

The Qualification Dataset Register:  
taking the first steps for sharing data on  
Qualifications and Learning  
Opportunities at a European Level

## Contents

<b>The Qualification Dataset Register: taking the first steps for sharing data on Qualifications and Learning Opportunities at a European Level .....</b>	<b>1</b>
1.1. Introduction .....	3
1.2. Background to the Qualification Dataset Register .....	4
1.2.1 Role of the Qualification Dataset Register .....	4
1.3. Why publish qualification data at a European level using a single format? .....	5
1.3.1 Interoperability .....	5
1.3.2 The importance of open data .....	6
1.3.3 Qualifications and Learning Opportunities as a Public Good.....	6
1.3.4 Single Register with a Unified Standard: Building a network or qualification and learning opportunity databases.....	6
1.3.5 Increased Visibility and Reach .....	7
1.3.6 Supporting the Recognition of Skills and Qualifications in Europe .....	7
1.4. Uses of unified learning opportunity and qualification data .....	7
1.5. Considerations prior to publishing data to the QDR.....	8
1.5.1 Organisational Considerations .....	9
1.5.2 Competencies of the Team.....	11
1.5.3 Quality objectives .....	11
1.6. Use of the European Learning Model .....	12
1.6.1 Map existing data with the ELM .....	12
1.6.2 Next steps .....	15

## 1.1. Introduction

The Qualification Dataset Register (QDR) is a common European database allowing Member States, EQF and Europass countries to publish and share data from their national databases and registries for qualifications and learning opportunities. By gathering data from all countries in a single, comparable format, the QDR promotes the searchability and interoperability of education related data, to help support the recognition of learning in Europe. The [European Learning Model](#) (ELM)<sup>1</sup> is the multilingual data model used for the publication of information in the QDR. It includes all the existing EU level standards for learning and provides a single format for describing learning opportunities or qualifications.

This document, outlining the importance of the publication of interoperable qualifications and learning opportunity data in the Qualification Dataset Register, is targeted at national policymakers, qualifications and learning opportunity professionals, IT experts, and all stakeholders working in the fields of education and training, qualifications, and digital transformation.

Within the context of the QDR, a **learning opportunity** can generally be understood as a specific course (e.g. the Basics of Coding at Learning Centre Y) or educational programme (e.g. a Master's in Political Science at University X) that a person can apply for and/or enrol in. Learning opportunities are always provided by an organisation (e.g. Learning Centre Y or University X), at a distinct place (that can also be online), with a start and end date. A **qualification**, on the other hand, can either refer to the formal outcome of an assessment or validation process from a competent authority resulting from taking part in a learning opportunity (qualification award), or a description, a standard that describes a diploma, certificate or degree, *without* the details of when, where and how the learning took place.

A common repository for qualifications and learning opportunity data is integral to enhance transparency, enabling navigation and comparison of qualifications or learning opportunities, facilitating recognition and more. These databases underpin services like automated guidance systems, digital credentialing systems, and more.

This document aims to provide a background for the need for publishing data to the QDR, as well as an overview of what is required to make data from national databases interoperable and aligned with the European Learning Model. While the QDR has been available as a tool to publish data on qualifications and learning opportunities on Europass since the launch of the new platform in July 2020, and in other forms prior to this date, only a limited number of countries are currently sharing their qualifications and learning opportunities data, while none are yet sharing data on accreditation. With this in mind, this document aims to:

- Position the QDR within the EU policy context.
- Provide an overview of the importance of sharing qualifications and learning opportunities data.
- Outline the benefits and uses of these datasets both within Europass and beyond.
- Summarise the processes that need to be in place to efficiently publish data to the QDR.
- Define the competences required to start the process of mapping national databases to the European Learning Model.
- Provide examples of the first steps of mapping national data to the European Learning Model.

---

<sup>1</sup> [European Learning Model for Stakeholders | Europass](#)

## 1.2. Background to the Qualification Dataset Register

The provision of information about learning opportunities and qualifications in Europass via the QDR is organised to support the effective implementation of the [Europass Decision<sup>2</sup>](#) and the 2017 [European Qualifications Framework \(EQF\) Council Recommendation<sup>3</sup>](#).

The Recommendation invites Member States in accordance with national circumstances to:

*Make the results of the referencing process publicly available at national and Union levels and, where possible, ensure that information on qualifications and their learning outcomes is accessible and published, using the data fields in accordance with Annex VI.*

The data fields specified in Annex VI have been integrated into the European Learning Model – the data model used for providing data on qualifications and learning opportunities within the QDR. Publishing the results of the EQF referencing process centrally and making them available in Europass provides the possibility for a single access point of information on qualifications at a European level.

In addition, the [Europass Decision](#) sets out that the Europass platform shall provide information on qualifications and learning opportunities. Therefore, the data published to the QDR is available to anyone through the ‘[Search Courses and Qualifications](#)’ function on Europass, where portal visitors can browse and compare the learning opportunities and qualifications that have been made available.

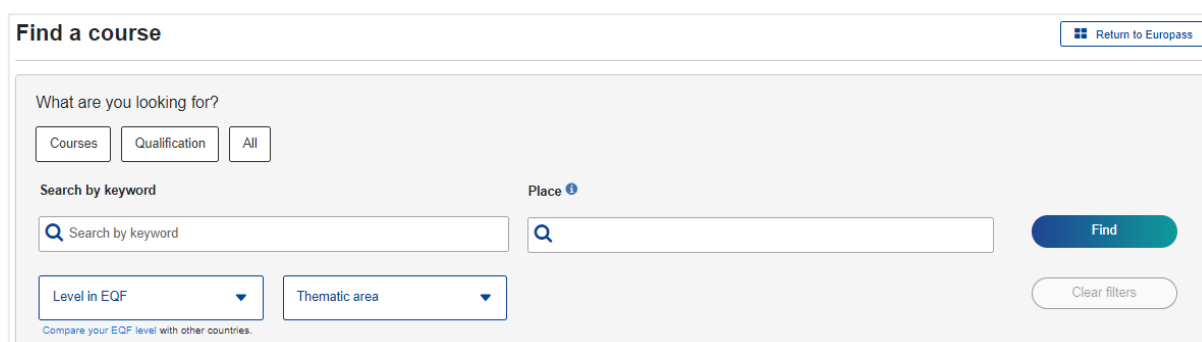
The image shows a screenshot of the 'Find a course' search interface on the Europass platform. At the top right, there is a 'Return to Europass' button. Below it, the main search area is titled 'Find a course'. It features a search bar with a magnifying glass icon and a 'Find' button. To the left of the search bar, there are three buttons: 'Courses', 'Qualification', and 'All'. Below the search bar, there are two dropdown menus: 'Level in EQF' and 'Thematic area'. A 'Clear filters' button is located at the bottom right of the search area. The interface is clean and user-friendly, with a light blue and white color scheme.

Figure 1: ‘Search Courses and Qualifications’ function on Europass

### 1.2.1 Role of the Qualification Dataset Register

The QDR allows providers of data on qualifications, learning opportunities and accreditation, such as ministries of Member States or awarding bodies, to upload datasets of qualifications and learning opportunities in European Learning Model (ELM) format.

The QDR is used to aggregate the data and validate each dataset against the quality criteria set out by the ELM. Once aggregated, the data is made available via the Europass portal. Additionally, the learning opportunities published in the QDR are used for the Course recommendations Europass users can choose to receive in their account.

---

<sup>2</sup> DECISION (EU) 2018/646 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 April 2018 on a common framework for the provision of better services for skills and qualifications (Europass) and repealing Decision No 2241/2004/EC

<sup>3</sup> COUNCIL RECOMMENDATION of 22 May 2017 on the European Qualifications Framework for lifelong learning and repealing the recommendation of the European Parliament and of the Council of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning (2017/C 189/03)

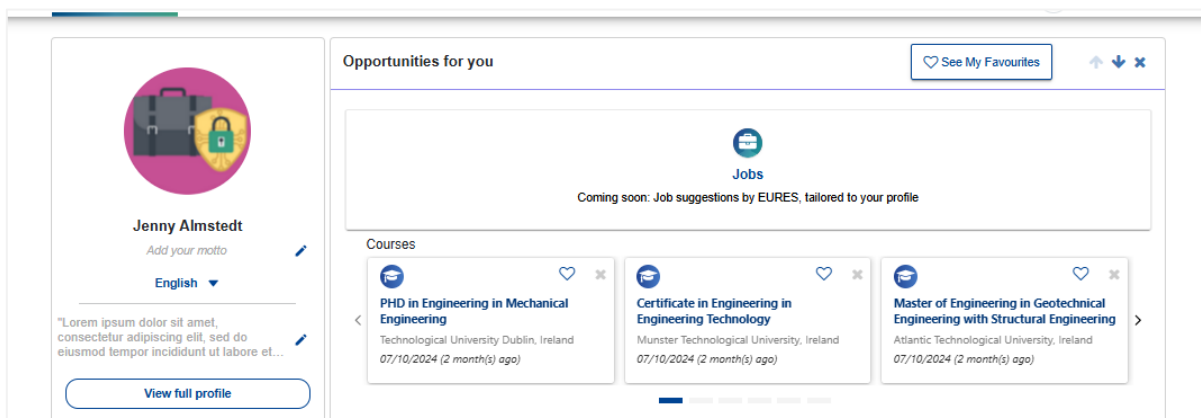


Figure 2: 'My Profile' section in the Europass Portal

While these are the current practical ways the data is utilised, the collection of learning opportunity and qualifications datasets in a common European format has further potential, including providing data for the creation of skills recommender systems, helping the planning of life-long learning and career pathways, and supporting mobility through ease of access to information across countries. Additionally, it provides a source of information for companies, training providers, employment services, guidance counsellors, and credential evaluators on qualifications, learning opportunities, lifelong learning, and job opportunities.

In addition to making the data available on Europass, entities publishing to the QDR agree to make the information from their national databases available as open data. European Commission's policies on open data focus on generating value for the economy and society through the reuse of public sector information (see [Directive \(EU\) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information](#)). In line with this policy, the datasets published in the QDR can be accessed and reused by other interested parties.

### 1.3. Why publish qualification data at a European level using a single format?

#### 1.3.1 Interoperability

The interoperability of qualifications and learning opportunities databases is a crucial advantage in a European learning ecosystem where data is published in a variety of languages, and where there are many different IT systems and data formats used across different subsectors of the educational sector. The value of these databases grows significantly when they can operate seamlessly across countries and languages. Interoperability enables smooth data exchange and use, allowing stakeholders to easily search, link, and compare qualifications and learning opportunities. This supports their identification and comparison, facilitates learning recognition, and promotes the mobility of learners and workers.

The European Learning Model (ELM), the standard format used by the QDR, ensures qualifications and learning opportunities are presented in a uniform and comparable manner, facilitating smoother recognition of skills and learning across Europe:

Figure 3: Example of a learning opportunity record in the Europass portal

Furthermore, interoperability through the use of the ELM enables integration with other relevant datasets, such as learning opportunities, courses, qualification programs, course catalogues, and learning credentials. Therefore, ensuring interoperability is at the core of the QDR.

### 1.3.2 The importance of open data

The growing need for cooperation and collaboration at the European level has increased the demand for sharing and accessing information on national qualifications and learning opportunities databases. Embracing open data principles for publishing learning-related data enhances transparency, drives innovation, and promotes collaboration among public sector organisations. By making data freely accessible and reusable, open data supports interoperability, enabling seamless information exchange between different systems and services. Additionally, it empowers citizens and businesses to leverage valuable public information, fostering economic growth, informed decision-making, and the creation of innovative solutions to societal challenges.

### 1.3.3 Qualifications and Learning Opportunities as a Public Good

Qualifications and learning opportunities databases facilitate numerous use cases, such as helping people better navigate their learning pathways, interpreting and recognising qualifications for employment purposes, or comparing qualifications or courses to inform curricular design. In each case, the databases support essential public policy elements in education and training and employment. As such, there is a strong argument for public support and the provision of this service to support these policies.

### 1.3.4 Single Register with a Unified Standard: Building a network of qualification and learning opportunity databases

The QDR provides a single, centralised repository for data on qualifications and learning opportunities, ensuring that all Member States follow the same format for describing these. This eliminates discrepancies between national systems, simplifies data sharing, and fosters greater cohesion in European education. In addition, being able to consult information on qualifications and learning opportunities in the same format allows for easier comparison between different entries. This may allow a prospective learner, looking for their next opportunity, to better understand and compare two distinct learning opportunities (for instance Master's

programmes in Political Science offered by different universities in their home country or abroad, or VET programmes preparing for similar occupations).

The QDR provides a starting point for a network of qualifications, learning opportunities, and accreditation databases. Such a network would consist of:

- **National databases** in each country aggregate all information on qualifications, learning opportunities and accreditation from diverse sources (different educational levels, both formal and non-formal) and make them available using the European Learning Model as a format, and shareable with other systems.
- **Central network:** the Qualification Dataset Register acts as a central register and service of data from all the national databases, making the structured data available in aggregate format, and providing the building blocks to re-share the whole dataset to other services, as well as making the full data accessible for tailored search to individuals via the Europass platform.
- **Third party interfaces:** organisations (education and training providers, employers, career counsellors, employment services, recognition bodies, public authorities, higher education institutions, researchers, industries, etc) would then be able to build tools that utilise this data.

### 1.3.5 Increased Visibility and Reach

By sharing qualifications and learning opportunities through the QDR, Member States can reach a much wider audience, both within Europe and internationally. Learners from across the continent and beyond can access qualifications and courses via Europass, increasing the visibility of, and level of enrolment in, educational offerings.

### 1.3.6 Supporting the Recognition of Skills and Qualifications in Europe

One of the main goals of the QDR is to promote the recognition of qualifications across Europe. By making national qualifications readily available and comparable, it becomes easier for learners to move between countries for study or work. This aligns with the EU's goal of promoting free movement and creating a highly-skilled, mobile workforce. It also supports the recognition of qualifications in different Member States, and making it easier for individuals to have their skills validated in another country. Member States can benefit from contributing to this register to strengthen the recognition of their qualifications at the European level. The standardised format (ELM) helps ensure that national qualifications are understood and valued across borders and without language barriers, and therefore enhancing employability and educational opportunities for their citizens.

## 1.4. Uses of unified learning opportunity and qualification data

The most basic functionality of the QDR is to **store** information on qualifications and learning opportunities and allow users to be able to search and read the data in the database. Already this basic functionality allows for better services to be developed for students and employers to find authoritative information, and for recognition authorities to improve their processes.

Additional functionalities can be built based on QDR data, once enough data of high enough quality is published. These could potentially become part of the services offered on Europass or developed separately.

- **Comparison** - allows users to select two or more qualifications or learning opportunities from the database, and compare them in terms of location of delivery, programme length, qualifications framework level, thematic area, learning outcomes, assessment methods, and other relevant criteria.
- **Intelligence** - uses big-data analysis to extract trend data from the qualifications, learning opportunities and related skills - mainly for the purpose of education and employment research and

policy-making. It allows for analysis of which subjects are being taught, emerging subjects (and those retiring), skills being taught, changes in skill profiles of courses and much more.

- **Guidance** - suggests personalised learning pathways to users, based on their learning and employment history, or their career aspirations.
- **Digital Credentials** - uses qualification or learning opportunity data to create digital credentials - whereby the qualification or learning opportunity record together with information about the student, their grades and learning make up the metadata of a digital credential.

## 1.5. Considerations prior to publishing data to the QDR

The following check-list provides an overview of the good practices for consideration before starting to publishing data to the QDR. Creating efficient structures at the national level for the collection of learning opportunities and qualifications data and the management of the national database provide the necessary environment for the successful sharing of information to the QDR.

The points below may serve as inspiration for the steps to take as a starting point.

	Main recommendation	Guidelines on implementation
Organisational	Document business processes	<ul style="list-style-type: none"> <li>• Create clear and comprehensive documentation of business processes (i.e., structured organisational procedures) within the relevant databases-registers;</li> <li>• Record activities, workflows, and procedures related to managing qualifications, learning opportunities, and metadata;</li> <li>• Serve as a reference point for stakeholders to identify inefficiencies, redundancies, and areas for improvement in database operations.</li> </ul>
	Aligning business processes	<ul style="list-style-type: none"> <li>• Establish clear objectives and outcomes for collaboration in line with each organisation's overall goals;</li> <li>• Identify integration points and gaps to align or integrate processes;</li> <li>• Develop and implement adjusted processes to bridge gaps, ensuring stakeholder understanding and agreement on changes made.</li> </ul>
	Distributed and centralised data collection	<ul style="list-style-type: none"> <li>• Consider the option of a distributed or centralised approach for collecting and managing information (when publishing to the QDR this can entail choosing a single organisation to publish all data, or alternatively using the delegation option to allow other stakeholders to publish their data directly);</li> <li>• Understand that the chosen model affects interoperability, efficiency, and effectiveness;</li> <li>• Evaluate the trade-offs between autonomy and control in a distributed model versus streamlined implementation and maintenance in a centralised model.</li> </ul>

	Involve competent teams	<ul style="list-style-type: none"> <li>• Develop data management skills for effective management of the database;</li> <li>• Improve communication abilities to facilitate collaboration across organisations;</li> <li>• Gain proficiency in business process modelling and technical expertise for efficient training system operations.</li> </ul>
	Enhance commitment to quality	<ul style="list-style-type: none"> <li>• Ensure accuracy and up-to-datedness of the databases;</li> <li>• Promote accessibility and interoperability for seamless data exchange;</li> <li>• Support scalability and alignment with organisational goals, enabling efficient sharing and comparison of qualification data;</li> <li>• Explore the properties available in the European Learning Model to ensure the availability of mandatory data and assess the possibilities for including additional informative data beyond the minimum required.</li> </ul>
Semantic	Treat data and information as valuable assets	<ul style="list-style-type: none"> <li>• Implement an information management strategy to handle valuable assets effectively;</li> <li>• Establish agreements on reference data for semantic interoperability;</li> <li>• Utilise data-driven design and linked data technologies to enhance semantic interoperability and foster stakeholder collaboration.</li> <li>• Promote the collection of detailed/granular data on qualifications and learning opportunities to aggregate rich datasets;</li> </ul>
	Use the European Learning Model (ELM)	<ul style="list-style-type: none"> <li>• Implement an information management strategy to ensure data is appropriately generated, collected, managed, shared, protected, and preserved;</li> <li>• Adopt the European Learning Model (ELM) as an interoperability solution to improve education and qualifications systems and reduce barriers to mobility and minimise the need for conversion.</li> </ul>
	Consider interconnectedness with <a href="#">ESCO</a> , Credit Systems, Qualification Frameworks	<ul style="list-style-type: none"> <li>• Use ESCO as a reference to align learning outcomes and qualifications in the ELM, improving transparency and comparability;</li> <li>• Where relevant link qualifications to occupations, utilise credit systems to support lifelong learning and career advancement.</li> </ul>

### 1.5.1 Organisational Considerations

Organisations need to integrate or align their workflows and practices to work together effectively to provide data to the QDR. Depending on national circumstances, it may be that the data to be published is already available in a single database or divided into different ones (for instance separate qualifications databases for higher education or vocational education and training, or separate registries of learning opportunities focused

on different target groups). Therefore, organisations should strive to document the various existing processes and make sure that everyone agrees on using commonly accepted techniques, and everyone understands their role.

Mutual assistance, joint action, and interconnected business processes should be formalised to ensure transparent relationships between data providers. This can be done through instruments such as Memorandums of Understanding (MoUs) and Service Level Agreements (SLAs). Different aspects of such collaboration are described below.

## Document Business Processes

Business processes refer to structured organisational procedures – a series of related and organised tasks or activities designed to achieve a specific outcome. Each process is composed of defined steps, roles, inputs, and outputs that function together cohesively.

When documenting business processes for publishing data to the QDR, it is essential to create a clear, concise, and detailed record of the workflows, activities, and procedures related to managing qualifications, learning opportunities, learning outcomes, and associated metadata. Comprehensive documentation acts as a key reference for stakeholders, enabling the identification of inefficiencies, redundancies, and areas for improvement. Moreover, it facilitates communication and collaboration across organisations by providing a shared understanding of processes, ensuring data is kept up-to-date and published in a timely manner.

Several recognised modelling techniques, such as e.g. Business Process Model and Notation (BPMN), Unified Modelling Language (UML) or straightforward flowcharts, can be utilised to document and standardise business processes for better collaboration. Although organisational processes vary between implementations and are shaped by national contexts, core processes must be established and clearly documented for any use case.

## Standardisation and Documentation

While qualifications or learning opportunities can be documented in many formats depending on users' needs, to be published via the QDR they will need to be made available in ELM compliant XML (using the Learning Opportunities and Qualifications – LOQ- application profile). If the qualifications and learning opportunities are currently provided in a different format – the first step will be to map the existing qualifications and/or learning opportunities data to the ELM. Once the mapping has been completed, the output will typically be a full template for a qualification and/or learning opportunity that can be reused as a model for future additions or shared with other organisations within the country that would need to complete the mapping process.

Such a process typically includes filling in information about the qualifications using standardised templates and tagging them with metadata such as European/national qualifications frameworks levels, learning outcomes, language of the qualification, etc. The output of the process is typically a completed qualifications template.

## Quality Control

Quality control is essential to ensure that the data available through the QDR is usable both for end-users in Europass and as full datasets. This involves using a mixture of human and automated checks to ensure that qualifications and learning opportunities sent to the QDR for publication meet all the criteria for publication. These will include:

- Format & completeness checks, such as ensuring that all required information is provided,
- Content checks, such as ensuring that descriptions are complete, grammatically correct and easily legible,
- Similarity checks to check whether qualifications or learning opportunities are new, updates to existing qualifications, or replacements of existing qualifications or learning opportunities,

- Official checks include ensuring that all approvals have been gained before publication.

## Publication

The publication process involves the management of the tools required to collect the outputs from all the steps described above digitally, assign identifiers to the outputs, record those outputs in a single database (or dataset to be published in the QDR), and make the qualifications available to the general public. The output of the process is the published dataset in the QDR. The QDR manual available online<sup>4</sup> provides detailed information on the publication process itself.

## Issue-Management

There are multiple scenarios under which data provided to the QDR may prove to be incorrect or outdated. Reasons could include a human error in any of the processes described above, a change in circumstances (such as the closing of an institution offering a qualification), updating of reference classifications and much more. Therefore, it is necessary to have a process in place to deal with ad-hoc corrections to data. These issues should then be analysed individually or collectively and, where necessary, investigated, leading to recommendations for changes to the data or processes that are then implemented. The output of the process is the decisions on how to handle each issue.

### 1.5.2 Competencies of the Team

Successfully publishing meaningful datasets for learning opportunities or qualifications to the QDR relies heavily on the teams' competences. It is vital to assemble a team with diverse skill sets to ensure effective collaboration, seamless data exchange, and efficient management of the data.

Critical competences for a team working on the data to be published in the QDR include:

- **Understanding of education and training systems:** familiarity with the national education and training landscape, as well as the specific organisation, is vital for ensuring the relevance and accuracy of the data.
- **Data management:** knowledge of data collection, structuring, storage, and analysis techniques is essential for managing the qualifications database and ensuring data consistency and integrity.
- **Inter-organisational communication:** strong communication skills are necessary for fostering collaboration and maintaining clear lines of communication among stakeholders from different organisations and countries.
- **Business process modelling:** team members should have expertise in documenting and aligning business processes using accepted modelling techniques, which is crucial for seamless collaboration between organisations.

### 1.5.3 Quality objectives

A commitment to quality must underpin the collection and publication of the data to the QDR. This involves setting clear quality objectives that define the desired outcomes and performance standards for the collaboration. Quality objectives should be measurable, achievable, and aligned with the organisation's overall goals in developing and managing the qualifications and learning opportunities data.

Examples of quality objectives include:

---

<sup>4</sup> <https://europass.europa.eu/en/stakeholders/qdr>

- **Accuracy to the European Learning Model:** ensure the data adheres to a common data model, promoting consistency and comprehensive data exchange between regions and countries.
- **Up-to-datedness:** regularly update and maintain the data to reflect the most current information on qualifications, learning opportunities, learning outcomes, and associated metadata.
- **Scalability:** ensure that the organisational system can accommodate future growth (e.g. incorporation of non-formal learning opportunities, micro-credentials, etc.), new participants, or changing requirements without compromising performance or quality.
- **Data-richness:** make efforts to create as detailed datasets as possible to gather meaningful and useful data for end-users.

Organisations can enhance the interoperability and overall quality of qualifications databases by focusing on these quality objectives. This, in turn, contributes to improving education and training systems, supports the recognition of learning outcomes, and facilitates the mobility of learners and workers.

## 1.6. Use of the European Learning Model

Most organisations working with education and skills data use different data models to describe information on qualifications, learning opportunities, programmes, providers, learning outcomes, assessment, and quality assurance processes. This makes it very difficult to compare information and link different data sets.

Therefore, the European Learning Model (ELM) as developed by the European Commission to allow a common standard for comparing and linking data across multiple use cases. It results from ten years of work involving merging different overlapping models, harmonising terms with existing vocabularies and developing new multilingual vocabularies where they did not exist, and testing terms for appropriateness and cross-border understanding and utility across more than 20 countries and 29 languages.

The ELM is the linked open data format in which data is published to the QDR. It provides a common framework for learning opportunities and qualifications, which helps to ensure that educational achievements are recognised across different countries and sectors.

The model encourages a focus on learner-centred approaches by emphasising the comprehensive description of learning outcomes and skills. It incorporates multiple vocabularies, in particular ESCO (the European Skills, Competences and Occupations Framework), which is used in the ELM as a reference to enrich learning outcomes and qualifications and learning opportunities, thus improving transparency and comparability. This also helps to link qualifications and learning opportunities with skills and occupations demanded in the labour market.

The recently released ELM v3<sup>5</sup> implements an ontology-based approach, allowing for the creation of knowledge graphs and enhancing AI models for skills assessment, learning pathway, and job recommendations. The model is available in all EU-27 + EEA languages. The ontology-based approach also allows countries to create their own customised applications of the profile - for example, selecting a core set of 20-40 properties from the over 800 on offer to specify their own national profiles.

ELM v3 offers numerous benefits, including long-term support, interoperability with other models and frameworks (e.g. EQF, ESCO, ISCED-f), alignment with policy developments, and free issuance of European Digital Credentials for Learning.

### 1.6.1 Map existing data with the ELM

From a technical perspective, publishing data to the QDR using the European Learning Model (ELM) requires a mapping of countries' existing data with the ELM properties. The mapping process involves identifying and

---

<sup>5</sup> [Launch of the European Learning Model | Europass](#)

aligning the relevant concepts in your education and training systems with the corresponding ELM concepts<sup>6</sup>. This can include mapping the qualification levels, fields of education, learning outcomes and related skills, and other relevant information to the corresponding properties in the ELM.

An example of mapping the concept of a learning outcome is provided below<sup>7</sup>. This process would need to be repeated for every property for which you would want to record data:

Information level

**LEARNING OUTCOME**

“I want to include this information”

↓ mapped to ELM ↓

Data level

Property name	URI	Expected value	Card.	Description
Title	dc:title	rdf:langString	1..*	A name given to the resource.
Type	dc:type	Concept	0..1	The nature or genre of the resource.
identifier	adms:identifier	elm:Identifier or elm:LegalIdentifier	0..*	Links a resource to an adms:identifier class.
more information, additional note	elm:additionalNote	Note	0..*	An additional free text note., An additional free text note about the quality assurance or licensing of an organisation or a qualification.
related ESCO skill(s), related ESCO skill	elm:relatedESCOskill	Concept	0..*	A link to an ESCO Skill., A link to an ESCO skill. If provided, the value must come from the ESCO classification's skill pillar ( <a href="http://data.europa.eu/esco/skill">http://data.europa.eu/esco/skill</a> ).
related skill, related skill(s)	elm:relatedSkill	Concept	0..*	A link to a related skill or the level of a related skill on a skill framework (except ESCO). If provided, the value should come from a controlled vocabulary., A link to a related skill or the level of a related skill on a skill framework (except ESCO).

“I want to use a standardised format to store this information”

↓ data elements (title) mapped to interface ↓

Interface level

“I want to display this data on a web portal”

<sup>6</sup> ELM consist of classes, their properties and associations between classes. Properties and associations can be compulsory (and have [1] cardinality). See the description of the ELM concepts and corresponding properties on the [ELM Browser](#).

<sup>7</sup> See the description of the concept of a learning outcome, corresponding properties and associations in the ELM on the [ELM Browser](#).

Figure 4: ELM mapping exercise example with the concept of a learning outcome

Once the data fields have been aligned with the ELM properties, countries can use the ELM standard formats and schemas to ensure the data is semantically interoperable. This involves developing a vocabulary and schema to describe this mapping ensuring that all communicating parties understand data elements in the same way.

Below is an example of business-level mapping that can be established using spreadsheet software. Such a mapping file can then be communicated to the technical team to encode it into specific programming notation.

### National Database structure

National database structure		
Class	Property	Example
d:kvalifikace	d:nazev	Dispečer silniční dopravy
d:kvalifikace	d:kod	37-055-M
d:kvalifikace	d:uroven	4
d:kvalifikace/d:autorizujici	d:nazev	Ministerstvo dopravy
d:zkouska/d:kompetence	d:nazev	Kalkulace ceny přepravy
d:kvalifikace/d:platnost	d:do	20.10.2022
d:kvalifikace/d:povolani_nsp	d:nazev	Dispečer silniční dopravy

### ELM mapping<sup>8</sup>

ELM mapping		
Class	Property	Example
qualification	title	Dispečer silniční dopravy
qualification/identifier	notation	37-055-M
qualification/NQFLevel	uri	4
qualification/accreditation/accreditingAgent	legalName	Ministerstvo dopravy
qualification/learningOutcome	title	Kalkulace ceny přepravy
qualification/accreditation	expiryDate	20.10.2022
qualification/entitlesTo/limitNationalOccupation	prefLabel	Dispečer silniční dopravy

<sup>8</sup> See the description of the concept of a qualification, corresponding properties and associations in the ELM on the [ELM Browser](#).

National database structure		ELM mapping	
Class	Property	Class	Property
d:kvalifikace	d:nazev	qualification	title
d:kvalifikace	d:kod	qualification/identifier	notation
d:kvalifikace	d:uroven	qualification/NQFLevel	uri
d:kvalifikace/d:autorizujici	d:nazev	qualification/accreditation/accreditingAgent	legalName
d:zkouska/d:kompetence	d:nazev	qualification/learningOutcome	title
d:kvalifikace/d:platnost	d:do	qualification/accreditation	expiryDate
d:kvalifikace/d:povolani_nsp	d:nazev	qualification/entitiesTo/limitNationalOccupation	prefLabel

To facilitate the mapping process, it may be necessary to establish common standards and guidelines for data exchange and develop tools and resources to support data mapping and alignment. This may involve the creation of data dictionaries or the development of software tools to automate the mapping/conversion process. Additionally, it can be useful to make use of the QDR Futurium group to share best practices and promote the adoption of common standards and frameworks for data exchange. The QDR Futurium group is a closed network for entities publishing or looking to publish data to the QDR to ask questions and share best practices. If you are not yet included in the Futurium group and would like to be, please contact [EMPL-ELM-SUPPORT@ec.europa.eu](mailto:EMPL-ELM-SUPPORT@ec.europa.eu) for further information.

## 1.6.2 Next steps

To start the publishing process, we invite you to refer to the [QDR Manual](#). For any further questions, or access to the QDR, please contact: [EMPL-ELM-SUPPORT@ec.europa.eu](mailto:EMPL-ELM-SUPPORT@ec.europa.eu). Countries are responsible for appointing one organisation responsible for submitting qualifications and one for submitting learning opportunities to be accessible through the Europass platform. Therefore, only authorised users will be able to access the environment of QDR to upload data.