goals of the framework is to cover precisely this gap.

Leadership vision or 'buy in' can drive open education initiatives. Leadership makes it possible to identify priorities and allocate resources to support open education –either directly or through teaching and learning or innovation funds for projects, the creation of support structures, etc. Leadership commitment may be affected by internal trends (such as the desire to innovate in teaching and learning) or contextual changes, as discussed below.

Contextual changes include the influence of global trends towards greater use of open teaching and research and the Bologna process. It was reported that this process led to the need to adapt educational materials, which some institutions linked to making those materials suitable for inclusion in open courseware repositories. *Regarding open research*, the importance of national initiatives such as the REF (Research Excellence Framework) in the UK, which established incentives –and more recently requirements- for the use of open research repositories, was highlighted. Two other contextual changes have enabled participation in open education: the availability of *new technological solutions* –such as new types of learning platforms and repositories- and the expectations of an *increasingly digitally-literate population*.

Discussions on enabling factors usually refer to factors that are endogenous to HEIs. This suggests that HEIs believe that internal dynamics are the key factor for involvement/ non-involvement in open education.

The OpenSurvey study of the OpenEdu project also elicited similar results to OpenCases. OpenSurvey showed that open education is being practiced by 39.4% of the institutions in the five countries surveyed, either in the form of MOOCs, OER or open online courses, which means that more than half the institutions did not practice open education. Though the benefits of offering open education are recognised by many HEIs, open education is far from being fully mainstream in higher education. In order to spread and promote open education further, three groups of recommendations were derived from the survey data: i) integrate open education into HEIs' overall strategies, ii) increase awareness and understanding of open education within HE institutions, and iii) change existing practices and mechanisms to facilitate the implementation of open education.

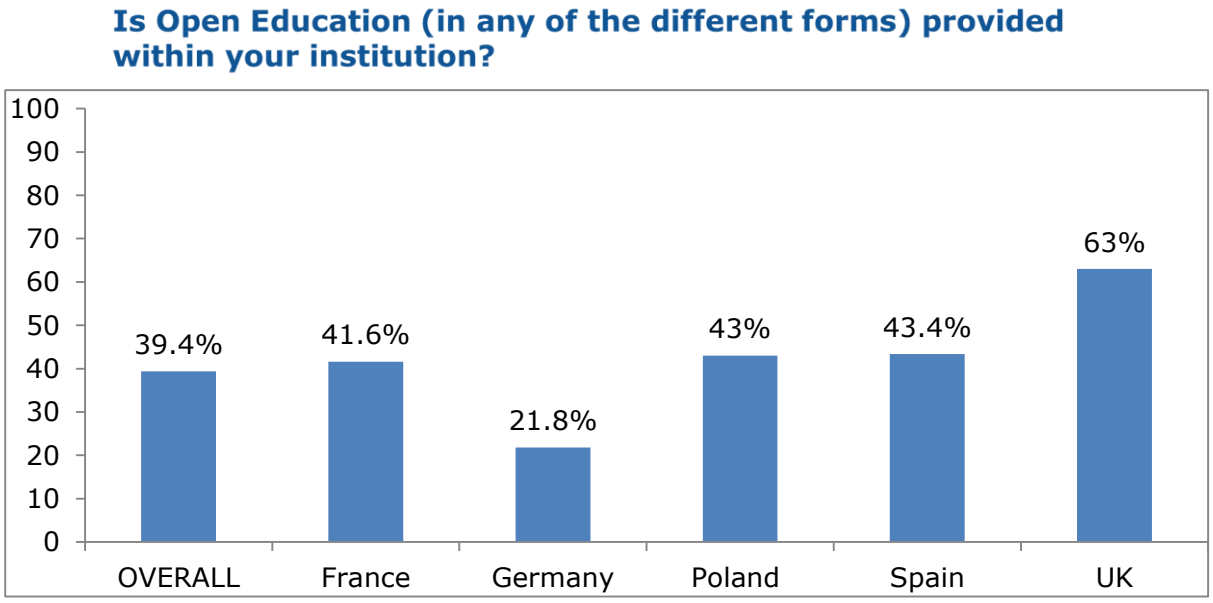

Figure 3: Open Education Provision (source: OpenSurvey Report, 2016)

The survey also revealed that many institutions are not clear on what open education is and how it can be practiced beyond OER and MOOCs. As previously argued, open education is understood differently by different stakeholders. This means that though open education has become fashionable it is still often unclear how it can be put into practice. This lack of clarity prevents universities from thinking about open education with purpose and strategy. A common understanding about open education, however, would enable them to collaborate and share experiences.

The figure below shows that few connections were found between open education and the universities' mission statements:

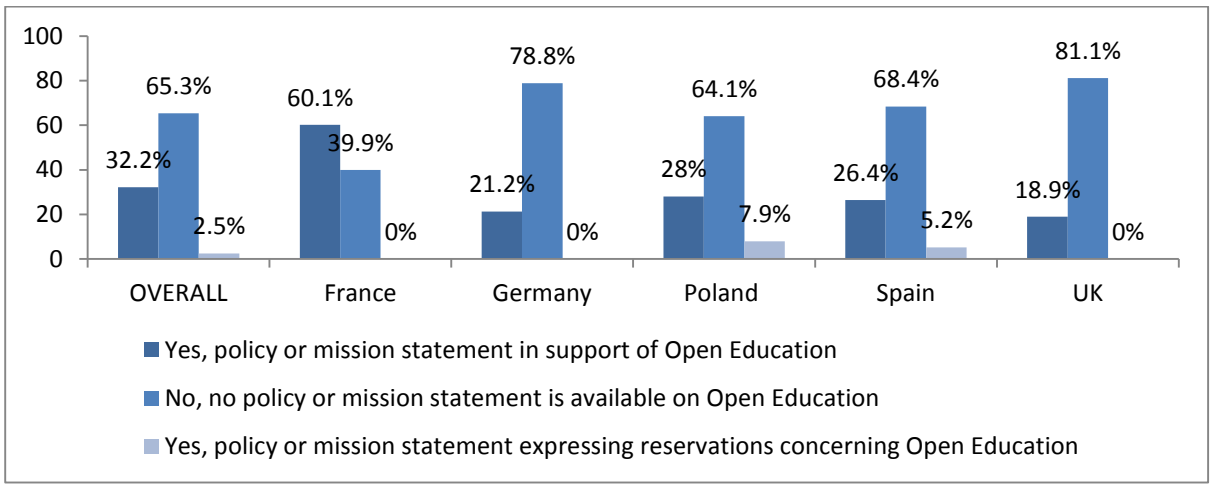

Figure 4: Open Education existence in universities' mission statements (source: OpenSurvey Report, 2016)

Other OpenSurvey study results (Castaño-Munoz, Punie, Inamorato dos Santos, Mitic and Morais, 2016, p. 5) point to the following:

- One fifth of the surveyed HEIs stated that they offer at least one MOOC. In addition, about a quarter of the HEIs that are not offering MOOCs at the moment intend to do so in the future. However, this situation varies among countries, ranging from France, where both the current MOOCs offer and the intentions to offer MOOCs in the

future are high, to others like Germany where both current and planned MOOC offers are low;

- More than 50% of HEIs support the use of OER within their institution. In contrast, only just over one third of HEIs support the development (and offer) of OER. Most of those HEIs that use OERs do so to supplement classical face-to-face instruction and do not substitute core learning materials for OER;
- The main reasons for HEIs not to engage in open education practices are that academic staff is not skilled to use open education and also the difficulties associated with formal recognition of open education. Pedagogical issues are reported as less important challenges;
- Promotion and visibility of the institution and also reaching more students are the strongest drivers for HEIs to engage with open education. Enhancing the quality of education is also an important motivation. Institutions are less convinced about the financial benefits as a major driver for engaging in open education;
- Finally, in all 5 countries studied, HEIs usually lack recognition mechanisms; even in cases where MOOC certificates are based on reliable ways of assessment and linked to a specific number of ECTS. This indicates there is little awareness and/or trust in providing recognition of learning through MOOCs.

The OpenEdu framework provides a working definition of open education to help higher education institutions to perceive it in a more holistic way, and think about how to approach it in their strategy. Most importantly, it also presents a discussion of the different dimensions in which universities can 'open up education'.

The MOOCknowledge study provided results for the first phase of the data collection, which was a pilot of six MOOCs. It showed that while MOOCs are open in terms of access, not all learners are equally likely to participate or succeed. Taking a MOOC and succeeding in it depends on several factors, such as outcome beliefs, socioeconomic status, educational background and digital skills.

In terms of learner profile, the pilot study showed that MOOC learners are mainly educated, working-age individuals, although there are some learners who are either unemployed or on low wages. It seems also that unemployed and low income people have higher expectations of the impact of learning through MOOCs for improving their socio-economic situation, hence their intention to enrol in (more) MOOCs in the future. Overall, for the pilot, MOOC learners tend to have more previous experience with lifelong learning (including MOOCs) and also have a relatively high level of digital skills. The majority of MOOC learners intend to complete the full MOOC, but there are also many who focus only on the parts that specifically interest them. The quality of the content of the MOOCs is considered high, but there is less interaction between learners and with tutors than learners expected before starting the course.

The OpenEdu framework draws attention to the role of learners and the community with regards to opening up education. The collaboration, access and leadership dimensions of the framework, for example, suggest ways in which learners can play a central role in the opening up process. They can produce and share content, propose and lead on ways in which opening up education can take place locally, within a community.

The OpenCred study explored recognition of MOOC-based learning. The study proposed that 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. OpenCred used the terms credentialisation and recognition to refer to these two separate processes. The table below clarifies this distinction:

Table 1: Credentialisation versus Recognition of Learning Outcomes[18]

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 Learning Outcomes
	… 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 Learning Outcomes

In the context of higher education, the study proposed that 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 a 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:

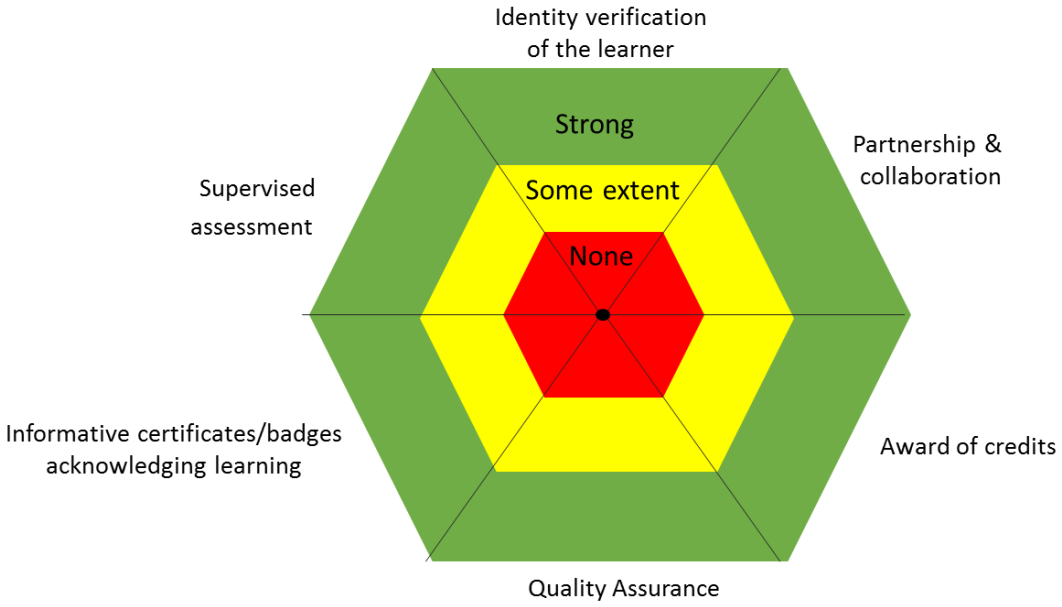

Figure 5: OpenCred Recognition Traffic Light Model[19]

[18] Source: Witthaus, G. Inamorato dos Santos, A., Childs, M. Tannhäuser, A. Conole, G. Nkuyubwatsi, B. Punie, Y. (2016) Validation of non-formal MOOC-based learning: an analysis of Assessment and Recognition Practices in Europe, JRC IPTS Science for Policy Report, EUR 27660: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC96968/lfna27660enn.pdf

[19] Ibid.

The recognition dimension of the OpenEdu framework proposes that universities have clear policies on recognition of open learning. It provides the traffic light model as a visual tool, which can be displayed on MOOCs and open learning courses, with a view to helping both learners and universities/employers. Students would benefit from upfront information on what to expect from the course they aim to take, e.g. whether or not the course provides ECTS credits and how assessment takes place. Universities and employers would benefit from it for recognition purposes. Looking at the traffic light for a specific course can make it easier to assess whether the course has the level of formality expected for recognition purposes or not, and whether it fits institutional policies on recognition of non-formal learning. The traffic light model aims to inform the learner and to speed up the recognition process by promoting transparency.

4. A support framework for promoting openness in higher education institutions

"No framework provides definitive answers. The answers come from the insights generated by the process of interacting with the framework".
(Eades et al, 2010)

Why is a framework for opening up education important? Because it guides those involved in the strategic planning of HEIs in thinking through critical questions and common practices. Without a framework, they can overlook important considerations or put great effort into practices that may need little more investment. The trick is to use the framework without getting trapped in it and approach it as a supporting tool for the development of strategies.

The OpenEdu framework is proposed as a foundation for developing insights and inspiring visions. It can also be used as a tool for developing a position on open education, by adapting the frameworks' propositions whenever needed. It was designed to help higher education institutions in Europe to make strategic decisions on open education. By defining open education and both its core and transversal dimensions, the framework promotes transparency in practices and proposes a common understanding of open education.

Open education is often understood as open educational resources (OER) and at times as open research data. The framework, however, seeks to promote a more holistic approach to open education. It proposes that contemporary open education goes beyond OER and open research outputs to embrace strategic decisions, teaching methods, collaborations between individuals and institutions, recognition of open learning and different ways of making content available. Contemporary open education is mostly enabled by ICTs and hence, there is endless potential for innovation and reach.

The framework was based on the results from previous and current, designed-for-purpose IPTS research on open education. This included intensive desk research, reviews of academic and grey literature (websites, blogs, newspapers, reports), and consultation and validation with experts (both in-house and online). The framework also underwent final validation by its target audience, who are the decision makers at universities across Europe.

Its main characteristic is that it shows the dynamism of open education and that there is no single correct way of doing it. Rather, open education can involve focusing on openness in specific dimensions of the framework such as content and technology, or more comprehensively, by targeting as much openness as possible in all the dimensions. Whether the first or the second option is chosen, open education remains bound by all the dimensions, which will always interact with one another, to a greater or lesser extent.

The OpenEdu framework focuses on open education as a tool to modernise education via technologies and new teaching and learning practices. At the same time, it aims to lower the barriers to education at many different levels (e.g. access, cost, technology, pedagogy). Another framework that focuses on higher education institutions and complements the OpenEdu framework is HEInnovate[20], which is a self-assessment tool to help universities become more entrepreneurial. It fits well with the OpenEdu framework in terms of its emphasis on collaboration, leadership and organisational capacity (the role of people). The OpenEdu framework can also work as a self-assessment tool on openness but it does not offer any particular benchmark or measurement against which the universities could score or rank themselves. Instead, it offers a number of descriptors that can lead a university to be more or less open in each of the dimensions, according to their own strategic decisions, and provides more detail

[20] https://heinnovate.eu/about

than HEInnovate in terms of course content and delivery. The framework was designed this way because, at the core of open education, there are a number of different understandings of what it means to be an open institution. There is no right or wrong answer, just practices that can enable openness in a more or less holistic way. Hence, the OpenEdu framework works best as a tool to stimulate ideas on how to open up education. An ultimate goal for openness is something that the institutions should set for themselves.

4.1 How to use the framework

For each dimension, the framework presents a definition of the dimension, a rationale for it, its main components and its descriptors. These descriptors show detailed actions that can be performed by HE institutions to achieve or maintain the level of openness desired in each dimension. The framework can be used differently depending on the stakeholder. It is designed to be used in a dynamic and flexible way, as it invites education institutions to mix and match the dimensions according to their specific requirements and strategic plan. For example, the framework may be used by an executive HE manager, who will probably propose, approve and support policies but not necessarily engage in the detailed design of the activities involved in it. In this case, focusing on the dimensions' definitions and their rationale will be enough to get a flavour of the comprehensiveness of the concept of open education proposed. Some guiding questions might be:

- Does my institution have an overall strategy for education or mission statement that fully embraces opening up?
- If not, why and how could it be done? What would be the challenges and benefits?
- If my institution does have an overall strategy/mission statement, how aligned is it with an open education ethos?
- Which dimensions of the framework are currently most prominent in the institution? To which other dimensions could we pay further attention?
- Who in the institution is playing/could play a leading role in helping us achieve our goals? How could they be supported?
- How does opening up education enable my institution to have a positive local impact in the community, and if possible, globally?
- Who in the community/region could benefit from the opening up of the practices of our university?
- Who are our main collaborators and stakeholders?
- What role do students and community leaders play in this process of opening up education?

However, the framework can be used in much more detail by anyone in charge of thinking deeply about openness as a strategy: i.e. managers, lecturers, researchers, strategists and community stakeholders. In these cases, besides the questions above, further questions can be asked regarding each of the dimensions. An optional opening up education planning template, in the format of a worksheet, is presented in ANNEX II to be used alongside this framework. It presents questions and a guide for stakeholders on things to consider when using the framework.

4.2 The OpenEdu Framework

The OpenEdu framework is presented in full in ANNEX I. It consists of 10 dimensions which are presented as a set of documents containing the definitions, rationale, components and descriptors of each dimension. It is followed by ANNEX II, which is a worksheet to help universities use the framework by eliciting useful questions.

5. The 10 dimensions of open education

The term 'dimensions' was chosen to indicate 'aspects or features of a situation'. In this case, the situation consists of the various ways in which open education is practised in educational institutions. The dimensions consist of different courses of action, focusing on a given area, which interact and together shape the practices of open education.

The *core dimensions* of open education are most commonly found in the practices around open education. They provide the 'what' of opening up education: i.e. access, content, pedagogy, recognition, collaboration and research. These core dimensions, though they are not always treated as such, appear as domains of open education in different institutional contexts where open education is being practised. For example, they can be found in the work of Uvalić-Trumbić and Daniels (2014), Weller (2014), Ros et al (2014), Murphy (2013), Mulder & Janssen (2013), Wiley & Hilton (2009), among many others. These dimensions embody the most common practices and perceptions associated with open education in higher education settings.

The *transversal dimensions* of open education provide the backbone for the realisation of the core dimensions - the 'how' of opening up educational practices. They constantly interact with the core dimensions and with one another. These dimensions are leadership, strategy, quality and technology. Together, they enable open education practices to be shaped in different ways in HE institutions.

Figure 6: The 10 Dimensions of Open Education

The next section provides an introduction to the dimensions, which are further discussed alongside their components and descriptors in the full framework, which is presented in ANNEX I. All definitions are contextual to opening up education.

5.1 The core dimensions

The core dimensions provide the 'what' of opening up education. For example, what does it mean when it is said that a university is opening up education? The 'what' in opening up needs explaining, e.g. is the university opening up its registration process by allowing anyone to study irrespectively of having previous certification? Or could the university be opening up its content instead? Or even opening up pedagogical practices to include ideas from lecturers of other institutions or countries?

5.1.1 Access

> *Access in open education is the removal or lowering of economic, technological, geographical and institutional barriers which obstruct the doorway to knowledge. It grants permission to learners to engage with educational content, courses, programmes, communities of practice, networks and other types of knowledge sharing environments, media and activities in formal and non-formal education. It is also about enabling informal and independent learners to seek and get recognition of their learning.*

Expanding access to information and knowledge is a core value of openness and a key enabler of formal and non-formal education. Consequently, it is one of the main goals of open education. In practice, from an educational institution's perspective, this broad conception of access can be promoted at three interrelated levels: access to programmes, access to courses, access to educational content (free of charge content or OER), and access to their related communities of practices and networks. This is inclusive of all applicable educational services offered by the institution, as well as access to teachers and other learners.

5.1.2 Content

> *Content in open education refers to materials for teaching and learning, and research outputs, which are free of charge and available to all.*

Content in open education encompasses texts of all sorts, textbooks, course materials, pictures, games, podcasts, video-lectures, software, data, research papers and outputs, and any other type of educational material that conveys information and can be used for teaching and learning. It can be open licensed, in the public domain or copyrighted but still 'gratis' and accessible by everyone without restrictions. It consists of two types of content: open educational resources (OER) and free of charge content.

An OER is content that is 'libre' (openly-licensed content) and at the same time 'gratis' (free of charge). There are different types of OER (e.g. fully licensed or licensed with restrictions). Content in the public domain is also in this category. One of the benefits of using an OER for teaching and learning is that it reduces the possibilities of users infringing copyright. At the same time, it grants greater permissions in the use of content, such as adaptation, translation, remix, reuse and redistribution, depending on the type of license applied to the content. OER can have different granularity, varying from a learning object (e.g. a picture with a specific teaching purpose) to a full course (e.g. a MOOC or an open - libre and gratis - online course).

Free-of-charge content refers to content that is 'gratis' but remains copyrighted. The user does not pay to access it, but at the same time cannot reuse, adapt, or share it without seeking permission from the copyright holder. Free-of-charge content can have different granularity, varying from a learning object to a full course (e.g. a MOOC or an open (gratis) online course). It should, whenever appropriate, be fully licensed to become an OER, which would give the user more permissions in handling the content.

5.1.3 Pedagogy

Openness in pedagogy refers to the use of technologies to broaden pedagogical approaches and make the range of teaching and learning practices more transparent, sharable and visible.

Opening up pedagogical practices is about developing the design for learning so that it widens participation and collaboration between all involved. Pedagogical approaches with an emphasis on the learner are very suitable for open education. The goal is to open up the range of pedagogical practices via ICTs in order to enhance the effectiveness of learning design and increase students' involvement and collaboration. It is also about making pedagogical practices visible, transparent and accessible, by making available the rationale for learning design, the assessments and learning outcomes. It also enables learners to design their own learning path by offering them a wide choice of learning resources.

5.1.4 Recognition

Recognition in open education has two meanings: a) it is the process, usually carried out by an accredited institution, of issuing a certificate, diploma or title which has formal value; b) it is also the process of formally acknowledging and accepting credentials, such as a badge, a certificate, a diploma or title issued by a third-party institution. These credentials should attest that a set of learning outcomes (e.g. knowledge, know-how, skills and/or competences) achieved by an individual has been assessed by a competent body against a predefined standard.

Recognition enables open education learners to make the transition from non-formal to formal education, to complete a programme of tertiary education in a more flexible way, and to get recruited/ promoted at the workplace. When submitting their credentials for recognition, learners expect to gain valid credits which will help them to move ahead professionally and in their personal lives.

Credentialisation also plays an important role in the recognition of open learning. It can be done in a variety of formal or informal ways, and the recognising institution can choose whether to recognise the credentials given, and in what circumstances.

5.1.5 Collaboration

Collaboration in open education is about connecting individuals and institutions by facilitating the exchange of practices and resources with a view to improving education. By collaborating around and through open educational practices, universities can move beyond the typical institutional collaboration patterns and engage individuals and communities to build a bridge between informal, non-formal and formal learning. It is a live and evolving practice which is shaped by individuals according to context, goals, resources and possibilities, contributing to the lowering of barriers to education. It is therefore a concept that must be as dynamic as its practice.

Collaboration in open education is also about removing barriers to education via the networks of individuals and institutions. Learners must be empowered to collaborate with each other and with the institution and community in order to produce knowledge, define their unique learning paths and achieve their goals. More specifically, it has to do with any practice or policy that promotes, for example:

- agreements to support open educational practices. These can take place at different levels: between individuals (formally or informally), intra-institutionally, inter-institutionally, nationally at policy level or cross-border.
- the exchange of knowledge in OER format, free-of-charge content and courses, MOOCs or open access research.
- the co-development of OER and free-of-charge content.

- the co-development and exchange of open educational practices with respect to pedagogies, learning designs, technologies, guidelines, training, accessibility and usage of repositories.
- the empowerment of learners to follow their lifelong learning paths.
- the acceptance and recognition of open education certificates and credits by third party organisations.
- the co-development of open, innovative and digital learning environments.
- practices that cultivate values of equality, non-discrimination and active citizenship.
- respect for socio-cultural differences.

5.1.6 Research

Openness in research is about removing barriers to access to data and research outputs, and also about broadening participation in research.

Openness in research implies a paradigm shift in the modus operandi of research and science which affects the entire scientific process. The underlying idea is to advance science as quickly as possible by sharing and collaborating, rather than trying to publish first in order to secure intellectual property rights and novelty. Researchers can gain from open science activities, both as project participants and as commentators on research ideas and progress, because extended networks provide a larger pool of expertise. Richer data sets are also available to them[21].

5.2 The transversal dimensions

The transversal dimensions of open education cover 'how' educational practices are opened up. They provide the structure for the realisation of the core dimensions. For example, releasing OER, research data or MOOCs to the general public requires a platform, some sort of technology to support this release. Likewise, designing an opening up education strategy for a university requires leadership at various levels (top-down and bottom-up). And without an opening up education strategy it is difficult to plan or to measure results. Moreover, a successful opening up education approach requires quality monitoring, evaluation and assurance. These four transversal dimensions, technology, leadership, strategy and quality, in any given order, are the framework in which these and other dimensions take place. They interact with each other and with the other dimensions. This means that they are not static and are not realised in isolation.

5.2.1 Strategy

Strategy in open education is the creation of a unique and valuable position on openness, involving different sets of activities.

Strategy, in the context of the OpenEdu project, is about defining the values, the commitments, the opportunities, the resources and the capabilities of a HE institution with respect to opening up education. Openness is a vital component of an institution's policy and strategy. It must be integral to the institution's mission. Its relationship to and inter-dependence with other aspects of the institution's wider policy should be clearly articulated and developed by a strategy. Basing an institution's strategy on openness can enhance and enrich the conceptual, operational and financial aspects of the educational offer.

5.2.2 Technology

Technology in open education refers to technological infrastructures and software which facilitate opening up education in its different dimensions.

[21] European Commission, background document – Public Consultation, Science 2.0: Science in Transition, 2014 https://ec.europa.eu/research/consultations/science-2.0/background.pdf

Technology is a necessary part of open education. Technological infrastructures and software, either open or closed, work as transversal enablers of the different dimensions.

Technological solutions play an important role in validating the identity of people being assessed for the recognition of non-formal learning (e.g. biometrics and proctoring), in making it easier to scale up assessment (test, peer to peer assessment tools and automated essay assessment) and in granting digital badges.

Technological choices have a direct impact on how open education is configured. Consequently, institutions should consider technology when planning their strategies in order to align them and their priorities on open education with the ICT investment they make. The degree to which the technology used by an institution is open reflects its openness culture. Institutions which are committed to the greatest possible level of openness will opt for open standards and open source technologies which are interoperable with other platforms. They will also build or use platforms which allow learners to interact with one another, upload and share content, download, peer-review and modify existing content.

5.2.3 Quality

> *Quality in open education refers to the convergence of the 5 concepts of quality[22] (efficacy, impact, availability, accuracy and excellence) with an institution's open education offer and opportunities.*

In relation to an institution's open education offer, the greater the confluence of the 5 concepts of quality explained below (efficacy, impact, availability, accuracy and excellence), the more reliable and trustworthy this offer will be for open learners.

- *Efficacy*: fitness for purpose of the object/concept being assessed.
- *Impact*: is a measure of the extent to which an object or concept proves effective. It is dependent on the nature of the object/concept itself, the context in which it is applied and the use to which it is put by the user.
- *Availability*: this is a pre-condition for efficacy and impact to be achieved, and thus also forms part of the element of quality. In this sense, availability includes concepts such as transparency and ease-of-access.
- *Accuracy*: is a measure of precision and absence of errors, of a particular process or object.
- *Excellence*: compares the quality of an object or concept to its peers, and to its quality-potential (e.g. the maximum theoretical quality potential it can reach) (Source: JRC IPTS report, 2014).[23]

The degree of quality of an open education offer/opportunity can be measured by different actors, such as the institution itself, its learners or the State. The latter measures the compliance with a given country's legislation and the recommendations of the object being offered (e.g. a course, a certificate, a degree). It can also be measured against the standards of a competent body which can issue credentials, such as a quality assurance agency or an association/community recognised by its members. The granularity in which quality is measured in open education may also vary, ranging from an institution's overall reputation to the quality of a particular offer such as an OER.

Quality in open education also relates to the environment and conditions in which an open education culture is built in an institution. Staff members involved in producing and supporting open education often require time and deserve incentives. An institution which identifies these needs, recognises them as fair and acts responsibly towards them is respecting a fundamental principle of excellence which is the promotion of the best conditions for individuals to tap into their greatness.

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[22] Camilleri, A., Ehlers, U.D., Palowski, J. (2014) State of the Art Review of Quality Issues related to Open Educational Resources. JRC Scientific and Policy Reports, IPTS, Luxembourg: Publications Office of the European Union.

[23] Ibid.

5.2.4 Leadership

Leadership in open education is the promotion of sustainable open education activities and initiatives via a transparent approach from both the top-down and the bottom-up. It paves the way to creating more openness by inspiring and empowering people.

Leadership in open education goes beyond the creation of strategies and activities decided at an executive level. It is above all the identification of champions at different levels, both bottom-up and top-down, who will lead open education at the institution in different strands. It is a transversal dimension because it supports open education practices at different levels: personal motivation, task organisation, collaboration and outcomes management. Leadership in open education should promote actions that enable the take up of open education across a university by a whole range of stakeholders, including learners.

6. Conclusions and recommendations

The research carried out for the OpenEdu Project and its associated studies (OpenCases, OpenCred, OpenSurvey and MOOCknowledge) shows that although opening up education is a policy priority in Europe, many higher education institutions in Member States do not have a strategic plan for opening up their practices. There are various reasons for this:

a) there is no consensus on what opening up education means and hence little common ground on which to build collaboration;

b) opening up education is often seen as only offering OER and MOOCs, or opening up research data – it therefore becomes a specific and isolated practice which does not always form part of an institution's overall educational strategy aligned with its mission; and

c) there is general agreement on the positive value of open education but little clarity on its scope and possible practices, or the subsequent benefits to those involved.

This report aimed to fill these gaps by presenting a support framework for opening up education which introduces ten dimensions of openness and descriptors for each of them. It is a non-prescriptive tool that can be used as needed to develop insights and inspire vision.

The OpenEdu Project has produced recommendations for HE institutions. Those involved in the strategic planning of higher education institutions should contemplate:

- **Having a holistic strategy for opening up education that encompasses the 10 dimensions of the OpenEdu framework**

  Opening up education can be more meaningful and promote social change if efforts are not focused on a single dimension of openness (e.g. opening up content as OER, opening up courses as MOOCs, or opening up research as open data). Instead, efforts should be made to combine a number of different elements which together and on a large scale have the potential to reconfigure the way higher education is realised.

- **Making the open education strategy part of the overall institutional strategy**

  A holistic strategy for opening up education that is fully integrated with the mission and vision of the HEI and targets local and global needs is essential. Including openness within an institution's education strategy can enhance and enrich the conceptual, operational and financial aspects of its educational offer. Without an institutional strategy that encompasses openness, open educational practices would remain experimental and would be easily entangled in discourses which, in isolation, may not be as effective in supporting the modernisation of higher education.

- **Promoting intra, inter and cross-border institutional collaborations and partnerships in order to achieve open education goals**

  Intrinsic to the concept of open education is collaboration and sharing. Inter-institutional collaboration optimises in-house resources and human capital. It is also a step towards scaling up openness: credits can be mutually recognised; courses and content can be co-produced; administrative tasks can be co-managed and research and technology can be shared with colleagues and third-party organisations, to cite just some of the possibilities. Furthermore, cross-border collaboration and partnerships can provide the leverage for opening up education at a European level, enabling local strategies to have a global impact.

- **Exploring new practices and welcoming changes**

  Trying to do new things in old ways often does not lead to the expected results. Opening up education is about being open to new horizons, new practices, new ways of doing things and therefore being open to change. Fully embracing open education requires HE institutions to have courage, commitment, strategy and vision. It is

about sharing the ownership of a lifelong project which will be configured and reconfigured over time.

- **Revising their practices at all levels: mission statement and vision, current organisational management structures and day-to-day policies, and the institution's role in the community and globally**

  Open education is a tool for social change. Once HE institutions fully embrace openness and transparency in their day-to-day practices, enabled by the use of ICTs, the modernisation of higher education will be pushed forward across Europe. Local and global collaboration will be possible, new ideas will be generated and resources will be better deployed. Above all, new practices on knowledge exchange and credit recognition will be possible. These, together, have the potential to make education more inclusive and more mobile, and to lower barriers to access and progression. At the same time, education will fit more closely with the fast-paced changes in the needs of the workforce and labour market.

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Wikis

Access dimension: http://openeducation-accessdimension.wikispaces.com
Content dimension: http://openeducation-contentdimension.wikispaces.com/
Pedagogy dimension: http://openeducation-pedagogydimension.wikispaces.com
Recognition dimension: http://openeducation-recognitiondimension.wikispaces.com/
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Leadership dimension: http://openeducation-leadershipdimension.wikispaces.com
Quality dimension: https://openeducation-qualitydimension.wikispaces.com/

List of abbreviations

ECTS	European Credit Transfer System
EQF	European Qualifications Framework
EU	European Union
HE	Higher Education
HEI	Higher Education Institution
MOOC	Massive Open Online Course
MS	Member States
OE	Open Education
OEP	Open Educational Practices
OER	Open Educational Resources

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ANNEX I – The OpenEdu Framework

CORE DIMENSION 1	
ACCESS	
Definition	Access in open education is the removal or lowering of economic, technological, geographical and institutional barriers which obstruct the doorway to knowledge. It grants permission to learners to engage with educational content, courses, programmes, communities of practice, networks and other types of knowledge sharing environments, media and activities in formal and non-formal education. It is also about enabling informal and independent learners to seek learning opportunities and get recognition for their learning.
Rationale	Widening access to information and knowledge is a core value of openness and a key enabler of formal and non-formal education. Consequently, it is one of the main goals of open education. In practice, from an educational institution perspective, this broad understanding of access can be promoted at three interrelated levels: access to programmes (which lead to a degree or full qualification), access to courses and access to educational content (free of charge content or OER[24]). It also means access to their related communities of practices and networks. This includes all applicable educational services offered by the institution, as well as access to teachers and other learners.
5 components	**Cost | Accessibility | Flexible learning | Lower entrance requirements for courses and programmes | People**
The components can be considered at different access levels to **programmes**, **courses** and **content**.	In order to facilitate access to education, five components can be promoted by institutions. In practice, these components can be embedded in at least three different levels (programmes, courses, and content). Depending on the level in which the focus is placed, different openness practices and strategies emerge. **Cost of access to resources, courses and programmes.** Cost is a key barrier that must be removed or lowered if access to courses and educational resources is to be widened. Although there is always cost involved in the provision of education and in taking advantage of education opportunities (e.g. from the learner's perspective, there may be the cost of internet connection or the opportunity cost of devoting time to study), the lower the cost, the more open the access to education. New strategies related to open education (free of charge content and open online courses, OER and MOOCs) are challenging educational provision models and configuring alternative approaches that reduce the cost of formal and non-formal education for learners (e.g. by using free open software). **Accessibility and adaptation of educational content (and channels, modes of communication) to specific needs (e.g. physically-challenged learners).** Accessibility is understood as real access possibilities for all, regardless of personal characteristics. Examples of accessibility measures are assistive technologies which focus on language translation, voice recording

[24] The differences between free content and OER are treated in the *content dimension*.

	of written text, and adapted websites/social media. There are web content accessibility guidelines (WCAG) that cover a wide range of recommendations for making web content more accessible.[25] Some specific recommendations [26]are that web content and systems should be: • Perceivable: information and user interface components must be presented to users in ways they can perceive. • Operable – user interface components and navigation must be operable. • Understandable – information and the operation of user interface must be understandable. • Robust – content must be robust enough to be interpreted reliably by a wide variety of user agents, including assistive technologies. In specific terms, to make open education accessible to physically-challenged open learners, open education websites and repositories could be compliant at least with[27]: • *Screen readers*: users with screen reading technology should have no difficulty accessing the text-based content. • *Settings*: users who require specific operating systems or browser settings should not have any difficulties with the site, nor should users with screen magnifiers. • *Video and audio materials*: it should be possible to play this material through a range of different media players or download the content. Textual descriptions or transcripts should accompany the educational resources whenever possible. **Flexible learning via internet and mobile technologies, overcoming time and space barriers.** In order to facilitate access to education, the Internet and mobile technologies not dependent upon the Internet can be used to overcome temporal and space barriers. This flexibility is especially important for non-traditional learners who have more time and infrastructural constraints and usually constitute the bulk of open education learners (e.g. adult, workers, physically-challenged learners) **Entrance requirements to courses and programmes.** Ideally, open education should not have entrance restrictions such as a minimum level of education, or country of residence. Entrance requirements for non-formal education are decided by the institution. However, for formal education, national legal frameworks may prevent higher education institutions from eliminating entrance requirements. Moreover, the different national policies on entrance requirements can reduce the opportunities for learners to choose cross-border formal education, even when it is provided by open and distance universities. The lack of practical processes for the recognition of prior (open) learning across countries can also limit learner access to formal education and mobility. **People** Open education content, courses and programmes should enable learners to reach and interact with teachers and other learners, in order to exchange ideas and to facilitate learning.

[25] See WCAG 2.0 (http://www.w3.org/TR/WCAG20/)
[26] Source: Open University web accessibility guidelines
[27] Source http://www.open.ac.uk/about/web-standards/files/web-standards-pa/file/ecms/web-content/OU-Web-Accessibility-Guidelines.pdf

Transversal Dimensions	
	Descriptors
Access to programmes	
Strategy	☐ The offer of MOOC-based programmes and/or programmes based on free-of-charge (open) online courses (or OER, micro-programmes, nanodegrees) is part of the official institutional strategy. The institution: ☐ has reduced/removed the entrance requirements to open education courses and programmes. ☐ has specific measures to ensure the accessibility of its open education offer. ☐ has developed a strategy to offer programmes leading to full degrees ☐ Other. Please specify.
Technology	The institution: ☐ has the adequate technical infrastructure to offer online programmes (servers, connections, etc.). ☐ has adequate digital services to offer and to manage online programmes (VLE, supported assessment, etc.). ☐ has adequate technologies and know-how to offer accessible open education programmes (e.g. to physically-challenged learners). ☐ Other. Please specify.
Quality	☐ The institution implements quality assurance mechanisms related to processes and outputs of MOOC-based programmes and/or free-of-charge (open) online courses (or micro-programmes, nanodegrees), and OER. ☐ Other. Please specify.
Leadership	The institution: ☐ supports the creation of full programmes consisting of free-of-charge (open) online courses, MOOCs and/or OER, leading to the granting of credits, degrees and/or the accreditation and recognition of learning. ☐ supports the creation of micro- programmes consisting of free-of-charge (open) online courses, MOOCs and/or OER leading to nanodegrees. ☐ The institutional staff members are co-responsible for the creation of accessible programmes. ☐ Other. Please specify.
Access to courses	
Strategy	The institution: ☐ has a policy supporting the offer of OER, MOOCs, and /or free-of-charge (open) online courses. ☐ has a policy supporting the adaptation of courses to special needs (e.g. physically-challenged learners). ☐ has a financial sustainability model for the offer of OER, MOOCs/ and or free-of-charge (open) online courses. The institution: ☐ offers mechanisms for teachers to engage with open learners.

	☐ offers mechanisms for open learners and researchers to reach academics and other staff members of the institution. ☐ Other. Please specify.
Technology	The institution: ☐ offers adequate technical infrastructure to teachers who aim to offer MOOCs, OER and free-of-charge (open) online courses (e.g. MOOC platform). ☐ takes advantage of supportive technologies in order to promote accessibility to content and courses. ☐ provides online content that can be accessed from any device and operating system. ☐ Other. Please specify.
Quality	☐ The institution has quality assurance mechanisms related to MOOCs and free-of-charge (open) online courses. ☐ Other. Please specify.
Leadership	The institution: ☐ offers techno-pedagogical support for staff who want to create OER, MOOCs and free-of-charge (open) online courses. ☐ offers incentives (e.g. financial, time-related…) for staff who want to create OER, MOOCs and free-of-charge (open) online courses. ☐ seeks to identify staff members who are motivated by the idea of producing OER, MOOCs and free-of-charge (open) online courses. ☐ Other. Please specify.
Access to content	
Strategy	The institution: ☐ has policies on OER and/or free-of-charge (open) online content. ☐ has a sustainability model for the creation and offer of OER and free-of-charge (open) online content. ☐ Other. Please specify.
Technology	The institution: ☐ produces online content can be accessed from any device and operating system. ☐ seeks to tag content appropriately to increase the possibilities of finding it. ☐ has an open repository of online resources which can be accessed free of charge, by anyone. ☐ makes institutionally-developed resources available at no cost users (Learning Resources or Research publications), making them visible in a repository (or the relevant portal), accompanied by metrics on patterns of download and use. ☐ Other. Please specify.
Quality	The institution: ☐ encourages users to give their feedback on digital content, thereby allowing social mechanisms of quality control. ☐ has quality assurance mechanisms related to digital content. ☐ automatically monitors when the content was created and when it will need updating (e.g. every 2 years).

	☐ Other. Please specify.
Leadership	The institution: ☐ offers techno-pedagogical support for staff who want to create free-of-charge (open) online content or remix OER. ☐ offers incentives (e.g. financial, available working time…) for staff who want to create free-of-charge (open) online content. ☐ seeks to identify staff members who are motivated by the idea of free-of-charge (open) online content production and use. ☐ Other. Please specify.

CORE DIMENSION 2	
CONTENT	
Definition	Content in open education refers to materials for teaching and learning, and research outputs, which are free of charge and available to all.
Rationale	Content in open education encompasses texts of all sorts, textbooks, course materials, pictures, games, podcasts, video lectures, software, data, research papers and outputs, and any other type of educational material that conveys information which can be used for teaching and learning. It can be open licensed, in the public domain or copyrighted but should be 'gratis' and accessible by everyone without restrictions.
2 components	**Open educational resources (OER) | free of charge content**
	OER OER constitute a key component of open education. OER are content that is printed or made available digitally The two main characteristics of OER are that they are "libre" (openly-licensed content) and at the same time "gratis"(free of charge). There are different types *OER* (e.g. fully licensed or partially licensed). Public domain content can also be placed in this category. Using OER for teaching and learning reduces the possibility that users infringe copyright. At the same time OER grants greater permissions in the use of content, such as adaptation, translation, remix, reuse and redistribution, depending on the type of license applied to the content. OER range from individual learning objects (e.g. a picture with a specific teaching purpose) to full courses (e.g. a MOOC or an open (libre and gratis) online course). **Free-of-charge content** Free-of-charge content refers to content that is printed or made available digitally and 'gratis' but remains copyrighted. Though users do not pay to access it, they cannot reuse, adapt or share it without seeking permission from the copyright holder. Free-of-charge content ranges from individual learning objects to full courses (e.g. a MOOC or an open (gratis) online course). Whenever appropriate, free-of-charge content should be fully licensed as OER, thereby granting users greater permissions in handling the content.

Transversal Dimensions	
	Descriptors
OER	
Strategy	The institution: ☐ has a policy on the production and use of free-of-charge content. ☐ uses, produces and offers OER in order to improve its content production mechanisms. ☐ produces, uses and offers OER in the form of MOOCs and/or open (libre and gratis) online courses. ☐ offers information sessions and/or support materials on different types of open licenses. ☐ produces, uses and offers OER as a visibility mechanism to attract students and increase its reputation. ☐ collaborates with other institutions in the production/remix/reuse/redistribution of OER. ☐ encourages staff members to produce, use and share OER. ☐ encourages its students to use OER. ☐ encourages its students to produce and share OER. ☐ Other. Please specify.
Technology	The institution: ☐ explores different digital tools to create and make available meaningful content and with appropriate granularity. ☐ seeks to use audiovisual resources to enhance the content produced. ☐ automatically monitors when the content was created and when it will need updating (e.g. every 2 years). ☐ allows content users to revise and remix content on the institutional platform on which it is offered ☐ allows users to create, remix and share content on the institutional platform. ☐ seeks to tag content appropriately to increase its findability. ☐ places its content on interoperable platforms (e.g. IMS Common cartridge compliant etc.). ☐ Other. Please specify.
Quality	The institution: ☐ has a quality check mechanism in place for its content production (both OER and free-of-charge content). ☐ supports and encourages staff members to develop meaningful assessments for its open education offers. ☐ makes informed decisions on the different types of robustness of assessment for open education (see OpenCred model). ☐ informs its open learners of what sorts of accreditation they may/may not get for studying with a given content. ☐ has guidelines on different OER and free-of-charge content granularity. ☐ encourages quality checks via social mechanisms by enabling user feedback on OER/ free of charge content. ☐ Other. Please specify.

Leadership	☐ Staff members at the institution proactively explore new and suitable assessment practices for the institution's open education offer. The institution: ☐ is committed to being at the forefront of free content offer in its region or country. ☐ seeks to be at the forefront of innovation on OER assessment techniques and tools. ☐ seeks to identify staff members who are motivated by the idea of OER and /or free-of-charge content production and use. ☐ Other. Please specify.
Free-of-charge content	
Strategy	The institution: ☐ has a policy on the production and use free-of-charge content. ☐ produces, uses and offers free-of-charge content as a visibility mechanism to attract students and increase reputation. ☐ produces, uses and offers free of charge content in the form of MOOCs and/or open (gratis) online courses. ☐ collaborates with other institutions in the production and distribution of its free-of-charge content. ☐ encourages staff members to transform their production of free-of-charge content into OER whenever possible and appropriate. ☐ encourages its students to use free-of-charge content. ☐ Other. Please specify.
Technology	The institution ☐ explores different digital tools to create and make available meaningful content with appropriate granularity. ☐ seeks to use audiovisual resources to enhance the content produced. ☐ automatically monitors when the content was created and when it will need updating (e.g. every 2 years). ☐ seeks to tag content appropriately to increase its findability. ☐ Other. Please specify.
Quality	The institution: ☐ has an internal quality check mechanism in place for its free content. ☐ provides quality checks via social mechanisms by encouraging user feedback on free content. ☐ Other. Please specify.
Leadership	The institution: ☐ engages staff members in the proposal of its free content. ☐ rewards (with money, time or career advancement) staff members who engage in producing and using free content. ☐ is committed to being at the forefront of free content offer in its region or country. ☐ seeks to identify staff members who are motivated by the idea of free content production and use. ☐ Other. Please specify.

CORE DIMENSION 3	
PEDAGOGY	
Definition	Openness in pedagogy refers to the use of technologies to broaden access and make the range of teaching and learning practices more transparent, sharable and visible.
Rationale	Opening up pedagogical practices is about developing the design for learning so that it widens participation and collaboration between all involved. Pedagogical approaches with an emphasis on the learner are very suitable to open education. The goal is to open up the range of pedagogical practices via ICTs in order to enhance the effectiveness of the learning design and increase students' involvement and collaboration. It is also about making pedagogical practices visible, transparent and accessible, by making available the rationale for the learning design, the assessments and learning outcomes, and also enabling learners to design their own learning path with a wide choice of learning resources.
5 components	**Supported open learning| Personalised teaching | Collaborative and networked learning | Use of authentic resources | Sharing educational resources and pedagogical practices**
	ICT can enhance the variety of pedagogical approaches by facilitating: **Supported open learning:** Learners take the initiative and the responsibility for their learning processes but they are supported by a mix of media, resources and practices. Learners decide what topic to study, select the learning resources and means, and manage their learning time. They also assess their own learning outcomes, at times counting on other peers or on full assessment by the institution. This type of learning can be pursued at any time, in any place and at any age, but requires commitment, self-discipline and goal-setting. The institution can provide support to open learners to follow their studies independently, such as advice on learning pathway, tutorials, call in phone line and online support, career and accreditation advice, online communities of practice and any other type of suitable support for open learning. **Personalised teaching.** Due to the increasing availability of learning technologies, a more personalized approach to teaching and learning can be taken. The use of learning analytics for example, to detect learners' online patterns of behaviour and preferences, and also personalised learning resources, can be pursued. **Collaborative and networked learning.** Digital communication and collaboration tools make it easier for learners and lecturers to collaborate. In addition, these tools, especially when they take advantage of a social network, facilitate the connection among individuals interested in the same topic. Thus they support learning in communities and networks that go beyond the institution. The nature of open education allows it to be used for implementing collaborative learning. Examples are team projects which involve searching, remixing and modifying OER. **Use of authentic resources** OER, collectively-produced learning materials, and real practitioner/learner networks, are useful

	resources which can make learning activities more meaningful and authentic. Technology can also enable immersive learning via simulations and virtual laboratories. **Sharing educational resources and pedagogical practices.** Open education calls for the use, sharing and adaptation of free-of-charge digital materials, OER and learning design rationales. It also enables educators to share their teaching practices, get advice and learn from colleagues in order to improve their own practices.
Transversal Dimensions	
	Descriptors
Supported open learning	
Strategy	☐ The institution's open education policy supports the use of technology-enhanced inquiry-based learning in their courses. ☐ The institution's open education policy supports the use of open education in order to offer flexibility in the curricula (and learning goals), facilitate students' choice of their own learning processes (e.g. recognising participation in MOOCs or online courses offered by other universities). ☐ The institution's open education policy includes all types of learning services for open learners such as learning pathway design advice, tutoring, online resources, assessment and accreditation support. ☐ The use of ICT/ open education for personalised learning is considered to be a tool that increases the efficiency of open education provision (reducing costs and enhancing results). ☐ The creation of modular curricula that allow students to plan self-directed learning pathways, is considered by the institution to be one of its strategies in the provision of open education. ☐ Other. Please specify.
Technology	The institution: ☐ has technologies that support peer-reviewing by open learners. ☐ offers technologies that enable the mapping of students' own learning. ☐ offers technologies for the creation of learning portfolios and pathways that can be openly accessed and transferred to other platforms. ☐ makes use of a range of learning technologies to support online or blended learning. ☐ Other. Please specify.
Quality	☐ has a quality monitoring system that checks the efficiency of its services to support open learning. ☐ Other(s) Please specify.
Leadership	☐ The institution's open education policy includes the offer of guidance (by lecturers, faculties or a central service) to independent learners who approach the institution for help on deciding on a self-learning path. ☐ Other. Please specify.

Personalised teaching	
Strategy	☐ The institution's open education policy encourages the use of diverse technology-enhanced pedagogical methods for OER, MOOCs and free (and open) online courses in order to adapt education to the needs of the learners. ☐ The institution's open education policy supports the use of learning analytics and/or adaptive learning in order to personalise the courses, content or methods to the needs of the learners.
Technology	☐ The institution's open education policy includes an ethical framework for the use of learning analytics in open courses.
Quality	☐ The offer of optional paid-for teaching services to independent learners is designed as a way of enhancing the quality of the learning experience. ☐ Other. Please specify.
Leadership	The institution: ☐ offers techno-pedagogical support and continuous professional development to its lecturers on how to innovate pedagogy using ICT and open education to create learner-centred courses. ☐ offers incentives for staff who aim to innovate the pedagogical design of their courses using ICT and open education to develop learner-centred courses. ☐ Other. Please specify.
Collaborative and networked learning	
Strategy	☐ The institution's open education policy supports technology-enhanced, networked and distributed learning where the teachers act as facilitators and the learners take control of their own learning (e.g. participation of registered learners in MOOCs, development of cMOOCs – connectivist Massive Open Online Courses). ☐ The institution promotes collaborative learning via ICT as part of the pedagogical strategies for open education. ☐ The institution promotes collaborative learning between peers using OER (e.g. team projects which involve searching, remixing and modifying OER or the searching and use of open data). ☐ The institution's open education policy supports and encourages collaborative and networked learning which takes place between different institutions (e.g. inter-institutional collaboration). ☐ Other. Please specify.
Technology	☐ The institution makes use of learning technologies to support collaborative learning (e.g. discussion forums, joint course assignments). ☐ Other. Please specify.

Quality	☐ Peer quality check is part of the quality monitoring procedure of the institution. ☐ Other. Please specify.
Leadership	The institution: ☐ offers techno-pedagogical support on how to innovate pedagogy through collaborative and networked learning using ICTs and open education. ☐ offers incentives for staff who want to innovate pedagogical practices through collaborative and networked learning using ICTs and open education.
Use of authentic resources	
Strategy	The institution: ☐ promotes the participation of the learners in communities that go beyond the institution. ☐ promotes the use of OER and open data for the solution of real word problems by using authentic resources. (e.g. OER, open data). ☐ promotes the contribution of learners to real public knowledge resources (e.g. Wikipedia, wikis).
Technology	☐ The institution has technologies and policies that allow and support the sharing of research.
Quality	☐ The integration of real word resources, data or communities in pedagogical practices is considered one of the quality criteria of the courses (quality check).
Leadership	The institution: ☐ offers techno-pedagogical support on how to innovate pedagogy by integrating online real word resources, data or communities. ☐ offers incentives for staff who aim to innovate pedagogy by integrating online resources, data or creating/supporting communities of practice.
Sharing educational resources and pedagogical practices	
Strategy	☐ The institution's open education policy promotes pedagogical exchanges among teacher (lecture videos, peer learning, teaching approaches ideas etc.). ☐ The institutional policy promotes the sharing and reuse of OER created by other lecturers.
Technology	☐ The institution promotes the exchange of educational practices by supporting open source technologies and tools that allow users to make comments and download educational content.
Quality	☐ The institution supports the sharing of innovative education practices and allow third parties to peer-review and comment on them to assess and improve their quality (e.g. comments from a group of teachers who collaborate openly online).
Leadership	The institution: ☐ plays a proactive role in encouraging staff members to discuss their educational practices and those of third parties. ☐ offers techno-pedagogical support on how to share educational practices. ☐ offers incentives for staff who want to share educational practices.

CORE DIMENSION 4	
RECOGNITION	
Definition	Recognition in open education has two meanings: a) it is the process, usually carried out by an accredited institution, of issuing a certificate, diploma or title which has formal value; b) it is also the process of formally acknowledging and accepting credentials, such as a badge, a certificate, a diploma or title issued by a third-party institution. These credentials should attest that a set of learning outcomes (e.g. knowledge, know-how, skills and/or competences) achieved by an individual has been assessed by a competent body against a predefined standard.
Rationale	Recognition enables open education learners to make the transition from non-formal to formal education, to complete a programme of tertiary education in a more flexible way, or to get recruited/ promoted at the workplace. When submitting their credentials for recognition, learners expect to gain 'validated credits' which will help them to move ahead professionally and in their personal lives. Credentialisation also plays an important role in the recognition of open learning. It can be done in a variety of formal or informal ways, and the recognising institution can choose whether, and in which circumstances, to recognise the credentials given.
7 components	**Assessment | Identity validation | Trust and Transparency | RPL (recognition of prior learning) | Fast Track Recognition | Qualification | Social recognition**
	Assessment Assessment is the core element of the recognition process. It is defined as the process of appraising knowledge, know-how, skills and/or competences of an individual against predefined criteria (measurement of learning outcomes). Assessment is typically followed by certification (CEDEFOP, 2004/2014). In the case of open education, this can be formal or non-formal certification. The type of certification awarded to open learners will depend on the *robustness of assessment* (OpenCred, 2015). This refers to the extent to which the assessment undertaken by open learners can ensure the appropriate verification of their identities and their knowledge/skills. **Identity validation** The thorough verification of the learner's identity for the sake of assessment and certification is considered essential by universities and is also highly valued by the learners. The most common systems used to identify distance learners, on MOOCs for example, are *biometrics* and *proctoring*. The biometrics system consists of the cross-checking of the learners' photos with their typing pattern. The proctoring system is the monitoring of distance learners taking exams via webcams or specific software. There is also the more conventional exam on a specific site, where learners are monitored by a person. This type of exam is still considered by universities to be the most reliable due to its similarity with that of the traditional education system.

	Trust and Transparency Both trust and transparency are essential for the success of recognition practices in open education. Trust in the open learning recognition context means the reputation built by the institution providing the open education (MOOCs, OER and OCW) and the responsibility with which it engages with open educational practices. Trust has to do with relationship building, reputation management, networking, community engagement, quality control, values and mission. Transparency seems easier to achieve than trust, since it requires that the institution takes steps to increase the visibility of its open education practices, such as course design processes, syllabus and assessment procedures. Inter-institutionally, trust has to do with the relationship the institutions build with one another. The more they collaborate and share, the more they make visible their processes and procedures, their values and goals, and the more trustworthy they become. **RPL (Recognition of Prior Learning)** RPL is the process for recognising learning that took place previously in informal, formal or non-formal contexts: for example, in the workplace and through life experiences. This method of assessment [leading to the award of credits] considers whether a learner can demonstrate that they meet the assessment requirements for a unit or course through knowledge, understanding or skills they already possess, without having to undertake new learning. Once recognised through this process, prior learning can be used to gain credits or exemption for qualifications, and/or for personal and career development (Quality Assurance Agency –QAA, UK; OpenAwards.org). Learners can usually achieve recognition of prior learning by: ➢ Undertaking the same assessments as those following the formal course of learning and assessment that lead to the desired unit or qualification. These assessments may be undertaken without attending the teaching sessions. ➢ Submitting a portfolio of evidence based on previous learning, skills and / or competence cross referenced to the learning outcomes and assessment criteria of the unit or units for which RPL is being sought. The drawback of RPL for open education is that it is not scalable, since the portfolio needs to be assessed by a lecturer or a designated committee, who will look at it against the original syllabus of the course. This process can be lengthy and time consuming, particularly when agreement is sought. Often, the decision to award credits with RPL procedures relies entirely upon the decision of the lecturer or committee in charge of the dossier of the learner. **Fast Track Recognition** This is a procedure where a group of universities, members of a consortium or not, agree to mutually recognize the certificates of open learners who are looking for credit transfers and formal recognition. This means that, via collaboration, the institutions agree upon the quality standards and assessment procedures which satisfy their requirements for the validation and recognition of previous open learning.

	Qualification: Qualification in the open education context means 'formal qualification'. It is the formal outcome (certificate, diploma or title) of an assessment process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards and/or possesses the necessary competence to do a job in a specific area of work. A qualification confers official recognition of the value of learning outcomes in the labour market and in education and training. A qualification can be a legal entitlement to practice a trade (OECD). Source: CEDEFOP, 2008/2014, based on Eurydice, 2006; European Training Foundation, 1997; OECD 2007; ILO 1998. Qualifications in open education depend on institutions being able to create learning paths that lead to full programmes of study. **Social recognition** In the context of open education recognition, social recognition is the value given by society to badges and micro-credentials obtained on the completion of a MOOC or another type of learning via open education (such as OCW). Although social recognition is not a formal type of recognition of learning achievements, it has increasingly been accepted as proof of knowledge by employers and by universities.
Transversal Dimensions	
Descriptors	
Assessment	
Strategy	☐ Paid-for open education assessment (in MOOCs/OCW, free-of-charge online courses etc.) is part of the business plan of the institution. ☐ Free open education assessment is part of the strategy of the institution. ☐ Other. Please specify.
Technology	The institution: ☐ uses biometrics systems to verify the learner's identity during assessments. ☐ uses proctoring services to verify the learner's identity in assessments at a distance. ☐ uses technology to verify the identity of the open learner. ☐ Other. Please specify.
Quality	The institution: ☐ has a quality control procedure to verify the design and the undertaking of open education assessments. ☐ has a quality control procedure for the open online courses to which it wishes to award credits.
Leadership	☐ The institution encourages the ECTS (European Credit Transfer System) mapping of its open education courses. ☐ Other. Please specify.

Identity validation	
Strategy	The institution: ☐ invests in hiring/developing proctoring/biometrics services for identity validation of open learners. ☐ accepts and performs face-to-face assessment of open learners as a form of identity validation. ☐ Other. Please specify.
Technology	The institution: ☐ uses proctoring services to verify the learner's identity in assessments at a distance. ☐ uses biometrics systems to verify the learner's identity during assessments. ☐ draws upon decentralised infrastructures for issuing 'travel-well credentials' (e.g. blockchain). ☐ Other. Please specify.
Quality	☐ The institution has established measures to control the reliability of the identity validation procedures of open learners. ☐ Other. Please specify.
Leadership	☐ The institution has policies to support and encourage the thorough verification of the open learner's identity during assessment. ☐ Other. Please specify.
Trust and Transparency	
Strategy	The institution: ☐ values and accepts certificates and qualifications in the format of credit transfer from open learners from other institutions. ☐ seeks to develop long-lasting partnerships with other institutions in order to increase its network and add further value to its reputation. ☐ Other. Please specify.
Technology	☐ The institution makes use of technology and social media to communicate to open learners and partners its values, good practices and experiences/opportunities in open education ☐ Other. Please specify.
Quality	The institution: ☐ gives clear guidelines to staff members on how to design for open education, with strong emphasis on descriptions of expected learning outcomes. ☐ gives clear guidelines to staff members on how to design for open education, with strong emphasis on detailed descriptions of the assessment procedures. ☐ Other. Please specify.

Leadership	☐ The institution proactively informs the learner about the existence (or not) of some open courses components in their initiatives, such as paid-for assessment and price, quality control procedures, credits to be gained per course, requirements for successful study, etc. ☐ Other. Please specify.
RPL	
Strategy	☐ The institution uses RPL as way to assess and recognise open learning. This is a mid-term strategy leading to the establishment of mechanisms for fast-track recognition. ☐ RPL is part of the strategy to recruit new students. ☐ Other. Please specify.
Technology	☐ RPL is done with the support of technologies that enable the blind validation by experts of the institutional verdict on the learners' portfolio. ☐ Other. Please specify.
Quality	☐ The institution has an internal committee which is in charge of assessing the department's decisions on the open learners' portfolios. ☐ RPL carries out blind validation by experts of the institutional verdict on the open learners' portfolio. ☐ Other. Please specify.
Leadership	The institution: ☐ values and rewards departments and individuals who actively encourage and support RPL for open learners. ☐ has identified champions of RPL for open learners, who are in charge of developing strategies to move their institutions from RPL to Fast Track Recognition and to find external collaborators and networks. ☐ Other. Please specify.
Fast Track Recognition	
Strategy	The institution: ☐ understands Fast Track Recognition for open learning as an important strategy for open education. ☐ seeks to develop strategies around the fast track recognition of open learning. ☐ seeks to identify institutional partners to collaborate on the recognition of prior learning for open learners. ☐ Other. Please specify.
Technology	The institution: ☐ makes use of technology for a first screening of portfolios to indicate their eligibility for open learning recognition. ☐ makes use of technology to support fast track recognition of open learning. ☐ uses technology to let open learners know that they can apply for recognition of open learning (e.g. social media, institutional website, online marketing tools). ☐ seeks to develop a strategy to provide transparent and comprehensive online information to both the learners and other

	institutions in relation to its assessment mechanisms for open learning, certification and recognition. ☐ uses technology to verify the identity of the open learner. ☐ Other. Please specify.
Quality	The institution: ☐ is committed to developing a speedy and reliable process for fast track open learning recognition. ☐ has an internal committee, which pre-verifies the reliability of third-party institutions' open learning assessments mechanisms and certification processes in order to establish collaboration on fast track recognition. ☐ seeks to develop a strategy to provide transparent and comprehensive online information to both the learners and other institutions in relation to its assessment mechanisms for open learning, certification and recognition. ☐ Other. Please specify.
Leadership	The institution: ☐ seeks to lead in open education by being at the forefront of open learning fast track recognition. ☐ identifies champions to lead the fast track open learning recognition dossier of the university. ☐ Other. Please specify.
Qualification	
Strategy	The institution: ☐ is committed to mapping its open education offerings against the ECTS (European Credit Transfer System) and EQF (European Qualifications Framework) whenever possible (MOOCs, OCW, OER). ☐ has a strategy on how to offer qualifications via open education. ☐ Other. Please specify.
Technology	The institution: ☐ uses technology to show the learners different qualification routes (e.g. online simulations). ☐ explores decentralised infrastructures (blockchain) for the issuing of certificates and other types of credentials. ☐ Other. Please specify.
Quality	The institution: ☐ has mechanisms to check and validate its open learning qualification awards process. ☐ supports and encourages the branding of its own open education qualifications. ☐ seeks to work in collaboration with other institutions to grant qualifications for open learners. ☐ Other. Please specify.
Leadership	☐ The institution encourages its reputation building in open education by the granting of full qualifications. ☐ Other. Please specify.

Social Recognition	
Strategy	The institution: ☐ seeks to offer non-formal recognition (e.g. badges) to its open education offerings when formal recognition is not appropriate or sought by the learner. ☐ encourages the acceptance of non-accredited certificates and badges as a form of knowledge demonstration whenever a formal certificate is not required. ☐ Other. Please specify.
Technology	☐ The institution offers mechanisms to open learners to build and use a personalised learning environment showing their non-formal learning ecosystem. ☐ Other. Please specify.
Quality	☐ The institution seeks to maintain its reputation through the high quality of its non-formal education offerings and the assessment practices used in such cases. ☐ Other. Please specify.
Leadership	☐ The institution encourages its staff members to award badges and certificates on completion of open education offerings which do not match the criteria for formal recognition of learning outcomes. ☐ Other. Please specify.

CORE DIMENSION 5	
COLLABORATION	
Definition	Collaboration is about removing barriers to education by facilitating the exchange of practices and resources with a view to improving education. By collaborating via open educational practices, universities can move beyond the typical institutional collaboration patterns and engage individuals and communities to build a bridge between informal, non-formal and formal learning. It is an evolving practice which is shaped by individuals according to context, goals, resources and possibilities. It is therefore a concept that must be as dynamic as its practice.
Rationale	Collaboration in open education is about making the removal of barriers to education a reality by creating networks between individuals and institutions. Learners must be empowered to collaborate with each other and with the institution and community in order to produce knowledge, define their unique learning paths and achieve their goals. More specifically, it has to do with any practice or policy that promotes, for example: • agreements to support open educational practices. These can take place at different levels: between individuals (formally or informally), intra-institutionally, inter-institutionally, nationally at policy level or cross-border; • the exchange of knowledge in OER format, free-of-charge content and courses, MOOCs or open access research; • the co-development of OER and free-of-charge content; • the co-development and exchange of open educational practices with respect to pedagogies, learning designs, technologies, guidelines, training, accessibility and usage of repositories; • the empowerment of learners on their lifelong learning paths; • the acceptance and recognition of open education certificates and credits by third party organisations; • the co-development of open, innovative and digital learning environments; • practices that cultivate values of equality, non-discrimination and active citizenship; • respect for socio-cultural differences.
4 components	**Intra-institutional | Inter-institutional | National | Cross-border**
	Intra-institutional collaboration: this type of collaboration takes place within an institution. It may involve different departments and faculties, students, staff members and even the wider community (alumni/ families of students/ local community). It aims to strengthen the open educational practices of the institution as a whole, promote knowledge sharing and management inside the organisation, develop an institutional policy on open education, identify champions, promote training and develop skills, promote the dissemination of an open education culture.

	Inter-institutional collaboration: this type of collaboration takes place between institutions, staff and learners from the same region, country, or network. It aims to strengthen the relationship between these organisations and individuals so that they can share all or any of the following: knowledge, pedagogies, practices, open research, OER and free content. It also aims to develop and maintain technologies, prompt formal recognition of certificates and credits and aid reputation building. ***National/Regional collaboration***: This type of collaboration refers to policies and recommendations on open education supported by National Ministries and regional governments. It may involve a given number of institutions working towards achieving a similar goal on open education, set and supported by these policies. ***Cross-border collaboration***: This type of collaboration aims to foster the internationalisation of institutions via open education, by increasing their reach and access by students globally. Students in turn will benefit from the contact and sharing with other cultures. This type of collaboration can be set up by mutual agreements or consortia between universities in different countries or regions. It envisages the sharing of content, open research, practices, pedagogies and technologies. It aims to enable a welcoming environment for learners, teachers, managers and researchers to explore knowledge and practice from places other than their own. It also attempts to overcome barriers established by national regulations or common practices with respect to recognition of learning achievements via open learning.
Transversal Dimensions	
Descriptors	
Intra-institutional collaboration	
Strategy	The institution: ☐ has a strategy on how to collaborate on open education at an institutional level within departments and faculties. ☐ encourages staff members from all departments and faculties to exchange and produce free content and OER, open access research, teaching materials, MOOCs, training in open education in collaboration. ☐ Other. Please specify.
Technology	The institution: ☐ provides and maintains fully operational a repository and/or a learning management system in which staff members can easily share knowledge, OER, free content, open access research, teaching materials, and open educational practices. ☐ encourages staff members to use social media to exchange practices and resources. ☐ encourages departments and faculties to produce/develop/use open technologies in collaboration. ☐ Other. Please specify.
Quality	☐ The institution has a cross-departmental peer-review process for open educational content (OER, free content).

Leadership	☐ Learners are empowered to decide about their studies and learning paths, to share knowledge and content, and to engage with staff members and learning networks. The institution: ☐ has identified open education champions in each department/ faculty. ☐ encourages staff members from all faculties/departments to participate in an open education committee and supports its ongoing existence. ☐ values the efforts of individual staff members to engage with open education by setting up a clear structure of rewards (e.g. career progression, training, time allocation, remuneration etc.). ☐ Other. Please specify.
Interinstitutional collaboration	
Strategy	The institution: ☐ has a strategy on collaboration with third party institutions to make open education sustainable to all parties involved. ☐ seeks to work in collaboration with other institutions to grant and recognise qualifications for open learners. ☐ Other. Please specify.
Technology	The institution: ☐ shares technologies with other organisations (HEIs, industries, government etc.), which support collaboration in open educational practices. ☐ builds technologies that support open educational practices in collaboration with other organisations to reduce costs and enhance quality and maintenance procedures. ☐ Other. Please specify.
Quality	☐ The institution shares a code of practice on quality with other organisations to mutually check and peer-review their open education outputs. ☐ Other. Please specify.
Leadership	The institution: ☐ shares policies with other organisations which enable collaboration in open education. ☐ collaborates with other HEIs and third party organisations to validate and recognise non-formal learning. ☐ Other. Please specify.
National/Regional collaboration	
Strategy	The institution: ☐ seeks to collaborate with its National Ministries to promote and support open education initiatives in the country. ☐ seeks to collaborate with local governments to promote and support open education initiatives regionally. ☐ has a strategy on open education which includes the collaboration with other institutions across the country, at different levels (e.g. pedagogy, content, technology, access).

	☐ seeks to work in collaboration with other institutions to grant and recognise qualifications for open learners. ☐ Other. Please specify.
Technology	☐ The institution shares a central national repository with other institutions. ☐ Other. Please specify.
Quality	☐ The institution shares a national code of practice with other organisations to control the quality of its open education outputs. ☐ Other. Please specify.
Leadership	The institution: ☐ actively participates in activities to foster opening up education at a national level. ☐ Other. Please specify.
Cross-border collaboration	
Strategy	The institution: ☐ has a strategy on open education which involves the collaboration with organisations abroad. ☐ approaches open education collaboration with institutions abroad as a way to internationalise its practices. ☐ seeks to develop fast-track routes for recognition of non-formal learning from collaborating institutions abroad. ☐ Other. Please specify.
Technology	The institution: ☐ has agreements with organisations abroad in order to use their platforms for open education delivery. ☐ has agreements with organisations abroad to co-develop and maintain technologies for open education. ☐ Other. Please specify.
Quality	☐ The institution follows international protocols on quality check f open education provision. ☐ Other. Please specify.
Leadership	☐ The institution has a leading international role on open education collaboration. ☐ Other. Please specify.

CORE DIMENSION 6	
RESEARCH	
Definition	Openness in research is about removing barriers to access to data and research outputs, and also about broadening participation in research.
Rationale	Openness in research implies a paradigm shift in the *modus operandi* of research and science which affects the entire scientific process. The underlying idea is to advance science as quickly and as well as possible by sharing and collaborating, rather than trying to publish first in order to secure intellectual property rights. International collaboration, for example, plays an increasingly important role both in improving the competitiveness of research and innovation systems and in fostering new knowledge production worldwide[28]. (Research and Innovation, European Commission, 2016) Researchers can gain from open science activities, both as project participants and as commentators on research ideas and progress, because extended networks provide a larger pool of expertise. Richer data sets are also available to them. (European Commission, background document – Public Consultation, Science 2.0: Science in Transition[29], 2014).
4 components	**Open Access | Open Research Collaboration | Open Data | Citizens' Science**
	Open access is the practice of providing online access to scientific information that is free of charge to the end-user. **Open Research collaboration** is the large–scale, remote collaboration between scientists through the use of internet-based tools similar to open source software collaboration. It can take place regionally, nationally or internationally. **Open data** is data that can be used free of charge, reused and redistributed, subject only to the requirements of its open license. **Citizens' science** is a form of research collaboration in which professional scientists engage with members of the public, who then contribute to the research.

[28] Open Innovation, Open Science, Open to the World: A Vision for Europe (2016) DG Research and Innovation, European Commission.
[29] https://ec.europa.eu/research/consultations/science-2.0/background.pdf

Transversal Dimensions	
	Descriptors
Strategy	**Open Access**
	The institution: ☐ has open access to research as a component of its open education strategy. ☐ has clear policies on open access publications. ☐ has policies that support and recognise academics who choose to publish in open access journals. ☐ has policies that support and recognise academics who choose to make their research available in open access research repositories. Researchers of the institution: ☐ are aware of the requirements and costs to them and the institution regarding the availability of open access research. ☐ Other. Please specify.
	Open research
	The institution: ☐ has policies to promote and/or reward researchers and lecturers who embrace open research practices. ☐ makes sure that researchers and lecturers are aware of the requirements and costs to them and the institution regarding the open research programmes they support. ☐ Other. Please specify.
	Open data
	The institution: ☐ has clear policies on open data. ☐ ensures that all academic/technical staff members are aware of the institutional policies on open data. ☐ Other. Please specify.
	Citizens 'science
	The institution: ☐ has policies to support and encourage the participation of third parties (e.g. companies, independent researchers) in the research process in various subject areas (e.g. grants, collaboration agreements, access to research labs, unpaid fellowships). ☐ has policies to support and encourage academics to open their research process to the participation of third parties (e.g. grants, merit recognition). ☐ Other. Please specify.

Leadership	**Open access**
	The institution: ☐ plays a leading national role in publishing open access research. ☐ has identified staff members who are willing to take the lead in creating an open access policy for the institution. ☐ encourages and values research published in open access journals. ☐ Other. Please specify.
	Open research
	The institution: ☐ plays a leading role in creating programmes to involve local governments and local enterprises in the production of collaborative, open research. ☐ plays a leading role in open research collaboration with other higher education institutions, interinstitutionally and cross-nationally. ☐ Other. Please specify.
	Open data
	☐ The institution has identified staff members who are willing to take the lead on creating an open data policy for the institution. ☐ Other. Please specify.
	Citizens' science
	The institution ☐ plays a leading role in opening up its laboratories, archives and data centre to the community. ☐ seeks to engage the community in research processes (e.g. via crowdsourcing, open data, open collaboration). ☐ Other. Please specify.
Quality	**Open Access**
	☐ The institution monitors the quality of its research output published in open access journals. ☐ Other. Please specify.
	Open Research
	The institution: ☐ applies quality monitoring procedures for its open research processes and initiatives. ☐ rewards staff members who comply with quality monitoring measures for their open research initiatives. ☐ Other. Please specify.

	Open data
	☐ The institution ensures that the purpose for which the data is made available, the conditions of data collection, and all other details that one may need to reuse the data, are fully described. ☐ Other. Please specify.
	Citizen's science
	☐ The institution ensures that a quality monitoring mechanism for citizens' science is put in place. It should focus on five components: efficacy, impact, availability, accuracy and excellence[30]. ☐ Other. Please specify.
Technology	**Open access**
	The institution: ☐ has its own research repository with an open access policy. ☐ encourages the use of open standards for the production of content. ☐ rewards staff members who are part of collaboration groups on technologies for open educational practices (e.g. open source communities' of developers, think tanks). ☐ Other. Please specify.
	Open research collaboration
	The institution: ☐ allows the use of its technology for research (e.g. laboratories and equipment) by third parties. ☐ rewards staff members who develop new technologies which support open educational practices. ☐ Other. Please specify.
	Open data
	The institution: ☐ seeks to be engaged with specific communities of practice which have /develop technologies for open data. ☐ has leading technology on open data (repositories, standards etc.). ☐ Other. Please specify.
	Citizen's science
	☐ The institution makes use of social media to seek the participation of individuals in its research. ☐ Other. Please specify.

[30] These components are fully described in the Quality Dimension.

TRANSVERSAL DIMENSION 7	
STRATEGY	
Definition	Strategy in open education is the creation of a unique and valuable position on openness involving different sets of activities.
Rationale	Openness is a vital component of an institution's policy. It is integral to the institution's mission and its relationship to and inter-dependence with other aspects of the wider institutional policy should be clearly articulated. Including openness in an institution's education strategy can enhance and enrich the conceptual, operational and financial aspects of the educational offer.
2 components	**Integrated Institutional Policy | Funding**
	➢ **Integrated institutional Policy** Including openness within an institution's education strategy can enhance and enrich the conceptual, operational and financial aspects of the educational offer. The open education strategy and the institution's overall strategy should not be treated as separate, but instead it should form a unique educational strategy for the institution. This means that a current institutional strategy may need to be revised to operate from openness. HEIs activities such as research, teaching and learning, and community services could all benefit from open practices. ➢ **Funding** In making opening up education an integral part of the institution's mission and goals, HEIs will also need to have a strategy on how to make these activities financially sustainable throughout their duration and deliver, where appropriate, return on the investment. The latter can be direct (e.g. revenue by commercialising specific parts of the open education offer to specific types of audiences, such as assessment or credentials, or more registrations for paid-for courses) or indirect (e.g. increased reputation and enhanced internationalisation). HEIs can explore internal funding to be used to consolidate the institution's strategy which includes openness, and/or explore how external funding, from governments or other bodies, can help them achieve their opening-up education goals.

Strategy and its relationship with the other transversal dimensions	➢ **Technology:** in open education, strategies and technology are interrelated and depend on each other in the institution's action plan for an open education initiative. Technologies can be selected according to the open education strategies the institution has chosen to adopt (e.g. open standards for software, use of social media to deliver content and engage with different audiences, open repositories for research outputs). ➢ **Quality** - the quality[31] (excellence) of the open education practice and resources of the institution are determined by a series of criteria set by the university and/or according to the recommendations of external bodies (e.g. ENQA, EADTU, etc.). ➢ **Leadership** - The promotion of open education at an institutional level is led by champions from the following groups: ✓ *Institution's executives.* ✓ *Institution's staff members (lecturers, researchers, technicians, administrators).* ✓ *Institution's learners (registered learners and open learners).*

[31] See the 'quality' transversal dimension for details.

TRANSVERSAL DIMENSION 8	
TECHNOLOGY	
Definition	Technology in open education refers to technological infrastructures and software which facilitate opening up education in its different dimensions.
Rationale	Technology is a necessary part of open education. Technological infrastructures and software, either open or closed, work as transversal enablers of the different dimensions. Technology use varies from one dimension to another and its different descriptors are incorporated in the template of the core dimensions. Thus, access can be enhanced by improving the infrastructures (devices and connexions) and by using virtual learning environments (VLE), MOOC and free/open online course platforms and supportive technologies. The openness of content (courses and programmes) can be enhanced via technology, e.g. by using institutional repositories, appropriate standards and metadata. Pedagogy can benefit from the use of social networks, web 2.0 (or plus), OER and technologies that allow teachers to monitor learners' behaviour and encourage and support personalised learning (e.g. via learning analytics). Technological solutions play an important role in validating the identity of people being assessed for the recognition of non-formal learning (e.g. biometrics and proctoring), in making it easier to scale up assessment (test, peer to peer assessment tools and automated essay assessment) and in granting digital badges. Collaboration can also be enhanced via technology. For example, social media can be used to disseminate open education initiatives and facilitate communication with external stakeholders (companies, local community), involving them in the educational process. The design of common digital courses and infrastructures for open education (e.g. repositories, MOOC and free/open online course platforms) is dependent upon technology and also the easy sharing of free content and OER. Technological choices have a direct impact on how open education is configured. Consequently, institutions should consider technology when planning their strategies in order to align them and their priorities on open education with the ICT investment they make. The degree to which the technology used by an institution is open or not reflects its openness culture. Institutions which are committed to the greatest possible level of openness will opt for open standards and open source technologies which are interoperable with other platforms. They will also build or use platforms which allow learners to interact with one another, upload and share content, download, peer-review and modify existing content. Open education today is not always implemented by using open source software. However, its use has added value. Open source software solutions can make personalization possible by adapting previous developments of technological solutions to specific institutional needs. In addition, openness in technology eliminates barriers to inter- and intra-institutional collaboration in the development of technological solutions for open education.

4 components	Software and Platforms| Maintenance and development | Training | Vision and audience
	➢ **Software and platforms** – To a certain extent, the affordances of the technology set the boundaries of what can and cannot be done in open education. For example, the commitment to certain commercial (or non-commercial) platforms for the offer of MOOCs and free/open online courses may mean that the institution has to adhere to certain business models. On the other hand, it makes it possible to reach global audiences more easily, due to the findability that these platforms provide. Another example is the tools that particular software may provide to learners and how customisable and interoperable it is. All these factors shape the learning experience and the institution's engagement with open education in different ways. A decision on software and platforms must be an integral part of the strategy of the institution. ➢ **Maintenance and development** – Content repositories, courses and programmes need to be within their lifecycle to be meaningful to the open learner and have a positive impact on the institution's reputation in open education. When designing a strategy for open education, periodic updating of the open education offer needs to be planned. In addition, open education provides possibilities for technology sharing and the development of new tools and systems, such as personalised learning environments. ➢ **Training** – New technologies often require user training. It is essential that staff training in the use of technologies be included in the institution's open education roadmap. ➢ **Institutional Vision and Audience**- The choice of technology for open education is also largely dependent on the initiative's target audience and the institution's vision in relation to open education. For example, technologies adapted to mobile learning or content shared on platforms which allow remixing may appeal to different audiences (e.g. teachers and open learners on the go). The institution's vision for open education must be related to its mission. The choice of technology must be aligned with the institution's open education vision, because technology shapes audience appeal.
Technology and its relationship with the other transversal dimensions	➢ ***Strategy***– the planned use of technology as an enabler is an essential part of the institution's strategy or business model for open education. The institution may decide that its open education offer (MOOCs, free/open online courses, OER, research) will rely on the technologies it already uses, be they open source or not. The institution may also decide to build a technological plan for openness, using not only its existing technologies (open or closed) but also sharing, customising, or designing and building new technologies. Technological choices and strategies in open education are closely related to one another. A strategic implementation plan can maximise the technology potential to create new operating mechanisms and business models. Technology in open education is used to enhance *pedagogy*, produce, modify and share *content*, assess learning to enable formal *recognition*, increase access (flexibility of time and space) and accessibility and support *collaboration* between different institutions. Within the scope of the core dimensions, there can be different foci on technology implementation, enabling a range of strategies and business models.

	➢ ***Quality –*** Technological quality in open education has to do with the reliability of the system used and its readiness to support different types of users (e.g. versions, accessibility). It also has to do with the promotion of user-friendly platforms that focus on the user experience. ➢ ***Leadership –*** Since technology is a key enabler for open education, institutions may decide to have it at the centre of their open education strategies by playing pioneering / leading roles in technology development for open education.

TRANSVERSAL DIMENSION 9	
QUALITY	
Definition	Quality in open education refers to the convergence of the 5 concepts of quality (efficacy, impact, availability, accuracy and excellence) with an institution's open education offer and opportunities.
Rationale	In relation to an institution's open education offer, the higher the confluence of these 5 concepts of quality (efficacy, impact, availability, accuracy and excellence) the more reliable and trustworthy this offer will be for open learners: • *Efficacy*: fitness for purpose of the object, concept being assessed. • *Impact*: is a measure of the extent to which an object or concept proves effective. It is dependent on the nature of the object /concept itself, the context in which it is applied and the use to which it is put by the user. • *Availability*: this is a pre-condition for efficacy and impact to be achieved, and thus also forms part of the element of quality. In this sense, availability includes concepts such as transparency and ease-of-access. • *Accuracy*: is a measure of precision and absence of errors, of a particular process or object. • *Excellence*: it compares the quality of an object or concept to its peers, and to its quality-potential (e.g. the maximum theoretical quality potential it can reach) (Source: JRC IPTS report, 2014)[32]. The degree of quality of an open education offer/opportunity can be measured by different actors, such as the institution itself, its learners or the State. The latter measures the compliance with a given country's legislation and recommendations of the object being offered (e.g. a course, a certificate, a degree). It can also be measured against the standards of a competent body which can issue credentials, such as a quality assurance agency or an association/community recognised by its members. The granularity in which quality is measured in open education may also vary, ranging from an institution's overall reputation to the quality of a particular offer such as an OER. In general, quality standards in open education should seek to comply with the European Standards and Guidelines for Quality Assurance in Higher Education[33], which have been divided in three parts: internal quality assurance, external quality assurance and quality assurance agencies. The term quality assurance means all activities within the continuous improvement cycle (e.g. assurance and enhancement activities) (ESG, 2015)[34]

[32] Camilleri, A., Ehlers, U.D., Palowski, J. (2014) State of the Art Review of Quality Issues related to Open Educational Resources. JRC Scientific and Policy Reports, IPTS, Luxembourg: Publications Office of the European Union.
[33] http://www.enqa.eu/wp-content/uploads/2015/11/ESG_2015.pdf
[34] Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) (2015), Brussels, Belgium.

	Quality in open education also relates to the environment and conditions in which an open education culture is built in an institution. Staff members involved in producing and supporting OE often require time and deserve incentives. An institution which identifies these needs, recognises them as fair and acts responsibly towards them is respecting a fundamental principle of excellence which is the promotion of the best conditions for individuals to tap into their greatness.
3 components	**Quality of open education offer | Quality of institutional support to staff |Quality of services to open learners**
	➢ **Quality of open education offer/opportunities** refers to the degree of confluence of the 5 concepts of quality applied to content (OER and free-of-charge content), courses, programmes, teaching methods and technologies. It also refers to quality of metadata, transferability and adaptability of teaching and learning resources. It is important that universities continuously improve their systems of production and service. ➢ **Quality of institutional support to staff** is related to the existence of an open education policy at the institution, which caters for the allocation of appropriate time and remuneration to staff members (e.g. lecturers, researchers, librarians) to design, modify and use OER and when applicable, free content . It has also has to do with incentives and continuous professional development (CPD) opportunities. ➢ **Quality of services to open learners is** related to the variety and excellence of the services provided to open learners, such as technologies, student support, tutoring, pathway guidance, issuing of certificates and recognition of non-formal learning.
Quality and its relationship with the other transversal dimensions	➢ **Strategy** –quality management approaches applied to the monitoring of the implementation of an institution's strategic plan for open education. ➢ **Technology** – Reliability of the technology. The use of international standards for course material production and availability/sharing. The user-friendliness of web resources and learning environments for open learners. ➢ **Leadership** – Leadership for quality is an important criterion in an open education strategy. Open education champions and the institution's executives must check the quality criterion against their main decisions and actions to ensure that the institution's reputation is being kept and enhanced. The goal is to provide the open learner with the best learning experience possible.

TRANSVERSAL DIMENSION 10	
LEADERSHIP	
Definition	Leadership in open education is the promotion of sustainable open education activities and initiatives via a transparent approach from both the top-down and the bottom-up. Leadership paves the way to creating more openness by inspiring and empowering people.
Rationale	Leadership in open education goes beyond the creation of strategies decided at the executive level. It is above all the identification of champions at all levels, who will take the lead in the different strands of open education in the institution. It is a transversal dimension because it supports open education practices at different levels: personal motivation, task organisation and outcomes management. Leadership in open education should promote open education take up across the university by a whole range of stakeholders, including learners.
4 components	**Institution's stakeholders | Staff members | Learners | Community**
	➢ **Institution's stakeholders** are members of the management team of a HE institution. The approval of an institution's open education policy or guidelines/roadmap, for example, would be the responsibility of these individuals. The Institution's executives have the power to support an open education culture and to decide on the best course of action to achieve desired goals. Their actions should ideally be aligned with those of staff members. ➢ **Staff members** can be advocates or champions of open education at the institutional level. They will design or put into practice the strategies planned. They should also be part of the decision-making process to enhance their sense of ownership of the OE strategy. They are key players for the success of the strategy. ➢ **Learners** in open education take increasing responsibility for their own learning pathways. They are the leaders of their own learning processes and achievements. Learners can also be authors and co-authors of open educational material. They may share their experiences digitally and via the social web. They may support and assess each other's work via peer-to-peer activities. ➢ **The community** related to the HE institution (e.g. family of learners, neighbours, institutional partners etc.) also benefit from the open educational practices of the institution. At the same time, the community can also collaborate and share their knowledge openly via the institution (e.g. collaboration with local businesses, events, employers and learners).

Leadership and its relationship with the other transversal dimensions	➢ ***Strategy****:* Leadership for strategy and business models is measured against the involvement of different champions in the promotion of open education at an institutional level: ✓ *Institution's executives,* ✓ *Institution's staff members (lecturers, researchers, technicians, administrators),* ✓ *Institution's learners (registered learners and open learners).* ➢ **Technology**: Since open education is highly dependent upon technology, it is important that the institution finds champions on the technological front. This will ensure not only the development of a strategy on (open) technologies for open education and support for it, but also commitment to designing and testing new technologies/uses for technology that can enhance the institution's open education offer and the learner's experience. ➢ **Quality**: Leadership for quality has to do with the individual's commitment to quality control of the institution's open education offer and with the various champions' efforts across the institution to promote quality as a value. Overall, the quality of an institution's open education offer affects its reliability and reputation, therefore leadership for quality is an essential part of an open education strategy.

ANNEX II – Strategic Planning Template for Opening up Education

Date:

(optional worksheet be used alongside the OpenEdu framework)

This template provides questions to think through while using the framework. The goal is to achieve a relatively short document [e.g. 10 pages] which is an easy read for your target audience. Ideally, it should be designed to be an integral part of your institution's main mission and education strategy, in order to promote openness as a value that is intrinsic to the institution's overall organisation. Complementary documents can be designed whenever necessary and linked to it. Also, please consider making the strategic plan on opening up education available online on your university's website, visible to all interested parties (the public in general, open learners, staff members, etc.), and explain how it is embedded in the institution's overall mission. Transparency is part of the open education ethos and if the strategic plan has an appropriate open licence, it could even be reused/adapted by other institutions, which will reference your planning.

Section 1: Background

1.1 HE institution information

Name, full address, status (public, private, etc.) rector/president, main website, contact.

1.1.2 Audience of the strategic plan

You/your team may want to say something like:

"This strategic plan on opening education for [higher education institution's name] has been developed by [XYZ group] in order to provide an institutional approach to [all faculties, staff members, external actors] on the development of specific initiatives for opening up education and their related policies. This planning is an official part (chapter, etc.) of the overall institutional planning and is aligned with the institution's mission.

1.2 Introduction

It is useful for anyone reading your strategic plan to provide some background information on the institution (size, main audience, private/publicly-funded, main achievements).

In this section, the institution's vision, mission and values can be explained. Then, the institutional perspective on open education (what it is, why it is a priority/not a priority at the institution, how it fits/does not fit with the institution's mission statement.)

Next, the current status of open education practices in the institution may also be presented, alongside a plan for non-formal learning recognition and incentives for staff.

Section 2: Planning

2.1 Institutional vision on open education

This is a short statement, carefully constructed, which will communicate to others what you want to achieve.

2.1.1 Major goals

In this section, you may want to describe how open education will be dealt with in your institution: i.e. what the main goals, the rationale and timeframe are. You may choose to distribute a number of these planning templates to appropriate staff members in order to identify main goals and specific objectives in the institution. Alternatively, you may see value in creating working groups and have them address a specific set of goals and objectives –checking how they relate to the dimensions of open education of the framework. Finally, consider merging the documents into one single institutional strategic plan.

2.1.2 Specific objectives on open education

Here you may describe specifically how the major goals will be achieved. What types of open education initiatives will you support/create/collaborate with? How will they be supported (staff/faculties, funding, external collaborators)? How open will your institution be about open licenses, reuse and sharing policies, etc.?

2.2 Dimensions of open education and rationale

What are the dimensions in your planning and why? How do they interplay? Are you taking a progressive approach (starting with fewer dimensions and aiming to include all in the future) or not? Why? Which descriptors from each dimension of the framework will your institution support and how?

2.2.1 Approach to recognition of open education

This is an aspect that you may want to emphasise and make clear to all staff and open learners. Presenting the institutional perspective on recognition of non-formal learning will help staff members to develop appropriate courses/programmes/projects. It will help open learners to understand the institution's position on recognition, enabling them to make informed decisions.

2.2.1.1 Desirable traffic light model for open education offers

You may wish to refer to OpenCred's traffic light model to guide your staff members and open learners on the types of recognition of non-formal learning provided by your institution. The traffic light model is a visual tool that can be displayed on courses, websites, etc., which can aid transparency in your recognition policies.

2.3 SWOT analysis (strengths, weaknesses, opportunities, threats)

You may wish to use some of the OpenEdu descriptors here, adapted as needed, to help you describe the strengths of your institution on open education (e.g. the institution is a strong player in online learning), weaknesses, opportunities and possible threats related to opening up education. A contingency plan may also be presented.

2.4 GANTT Chart

This is an important part of your strategic plan since it offers a trackable visual schedule for the achievement of goals and specific objectives, and makes it possible to break them down into work packages.

You may need to identify who the open education champions are/could be at the institution. This group will be assigned tasks and accountability. These champions can also be learners. Consider how they could be encouraged to feel ownership of at least parts of the strategic plan. This will make them more committed and they will achieve better results. The Leadership dimension of the OpenEdu framework may be helpful in designing this section of the strategic plan.

Section 4: EVALUATION

Your institution's performance against all the goals and objectives set in the strategic planning should be rigorously evaluated. This will help to redefine goals whenever necessary and also in the design of a revised plan for a further time period.

4.1 Formative

How often will the initial (formative) evaluation occur? Who is its audience? Which criteria will be used? What will you do with the information you gather from this formative evaluation?

4.2 Summative

Against which criteria will the final (summative) evaluation occur? Who is its audience? To what extent have your annual reports and operational plan addressed the open education strategic plan? How can you use the data gathered when completing the summative evaluation to inform the next round of strategic planning? Consider making the results of the evaluation available to all.

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