

VIRQUAL - SIMPLE GUIDE FOR INSTITUTIONS

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1. Scope

Teaching and learning in general and specifically in Higher Education (HE) have been experiencing a mobility shift. The reasons behind this shift are rooted in a continuously changing environment of learning/teaching processes, of companies and of organizations that have the growing requirement as part of an increased international cooperation and collaboration. Due to this globalization and mobility trends the demand from economic players for highly qualified human capital that is able to work and succeed in such an environment has grown considerable.

The technological development of Information and Communication Technologies (ICT) allowed the adoption of new technologies for teaching and learning. That has led to the creation of policies and of supportive programs on national and European level to promote the use of ICT in teaching and learning. This use of ICT, together with open labor market regulations, has created the opportunity for virtual mobility in learners and in professionals. In this context HE institutions have been trying to offer courses to a geographically broader audience and a more diverse student body than ever before. The transformation of HE institutions from a traditional model where courses are taught face-to-face only to a university where course are offered in a blended or fully online form is currently in progress.

In other words this means the change from an organization with a rather limited range where students and teacher are coming from a geographical radius around the location of the university to a more open organization with students and teacher possibly coming from all around the world, ages, backgrounds, industries and experience. This transformation brings along a lot of issues: familiar ones that just are at the core of continuously developing and operating an educational institution but also some that never existed before. The qualifications acquired through ICT learning or training needs to be assessed and recognized so the mobility exists in practical terms. Companies and HE institutions need to have tools to recognize the qualifications acquired virtually either for professional development or for an academic degree or diploma.

2. Target group

An increasing number of HE institutions in Europe already have an online campus and have been experimenting with e-Learning in the last years. But at the moment learning contents are mainly for in-campus HE students and some for lifelong learning professionals. These comments also apply for Vocational and Education Training learners and providers.

This guide intends to be a tool to help the providers of virtual learning/training like HE institutions and VET organizations, to organize the provision of virtual learning and to facilitate the recognition of learning and training done virtually. It is also intended for companies that would like to verify the competences, acquired by professionals or by applicants, in a virtual environment. It is a suggestion on how to proceed using the project VIRQUAL tools to achieve a better utilization of the possibilities provided by ICT in virtual environments to achieve desired competencies. The European Qualification Framework (EQF) is used as reference for the organization of competences in the levels 5 to 8 that correspond in general to the HE sector. The adaptation of these competences to each country National Qualification

Framework (NQF) can be done if the transposition of the EQF has already been implemented for that country.

3. Example of application

To be able to visualize this procedure proposed by the project VIRQUAL in a more concrete way it is used the following example:

A university sets up a course with the title “Creativity and Innovation in work environments”. Following scenarios can be the starting point on the pathway:

The University decides to create a virtual course (e.g. e-learning).

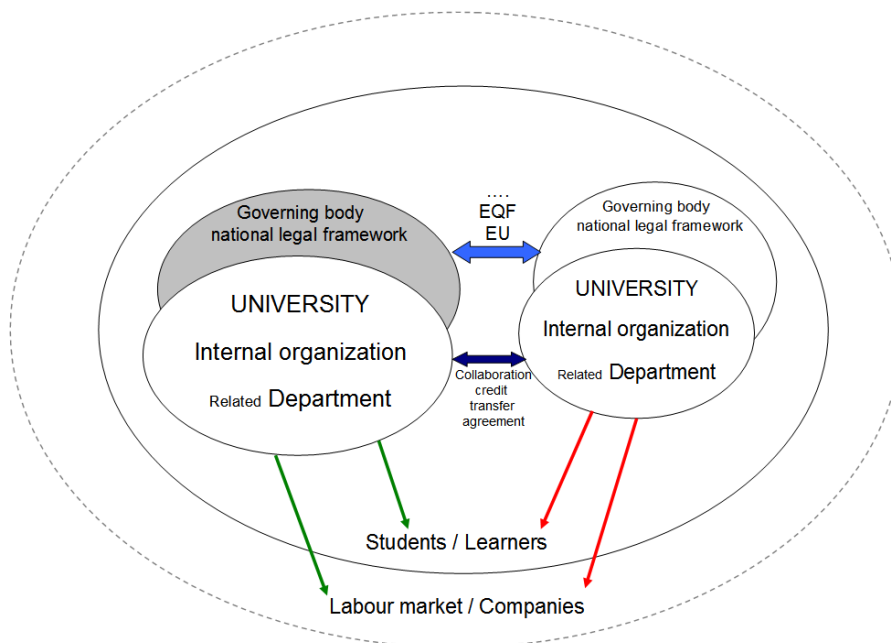
The University decides to open up access to this course for students from all over the world.

The University verifies if the course has learning outcomes (competences of EQF/NQF) are properly defined using the VIRQUAL model.

The University can define assessment modes that match the type of competences according to the VIRQUAL model.

A Company can recognize the successful participant in that course using the VIRQUAL model.

The following graph tries to capture the environment that a HE institution or a company may consider as adequate to use the VIRQUAL model.



4. Step by Step

4.1. Step 1 – National regulations, NQFs and legal frameworks

This step is related with the legal environment of virtual learning and of national framework of competences. Every HE institution has the responsibility to report to a governing or accrediting body embedded in the national educational framework. The reason for this analysis of national situations is to facilitate compliance with the national legal frameworks.

This step will allow answering institutions or companies the following questions or a in similar form:

How do the national regulations NQF stipulate e-learning in the respective legal framework?

What is the plan to relate the NQF to the EQF and how far is the implementation on its way?

How can a HE institution or a company verify if virtual learning/training is acceptable in a specific EU country?

Links

- Annex 1: Definitions

- e-Learning and EQF - Cross analysis of data from 30 country reports (<http://virqual.up.pt/sites/default/files/map/mapa.html>)

4.2. Step 2 – Course development

It is an important question to ask about the course goals and the respective motivation of a student or learner to take the course. Therefore the course, either for an academic degree or for training, should have the learning outcomes defined in terms of the competences acquired as outputs of the learning or training. In certain course may be directly related to employability and labor markets needs and requirements. The main focus is on learning outcomes, competencies and assessment in a virtual environment. Credibility for virtual mobility is an important issue and needs to prove to teachers and to employers that the certification was done according to the correct assessment criteria. A table of proposed types of assessment versus the different competences of EQF was researched and defined. The procedure to follow in course development is:

- a) Identify Intended learning outcomes (EQF/NQF or sector framework)
- b) Determine correct writing of learning outcomes (competences). Consult the Intended Learning Outcomes Repository of VIRQUAL
- c) Select assessment methods using the VIRQUAL proposal

References

- Consult the VIRQUAL survey of EQF/NQF (<http://virqual.up.pt/sites/default/files/map/mapa.html>) implementation on virqual.up.pt

- Annex 2: Intended Learning Outcomes Repository virqual.up.pt
- Annex 3: EQF Competences and Assessment Methods

4.3. Step 3 – Recognition of Competences

The competences acquired in virtual courses may be evaluated by HE institutions and companies using the VIRQUAL model. In fact the essential issue is to verify if the assessment methods guarantee the quality of the learning/training. Each HE institution or company can verify, through document analysis, if the competences were verified using proper assessment methods by the teaching or training provider from another country. Currently there is no mechanism to accredit virtual learning recognized by most stakeholders in the EU. What is proposed is a model that matches the different types of competences of EQF with the correct types of assessment methods. Once those conditions are verified it is expected that the learner/trainer has acquired the competences in a virtual environment.

Annex 1: Definitions

<p>Learning outcomes</p>	<p>“Learning outcomes (LOs) describe what a student is expected to know, understand or be able to demonstrate at the end of a course in order to obtain a passing grade. They express a desired state and are often described in terms of knowledge, skills and attitudes” http://www.lut.fi/fi/lut/studies/learningcentre/report/Documents/lo_en.html).</p> <p>Skill: In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).</p> <p>Knowledge: In the context of EQF, knowledge is described as theoretical and/or factual.</p> <p>Competence: In the context of EQF, competence is described in terms of responsibility and autonomy.</p> <p>Attitude/Value: Related to the affective domain, it is a “state of mind or a feeling, a disposition” (A behaviour we adopt under certain circumstances).</p> <p>To know more: http://www.lut.fi/fi/lut/studies/learningcentre/report/Documents/lo_en.html</p>
<p>EQF</p>	<p>European Qualifications Framework</p> <p>The EQF is a common European reference system which will link different countries' national qualifications systems and frameworks together. In practice, it will function as a translation device making qualifications more readable. This will help learners and workers wishing to move between countries or change jobs or move between educational institutions at home.</p> <p>To know more : http://ec.europa.eu/education/pub/pdf/general/eqf/leaflet_en.pdf http://ec.europa.eu/education/pub/pdf/general/eqf/broch_en.pdf</p>
<p>EHEA</p>	<p>Framework for Qualifications of The European Higher Education Area</p> <p>This overarching Framework finds its base on the conclusions of the Berlin conference (September 2003) of the ministers in charge of higher education that said: ‘Ministers encourage the member states to elaborate a framework of comparable and compatible qualifications for their higher education systems, which should seek to describe qualifications in terms of workload, level, learning outcomes, competences and profile. They also undertake to elaborate an overarching framework of qualifications for the European Higher Education Area.’</p> <p>To know more: http://www.bologna-bergen2005.no/Docs/00-Main_doc/050218_QF_EHEA.pdf http://www.ond.vlaanderen.be/hogeronderwijs/bologna/af/overarching.asp</p>
<p>NQF</p>	<p>National Qualification Framework (NQF)</p> <p>The EQF Recommendation formally sets 2010 as the recommended target date for countries to relate their national qualifications systems to the EQF, and 2012 for countries to ensure that individual qualification certificates bear a reference to the appropriate EQF level. The EQF will relate different countries' national qualifications systems and frameworks together around a</p>



**ILO
database**

common European reference.

To know more:

http://ec.europa.eu/education/lifelong-learning-policy/doc/eqf/criteria_en.pdf

The **ILO database** consists of a Moodle database, accessible on www.learning-outcomes.org. It has been developed in the VIRQUAL LLL European project. Entering LO in this database offers the opportunity to Higher Education and Continuing Education institutions to publish intended learning outcomes of their curriculum, at a module level. It is also a way of adding some metadata, namely the position of the module in terms of EQF (European Qualifications Framework,

http://ec.europa.eu/education/pub/pdf/general/eqf/leaflet_en.pdf) or EHEA (Framework for Qualifications of The European Higher Education Area, http://www.bologna-bergen2005.no/Docs/00-Main_doc/050218_QF_EHEA.pdf)

Link to the database: www.learning-outcomes.org

Annex 2: Instructions to Use VIRQUAL ILO Repository

Fields	Explanations
Part A: Module data	Short identification of the module the following ILO (intended learning outcome) is part of.
[01] Name of the module	[01] Name of module as used in corresponding curriculum
[02] ISCED code of the module	<p>[02] The ISCED code (see "Erasmus Subject Code - ISCED classification - https://www.learning-outcomes.org/file.php/2/Erasmus_Subject_Code_-_ISCED_EN.pdf") classifies the subject of learning units (typically of complete programmes). Mostly the ISCED codes of a specific <i>module</i> and the superordinate <i>programme</i> will be the same.</p> <p>But in a significant number of cases there will be a difference, e.g.</p> <ul style="list-style-type: none"> ▪ soft skills modules (09 = Personal Skills) in Engineering programmes (5 = Engineering, Manufacturing and Construction) ▪ mathematics modules (461 = Mathematics) in Business programmes (340 = Business and Administration).
Part B: Details of specific learning outcome	For comparison, development and individual use of specific ILOs it is necessary to be able to find and unambiguously identify them. Additional information will be asked referring to assessment methods.
[03] Fulltext [English]	[03] Fulltext [English]: Wording of the specific ILO as used in corresponding curriculum: in English – translation (from original language) or original text
[04] Fulltext [in original language - if not English]	[04] Fulltext [in original language - if not English]: Leave blank if original language is English
[05] Fulltext [further language/s]	[05] Fulltext [further language/s]: Here is space for translations into any other languages
[06] ISCED code - classifying the learning outcome	<p>[06] The ISCED code (see "Erasmus Subject Code - ISCED classification - https://www.learning-outcomes.org/file.php/2/Erasmus_Subject_Code_-_ISCED_EN.pdf") classifies the subject of learning units (typically of complete programmes). Mostly the ISCED codes of a specific <i>ILO</i> and the superordinate <i>module</i> will be the same.</p> <p>But in a number of cases there will be a difference (similar as with modules and programmes), e.g.</p> <ul style="list-style-type: none"> ▪ mathematical ILOs (461 = Mathematics) in Engineering modules (5 = Engineering, Manufacturing and Construction) ▪ economic ILOS (314 = Economics) in Civil engineering modules (582 = Building and civil engineering)
[07] Domain	<p>[07] Domain: For the purpose of clear identification of ILOs we apply a trinomial classification of the domain of learning outcomes:</p> <ul style="list-style-type: none"> ▪ discipline specific: relevant only in the context of one specific subject – like medical, chemical or psychological knowledge / competences ▪ methodical: knowledge or competence overarching some or many disciplines like research methodology, documentation skills or statistics

	<ul style="list-style-type: none"> ▪ personal / social: all knowledge, skills, attitudes and competences necessary to enable and improve living and working in a social context. <p>(The classification of the domain was adopted from: Tippelt, R. / Mandl, H. / Straka, G. (2003): Entwicklung und Erfassung von Kompetenz in der Wissensgesellschaft – Bildungs- und wissenstheoretische Perspektiven. In: Gogolin, I. / Tippelt, R. (Hrsg.): Innovation durch Bildung. Beiträge zum 18. Kongress der Deutschen Gesellschaft für Erziehungswissenschaft. Opladen, S. 349-369.)</p>
<p>[08] Ability</p>	<p>[08] Ability: For the purpose of clear identification of ILOs we use the EQF classification of learning outcomes – supplemented by attitudes (which still lack in the EQF model):</p> <ul style="list-style-type: none"> ▪ Knowledge: the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual ▪ Skill: the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualifications Framework, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments) ▪ Attitude: “a relatively enduring organisation of beliefs, feelings, and behavioural tendencies towards socially significant objects, groups, events or symbols” (Hogg & Vaughan 2005, p. 150); “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (Eagly & Chaiken, 1993, p. 1) ▪ Competence: the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy. <p>Sources:</p> <p>For knowledge, skill and competence: European Commission: The European Qualifications Framework for Lifelong Learning (EQF), Luxembourg: Office for Official Publications of the European Communities, 2008, ISBN 978-92-79-08474-4.</p> <p>For attitude: Hogg, Michael A. / Vaughan, Graham M. (2005; 4th edition). Social psychology. Harlow: Pearson. Eagly, A.H. / Chaiken, S. (1993). The Psychology of Attitudes, Fort Worth, TX: Harcourt Brace Jovanovich.</p>
<p>[09] EQF level</p>	<p>[09] EQF level: Relevant in our context are only the four academic levels of the EQF:</p> <ul style="list-style-type: none"> 5 – short cycle 6 – bachelor 7 – master 8 – doctor, phd
<p>[10] Level of performance</p>	<p>[10] Level of performance: With reference to competences the intended level of performance might be variable: comparative simple</p>

	<p>competences (e.g.: to develop software solving a simple, well defined problem) can be fully accomplished in a bachelor programme while complex competences (e.g.: to be able to construct a highway bridge) will be developed not further than advanced level in a master programme.</p> <ol style="list-style-type: none"> 1 – Novices are characterised by “rigid adherence to taught rules or plans, little situational perception, no discretionary judgement” 2 – Advanced beginners are able to use “guidelines for action based on attributes or aspects (aspects are global characteristics of situations recognisable only after some prior experience)”, their “situational perception is still limited”, while “all attributes and aspects are treated separately and given equal importance” 3 – Competent persons are ready for “coping with crowdedness” and “conscious, deliberate planning”, they are able to “see actions at least partially in terms of longer-term goals” and to apply “standardised and routinised procedures”. <p>Sources: Dreyfus, Stuart E. & Dreyfus, Hubert L. (1980), A Five-Stage Model of the Mental Activities Involved in Directed Skill Acquisition.</p>
<p>[11] Assessment methods applicable</p>	<p>[11] Assessment methods applicable: Try to classify the methods you use for assessment of this specific learning outcome according to the following list provided by VIRQUAL.</p> <ol style="list-style-type: none"> 1 – Adaptive Test 2 – Chat room 3 – CLOZE Question Type 4 – Collaborative assignments 5 – Concept Map 6 – Discussion Group 7 – Drag-And-Drop Question Type 8 – Drop-Down question type 9 – E-Portfolio 10 – Essay Style Question Type 11 – Game-Based Learning 12 – Gap Fill Question Type 13 – Group Assessment 14 – Hotspot Question Type 15 – Mathematical Question Type 16 – Multiple Choice Question Type 17 – Numeric Response Question Type 18 – Peer Assessment 19 – Role-play 20 – Sequence Response Question Type 21 – Short Answer Question Type 22 – Simulation 23 – Text Matching Question Type 24 – True/false question type



	<p>25 – Website or publication</p> <p>26 – Wiki</p>
Part C: Module details	The following information provides details of the module. It has to be entered only once per module – preferably with the first of its learning outcomes.
[12] Percentage of distance learning [0 - 100% of workload]	[12] Percentage of distance learning [0 - 100% of workload]: to which degree distance learning (e-learning) is scheduled - in % of total workload of students.
[13] Percentage of distance assessment [0 - 100% of total assessment]	[13] Percentage of distance assessment [0 - 100% of total assessment]: to which degree distance assessment (e-assessment) is used - in % of total assessment
[14] Detailed description (rtf file)	<p>[14] Detailed description (rtf file): The core information of the module collected by a template (https://www.learning-outcomes.org/mod/resource/view.php?id=15) with following fields:</p> <p>General Information / Module</p> <ul style="list-style-type: none"> • Title in original language • Erasmus Subject code • ISCED code • Internal code • Web address • Institution: • Name abbreviation • Erasmus ID code • Web address • Study Programme/s • using this module • Module Details • Teaching language/s • ECTS Credits • Total workload (in hours) • Contact hours • Pre-requisites • Module objective • Module content • Applicable Methods • % of distance learning • % distance assessment • Teaching methods • Assessment methods <p>Learning Outcomes</p> <ul style="list-style-type: none"> • #1: English / original language to • #x: English / original language
[15] URL (of module description)	[15] URL (of module description): If there is a module description available in the internet, please enter it here.
[16] Erasmus code –	[16] Erasmus code – classifying the module (see "Erasmus Subject Code - ISCED classification - https://www.learning-outcomes.org/mod/resource/view.php?id=15)



classifying the module	<p>outcomes.org/file.php/2/Erasmus_Subject_Code_-_ISCED_EN.pdf) classifies the subject of learning units (typically of complete programmes). Mostly the Erasmus codes of a specific module and the superordinate programme will be the same.</p> <p>But in a significant number of cases there will be a difference, e.g.</p> <ul style="list-style-type: none"> • soft skills modules (16.0 = Personal Skills) in Engineering programmes (06.0 = Engineering, Technology) • mathematics modules (11.1 = Mathematics) in Business programmes (04.0 = Business Studies, Management Sciences).
[17] Number of module within programme	[17] Number of module within programme: If there is a fixed sequence of modules within a programme – what is the number of this specific module?
Part D: Programme identifier	The following information provides details of the Programme. It has to be entered only once per module – preferably with the first of its learning outcomes.
[18] Title / ISCED code / Erasmus code / URL of programme	[18] Title / ISCED code / Erasmus code / URL of programme: ILO is part of following study programme
[19] Qualification profile of programme	[19] Qualification profile of programme: Qualification profile of study programme above
[20] Title(s) / ISCED code(s) / Erasmus code(s) / URL(s) of further programme(s)	[20] Title(s) / ISCED code(s) / Erasmus code(s) / URL(s) of further programme(s): ILO is part of following further study programme/s
Part E: Information about authors	To be able to understand all entries and modifications / additions it will be valuable to know something about the authoring process.
[21] Date of entry, comments, e-mail address of author(s)	[21] Date of entry, comments, e-mail address of author(s): Who did what, why and when?

Annex 3: EQF Competences and Assessment Methods

Assessment	Adaptable test	Chat room	CLOZE question	Collaborative assignments	Concept map	Discussion group	Drag and drop	Drop down	E-portfolio	Essay style	Game-Based	Gap-fill	Group assessment	Hatspot	Mathematical	Multiple choice	Numeric response	Peer assessment	Role-play	Sequence response	Short answer	Simulation	Text matching	True/false	Website or publication	Wiki
Level 5																										
(K) comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	x		x				x	x		x		x		x	x	x					x		x	x	x	x
(S) a comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems				x						x	x		x				x		x	x		x			x	x
(C) exercise management and supervision in contexts of work or study activities where there is unpredictable change		x		x		x			x		x		x						x							
(C) review and develop performance of self and others	x		x		x				x				x					x							x	x

Assessment	Adaptable test	Chat room	CLOZE question	Collaborative assignments	Concept map	Discussion group	Drag and drop	Drop down	E-portfolio	Essay style	Game-Based	Gap-fill	Group assessment	Hotspot	Mathematical	Multiple choice	Numeric response	Peer assessment	Role-play	Sequence response	Short answer	Simulation	Text matching	True/false	Website or publication	Wiki
	Level 6																									
(K) advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	x		x		x	x	x	x		x		x		x	x	x	x			x	x		x	x	x	x
(S) advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study	x	x		x	x	x			x		x		x						x			x				
(C) manage complex technical or professional activities or projects, taking responsibility for decision making in unpredictable work or study contexts	x	x		x	x	x					x								x			x				
(C) take responsibility for managing professional development of individuals and groups				x	x	x					x		x					x	x			x				

Assessment	Adaptable test	Chat room	CLOZE question	Collaborative assignments	Concept map	Discussion group	Drag and drop	Drop down	E-portfolio	Essay style	Game-Based	Gap-fill	Group assessment	Hotspot	Mathematical	Multiple choice	Numeric response	Peer assessment	Role-play	Sequence response	Short answer	Simulation	Text matching	True/false	Website or publication	Wiki
Level 7																										
(K) highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research	x		x		x				x	x					x	x	x	x	x	x					x	x
(K) critical awareness of knowledge issues in a field and at the interface between different fields					x				x		x							x							x	x
(S) specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	x			x	x	x			x		x							x	x						x	x
(C) manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches					x				x		x		x					x	x						x	x
(C) take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams		x				x			x		x		x					x	x						x	x

Assessment	Adaptable test	Chat room	CLOZE question	Collaborative assignments	Concept map	Discussion group	Drag and drop	Drop down	E-portfolio	Essay style	Game-Based	Gap-fill	Group assessment	Hotspot	Mathematical	Multiple choice	Numeric response	Peer assessment	Role-play	Sequence response	Short answer	Simulation	Text matching	True/false	Website or publication	Wiki
	Level 8																									
(K) knowledge at the most frontier of a field of work or study and at the interface between fields				x	x	x			x	x	x		x					x							x	x
(S) the most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice				x	x	x			x	x			x		x			x				x			x	x

VIRQUAL

Network for integrating Virtual Mobility and European Qualification Framework in HE and CE Institutions

Reference: 143748-PT-KA3NW

Duration: 3 years

Key Activity 3 : ICT / network

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Education
and
Training

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