



EntreComp

ECI - EntreComp Implementation

Develop implementation tools and training content for European education systems for the introduction of the "EntreComp" competence framework to promote entrepreneurship

Assessment and Cross-References of the EntreComp with ESCO and EQF (Intellectual Output 2 – ECI Implementation)

DATE: AUGUST 2020

This project has been funded with support from the European Commission. This document reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



About this document

The “ECI – EntreComp Implementation” Erasmus+ project aims to operationalise the “EntreComp” Framework by developing implementation tools and training content for the European Vocational Education and Training (VET) systems adopting “EntreComp” in operational environments and promote entrepreneurship.

In 2016, the EU Commission developed the “EntreComp” competence framework for entrepreneurial skills to propose a common definition of entrepreneurship as competence, to build consensus among stakeholders and to build a bridge between education and work.

The following paragraphs represent a joint effort to cross-reference the EntreComp Framework with ESCO (the classification of European Skills, Competences, Qualifications and Occupation) and EQF (European Qualifications Framework); a bond that the literature review – finalised during the development of the National Reports – proved to be highly consistent but still tangibly missing and not fully exploited.

The ultimate objective of this desk assessment is to establish an initial and operational connection between the EntreComp framework and the other two’s allowing partners to operationalise a new model – the **ECI** model – for entrepreneurship valorisation and mainstreaming of entrepreneurial spirits across the VET dimension.

Each of the 6 competences selected by the partnership has been reconducted to a specific dimension, field and theoretical/operational setting of both ESCO and EQF, highlighting the different compliances by degree of consistency.

We evaluated this degree by balancing each ESCO and EQF unit to the main and defining traits of each considered EntreComp competence as described¹ by the same EU Joint Research Centre:

1.2 Creativity: *Develop creative and purposeful ideas*

- Develop several ideas and opportunities to create value, including better solutions to existing and new challenges
- Explore and experiment with innovative approaches
- Combine knowledge

1.5 Ethical and sustainable thinking: *Assess the consequences and impact of ideas, opportunities and actions*

- Assess the consequences of ideas that bring value and the effect of entrepreneurial action on the target community, the market, society and the environment
- Reflect on how sustainable long-term social, cultural and economic goals are, and the course of action chosen
- Act responsibly

2.1 Self-awareness and self-efficacy: *Believe in yourself and keep developing*

- Reflect on your needs, aspirations and wants in the short, medium and long term

¹ EntreComp: The Entrepreneurship Competence Framework, JRC Science for Policy Report, EU Commission, 2016. Table 1, pp. 12 – 13 (<https://publications.jrc.ec.europa.eu/repository/bitstream/JRC101581/lfna27939enn.pdf>)



- Identify and assess your individual and group strengths and weaknesses
- Believe in your ability to influence the course of events, despite uncertainty, setbacks and temporary failures

2.5. Mobilizing others: *Inspire, enthuse and get others on board*

- Inspire and enthuse relevant stakeholders
- Get the support needed to achieve valuable outcomes
- Demonstrate effective communication, persuasion, negotiation and leadership

3.1 Taking the initiative: *Go for it*

- Initiate processes that create value
- Take up challenges
- Act and work independently to achieve goals, stick to intentions and carry out planned tasks

3.3 Coping with uncertainty, ambiguity and risk: *Make decisions dealing with uncertainty, ambiguity and risk*

- Make decisions when the result of that decision is uncertain, when the information available is partial or ambiguous, or when there is a risk of unintended outcomes
- Within the value-creating process, include structured ways of testing ideas and prototypes from the early stages, to reduce risks of failing
- Handle fast-moving situations promptly and flexibly

What we observed reflects and confirms our previous expectations: the *natural* emergence of numerous intersections between the EntreComp and the other two frameworks, which allows us to valorise the first not only as a precious model to boost and nurture a common European sense of entrepreneurial initiative, but also a concrete self-assessment mean for occupational/employability profiling.

It is important to mention that, the great emphasis reserved to such practical-oriented frame, has not prevented partners from ignoring or underestimating the need for an academic method applied to the research, still highly relevant for the pedagogical priority associated to the task: the result that you will see below came from intense brainstorming and problem-shooting sessions, assisted also by the informal consultation of external experts in the domain of education and training.

Partners canalised their focus on existing literature, policy papers, analysis and diagnostics on entrepreneurship, skill sets and needs, capacity building needs, etc. to assure coherence in the consolidation of all findings regarding each selected competence.

The approach adopted by partners is highly practical-oriented and considers the Vocational Education and Training perspective as main assumption in all its multiple facets. This allowed the Consortium to exploit the (self) employability potential within the EntreComp for the social and economic benefits of the targets as identified by the ECI project.

The complete finalisation of this cross-reference effort is not a stand-alone activity and it will represent the rational and theoretical baseline for the implementation of Intellectual Output 3, when partners will develop training tools and contents to mainstream and operationalise the **ECI** model itself as a means to boost entrepreneurial culture and education.



Summary

Introduction:.....	5
ESCO/EntreComp cross-assessment: Preliminary Considerations.....	6
ESCO/EntreComp cross-assessment: Skills/Competences.....	7
ESCO/EntreComp cross-assessment: Occupations	16



Introduction

When we started to research for tangible references to EQF and ESCO in the official EntreComp framework publication², results have been quite disappointing: respectively, the EQF found only two citations and both in the context of the glossary – one defining *Knowledge*, the other defining *Skills*. Also, there is no evidence whatsoever of an ESCO mention.

Regarding the last one, there is even a more significant trend to bring into attention: ESCO is deeply impacted by multiple EU classifications/frameworks³, but EntreComp still not appears in the overall conversation. This suggested us that maybe, as later proved, even though not recognised as formal assumption, EntreComp can still play a core role in navigating ESCO from a different perspective.

On the other hand, EQF embraces EntreComp as a whole, dictating an assessment grill of competences and skills intentionally broad and “vague” so to make it easily approachable in as many contexts as possible. In fact, as soon as we move towards the most sophisticated layers of EQF, it seems that more and more EntreComp competences are potentially relatable – especially for those EQF levels that imply complex thinking oriented towards relation and emotionally-intelligent decision making.

While diving into our cross-assessment efforts, we realised the great opportunity to explore and highlight hidden mutual references that stand out as a common ground of discussion. From there we decided to further exploit the most significant contributions from all of the three frameworks, combining and integrating their respective resources and shared narratives when highly relevant.

From a training perspective, it is very interesting to notice the different mindsets that each of the cross-reference effort required: while the EQF-EntreComp assessment seemed to be more of a benchmarking exercise, the ESCO-EntreComp cross-evaluation appeared like drafting a connection map that relates each EntreComp competence to an occupation/skill (competence) counterpart.

Such binomial approach has been legitimated by the intrinsic nature of the two considered frameworks: EQF has the primary characteristic of being expressly generic so to accommodate any skill/competence that is susceptible to classification; ESCO follows a completely opposite logic, working as a sort of encyclopaedia of professional occupations and qualifications relevant for the EU labour market, self-empowerment, employability and training.

² EntreComp: The Entrepreneurship Competence Framework, JRC Science for Policy Report, EU Commission, 2016

³ - International Standard Classification of Occupations (ISCO)

https://ec.europa.eu/esco/portal/escopedia/International_Standard_Classification_of_Occupations_40_ISCO_41

- Statistical classification of economic activities in the European Community (NACE)

https://ec.europa.eu/esco/portal/escopedia/Statistical_classification_of_economic_activities_in_the_European_Community_40_NACE_41

- European Qualifications Framework (EQF)

https://ec.europa.eu/esco/portal/escopedia/European_Qualifications_Framework_40_EQF_41

- International Standard Classification of Education (ISCED)

https://ec.europa.eu/esco/portal/escopedia/International_Standard_Classification_of_Education_58_Fields_of_Education_and_Training_2013_40_ISCED-F_41

- European e-Competence Framework (e-CF)

https://ec.europa.eu/esco/portal/escopedia/European_e-Competence_Framework_40_e-CF_41

- European Digital Competence Framework for Citizens (DigComp)

https://ec.europa.eu/esco/portal/escopedia/European_Digital_Competence_Framework_for_Citizens_40_DigComp_41



ESCO/EntreComp cross-assessment: Preliminary Considerations

Before getting into the cross-assessment results, it is important to break-down the basics of the ESCO structure and the methodology that we applied to go through it.

According to the official definition⁴:

ESCO (European Skills, Competences, Qualifications and Occupations) is the European multilingual classification of Skills, Competences, Qualifications and Occupations [...] The aim of ESCO is to support job mobility across Europe and therefore a more integrated and efficient labour market, by offering a “common language” on occupations and skills that can be used by different stakeholders on employment and education and training topics.

The most updated ESCO version ([ESCO 1.0.7](#))⁵ gathers and displays a total of:

- 2,942 Occupations
- 10,583 Skills/Competences
- 2,902 Knowledge (formally integrated under the Skills/Competences tag)

Along with **Qualifications**; **Skills/Competences** and **Occupations** account for the three main pillars of the framework itself. Our analysis took into consideration the opportunity to frame the EntreComp with the last twos.

We deliberately decided to set aside the parallel evaluation with the “Qualifications” pillar because of the impracticality of the task: *Qualifications are the formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards*⁶, in other words, there is not a coordinated taxonomy or a formal cluster of Qualifications that would allow us to cross any potential reference with the EntreComp.

The biggest challenge that we faced was related to the impressive amount of variables to take into consideration. Because of the number of Skills/Competences and Occupations formally listed by ESCO, we had to find a way to restrict the sample without posing any prejudice to the quantitative and qualitative relevance of the sample itself.

We managed to balance our research between two different needs: being as specific, systemic and accurate as possible, maximizing time and efforts and without getting lost in the branches of the framework.

To do so, we relied on the same ESCO structure: to get to each Skills/Competence or Occupation out of the tens of thousands available, the user must navigate through a series of categories and sub-categories; in other words, each unit (i.e. the single Occupation) belongs to a cluster which is in turn included in a larger category itself.

We exploited this “Onion Architecture” in our favour, limiting the perimeter of the analysis to a certain level of classification so that:

- Skills/Competences have been reduced to 96 units
- Occupations have been reduced to 130 units

⁴ “What is ESCO?” (web link: <https://ec.europa.eu/esco/portal/howtouse/21da6a9a-02d1-4533-8057-dea0a824a17a>)

⁵ Last update: 03.07.2020

⁶ Qualifications: A Definition from ESCO (<https://ec.europa.eu/esco/portal/qualification>)



ESCO/EntreComp cross-assessment: Skills/Competences

As shown below, Skills/Competences pillar is further structured in four others sub-pillars. For the purpose of this research, we preferred to stick only to the first and the fourth (Attitudes and Values, Skills) because of their greater relevancy in comparison with the EntreComp⁷.

I) Attitudes and Values: “Individual work styles, preferences and work-related beliefs that underpin behaviour so that knowledge and skills are applied effectively”⁸

Attitudes

A1.0 – attitudes

A1.1 – adapting to changes

A1.2 – paying attention to details

A1.3 – paying attention to hygiene

A1.4 – stress management

A1.5 – risk and uncertainty management

A1.6 – curiosity

A1.7 – enthusiasm

A1.8 – demonstrating willingness to learn

A1.9 – people engagement

A1.10 – managing frustration

A1.12 – managing quality

- A1.12.0 - manage quality
- A1.12.1 - assure quality of processes and products
- A1.12.2 - apply quality standards
- A1.12.3 - provide high quality client service

A1.13 – respecting commitments

- A1.13.0 - meet commitments
- A1.13.1 - meet deadlines and follow schedules
- A1.13.2 - assume responsibility
- A1.13.3 - stay within budget

A1.14 – perseverance

A1.15 – efficiency and effectiveness

A1.16 – working independently

Values

A2.0 – values

A2.1 – empathy

A2.2 – good manners

A2.3 – ethical conduct

II) Knowledge: further explored according to specific labour market/sectors

III) Linguistic competences and knowledge: between classical and modern

IV) Skills:

⁷ Furthermore, “Linguistic competences and knowledge” is also a skill itself (S1.15) and we treaded as such. While “Knowledge” taxonomy as a whole might be conceived as fundamentally integrated among skills, Attitudes and Values.

⁸ Attitudes and Values: A Definition from ESCO (<https://ec.europa.eu/esco/portal/skill>)



S1 – Communication, collaboration and creativity

S1.0 – communication, collaboration and creativity

S1.1 – negotiation

- S1.1.0 - negotiation
- S1.1.1 - negotiating and managing contracts and agreements
- S1.1.2 - mediating and resolving disputes
- S1.1.3 - responding to complaints

S1.2 – networking and relationship management

- S1.2.0 – Liaising & Networking
- S1.2.1 - coordinating activities with others
- S1.2.3 - developing professional relationships or networks
- S1.2.4 - advocating for individual or community needs

S1.3 – teaching and training

- S1.3.0 - teaching and training
- S1.3.1 - teaching academic or vocational subjects
- S1.3.2 - teaching safety procedures
- S1.3.3 - training on operational procedures
- S1.3.4 - training on health or medical topics
- S1.3.5 - coaching and mentoring

S1.4 – public speaking and reasoning

- S1.4.0 - presenting information
- S1.4.1 - presenting general information
- S1.4.2 - presenting research or technical information
- S1.4.3 - presenting information in legal proceedings

S1.5 – mentoring

- S1.5.0 - advising and consulting
- S1.5.1 - advising on legal, regulatory or procedural matters
- S1.5.2 - providing financial advice
- S1.5.3 - advising on products and services
- S1.5.4 - providing medical advice
- S1.5.5 - advising on environmental issues
- S1.5.6 - advising on design or use of technologies
- S1.5.7 - advising on business or operational matters
- S1.5.8 - advising on educational or vocational matters
- S1.5.9 - advising on workplace health and safety issues

S1.6 – promoting and selling

- S1.6.0 - promoting, selling and purchasing
- S1.6.1 - selling products or services
- S1.6.2 - promoting products, services, or programs
- S1.6.3 - purchasing goods or services

S1.7 – gathering information

- S1.7.0 - obtaining information verbally
- S1.7.1 - interviewing
- S1.7.2 - engaging with others to identify needs
- S1.7.3 - listening and asking questions

S1.8 – working with others

- S1.8.0 - working with others
- S1.8.1 - working in teams
- S1.8.2 - giving instructions
- S1.8.3 - giving feedback
- S1.8.4 - accepting feedback
- S1.8.5 - following instructions and procedures
- S1.8.6 - assisting and supporting co-workers

S1.9 – problem solving

- S1.9.0 - solving problems
- S1.9.1 - developing solutions
- S1.9.2 - implementing new procedures or processes

S1.11 – systems and product design

- S1.11.0 - designing systems and products
- S1.11.1 - designing ICT systems or applications
- S1.11.2 - designing electrical or electronic systems or equipment
- S1.11.3 - developing recipes or menus



- S1.11.4 - designing structures or facilities
- S1.11.5 - designing industrial materials, systems or products
- S1.12 – creating artistic, visual or educational materials
 - S1.12.0 - creating artistic, visual or instructive materials
 - S1.12.1 - creating visual displays and decorations
 - S1.12.2 - developing instructive or promotional materials
 - S1.12.3 - creating artistic designs or performances
- S1.13 – writing and composing
 - S1.13.0 - writing and composing
 - S1.13.1 - composing music
 - S1.13.2 - artistic and creative writing
 - S1.13.3 - technical or academic writing
- S1.14 – performing and entertaining
 - S1.14.0 - performing and entertaining
 - S1.14.1 - practising sports
 - S1.14.2 - performing artistic or cultural activities
 - S1.14.3 - conducting gaming activities
- S1.15 – proficiency in other languages
 - S1.15.0 - using more than one language
 - S1.15.1 - using foreign languages
 - S1.15.2 - translating and interpreting

S2 – Research and Analytical thinking

S2.0 – information skills

S2.1 – surveys and assessments

- S2.1.0 - conducting studies, investigations and examinations
- S2.1.1 - conducting investigations
- S2.1.2 - diagnosing health conditions
- S2.1.3 - interpreting technical documentation and diagrams

S2.2 – storing and recording information

- S2.2.0 - documenting and recording information
- S2.2.1 - preparing financial documents, records, reports, or budgets
- S2.2.2 - recording legal information
- S2.2.3 - preparing documentation for contracts, applications, or permits
- S2.2.4 - maintaining or preparing medical documentation
- S2.2.5 - maintaining operational records
- S2.2.6 - documenting technical designs, procedures, problems or activities
- S2.2.7 - reporting incidents and defects

S2.3 – managing information

S2.4 – processing information

- S2.4.0 - processing information
- S2.4.1 - gathering information from physical or electronic sources
- S2.4.2 - entering and transforming information

S2.5 – measuring physical properties

- S2.5.0 - measuring physical properties
- S2.5.1 - measuring dimensions and related properties
- S2.5.2 - weighing

S2.6 – calculations and estimations

- S2.6.0 - calculating and estimating
- S2.6.1 - performing calculations
- S2.6.2 - determining values of goods or services
- S2.6.3 - estimating resource needs

S2.7 – analysing and evaluating information and data

- S2.7.0 - analysing and evaluating information and data
- S2.7.1 - assessing land or real estate
- S2.7.2 - analysing scientific and medical data
- S2.7.3 - analysing financial and economic data
- S2.7.4 - analysing business operations
- S2.7.5 - performing risk analysis and management
- S2.7.6 - evaluating systems, programmes, equipment and products



S2.8 – monitoring and testing

- S2.8.0 - monitoring, inspecting and testing
- S2.8.1 - monitoring, inspecting and testing equipment, systems and products
- S2.8.2 - monitoring operational activities
- S2.8.3 - monitoring financial and economic resources and activity
- S2.8.4 - monitoring safety or security
- S2.8.5 - monitoring environmental conditions
- S2.8.6 - monitoring health conditions
- S2.8.8 - testing and analysing substances

S2.9 – monitoring developments in the sector of competence

S3 – Providing assistance and care

S3.0 – providing assistance and care

S3.1 – offering advices and mentoring

- S3.1.0 - counselling
- S3.1.1 - counselling on personal, family or social issues
- S3.1.2 - providing support to resolve problems
- S3.1.3 - assisting people to access services

S3.2 – providing health care or medical care

- S3.2.0 - providing health care or medical treatments
- S3.2.1 - providing medical, dental and nursing care
- S3.2.2 - performing surgical procedures
- S3.2.3 - providing physical therapies
- S3.2.4 - providing psychological and occupational therapies
- S3.2.5 - prescribing and ordering medical tests, treatments or devices
- S3.2.6 - fitting assistive devices

S3.3 – protecting healthcare regulations

- S3.3.0 - protecting and enforcing
- S3.3.1 - complying with health and safety procedures
- S3.3.2 - complying with environmental protection laws and standards
- S3.3.3 - complying with legal and organisational guidelines
- S3.3.4 - verifying identities and documentation
- S3.3.5 - maintaining and enforcing physical security
- S3.3.6 - protecting privacy and personal data

S3.4 – providing information and support to the public and customers

- S3.4.0 - providing information and support to the public and clients
- S3.4.1 - providing information to the public and clients
- S3.4.2 - accompanying people
- S3.4.3 - assisting people with paperwork
- S3.4.4 - providing general assistance to people

S3.5 – preparing and serving food and drinks

- S3.5.0 - preparing and serving food and drinks
- S3.5.1 - preparing food and drinks
- S3.5.2 - serving food and drinks

S3.6 – providing general assistance to people

- S3.6.0 - providing personal care
- S3.6.1 - assisting people with mobility
- S3.6.2 - assisting with personal needs
- S3.6.3 - caring for children
- S3.6.4 - styling hair and providing beauty treatments

S4 – Managerial skills

S4.0 – managerial skills

S4.1 – developing objectives and strategies

- S4.1.0 - developing objectives and strategies
- S4.1.1 - identifying opportunities
- S4.1.2 - developing financial, business or marketing plans
- S4.1.3 - developing operational policies and procedures
- S4.1.4 - developing research plans



- S4.1.5 - developing health programmes
- S4.1.6 - developing educational programmes
- S4.1.7 - developing contingency and emergency response plans
- S4.2 – organising, planning and scheduling work and activities
 - S4.2.0 - organising, planning and scheduling work and activities
 - S4.2.1 - directing operational activities
 - S4.2.2 - planning and scheduling events and activities
- S4.3 – allocating and monitoring resources
 - S4.3.0 - allocating and controlling resources
 - S4.3.1 - managing budgets or finances
 - S4.3.2 - managing human resources
 - S4.3.3 - allocating and controlling physical resources
- S4.4 – carrying out administrative activities
 - S4.4.0 - performing administrative activities
 - S4.4.1 - administering human resources
 - S4.4.2 - executing financial transactions
 - S4.4.3 - performing general clerical and administrative tasks
- S4.5 – driving and motivating the others
- S4.6 – team management
- S4.7 – HR
- S4.8 – Staff supervision
 - S4.8.0 - supervising people
 - S4.8.1 - supervising a team or group
 - S4.8.2 - assigning work to others
 - S4.8.3 - monitoring and evaluating the performance of individuals
- S4.9 – decision making and problem solving

S5 – ICT skills

- S5.0 – working with computers
- S5.1 – programming computer systems
- S5.2 – cyber security
 - S5.2.0 - setting up and protecting computer systems
 - S5.2.1 - setting up computer systems
 - S5.2.2 - protecting ICT devices
 - S5.2.3 - resolving computer problems
- S5.5 – accessing and understanding digital data
 - S5.5.0 - accessing and analysing digital data
 - S5.5.1 - browsing, searching and filtering digital data
 - S5.5.2 - managing and analysing digital data
- S5.6 – using and mastering digital tools for collaboration, content creation and problem solving
 - S5.6.0 - using digital tools for collaboration, content creation and problem solving
 - S5.6.1 - using digital tools for collaboration and productivity
 - S5.6.2 - using word processing, publishing and presentation software
 - S5.6.3 - using computer aided design and drawing tools
 - S5.6.4 - using digital tools for processing sound and images
- S5.7 – using digital tools to control and manage machinery

S6 – Hand working

- S6.0 – moving and transferring goods and products
- S6.1 – sorting and packaging of goods and materials
 - S6.1.0 - sorting and packaging goods and materials
 - S6.1.1 - sorting materials or products
 - S6.1.2 - marking materials or objects for identification
 - S6.1.3 - packaging objects
- S6.2 – lifting and transferring goods and products
 - S6.2.0 - moving and lifting
 - S6.2.1 - loading and unloading goods and, materials



- S6.2.2 - moving or lifting materials, equipment, or supplies
- S6.2.3 - storing goods and materials
- S6.2.4 - climbing
- S6.3 – transforming and mixing materials
 - S6.3.0 - transforming and blending materials
 - S6.3.1 - preparing mixtures or solutions
 - S6.3.3 - preparing industrial materials for processing or use
 - S6.3.6 - collecting and preparing specimens or materials for testing
- S6.4 – dealing with plants and crops
 - S6.4.0 - tending plants and crops
 - S6.4.1 - cultivating land and crops
 - S6.4.2 - planting crops, trees, or other plants
 - S6.4.3 - pruning, cutting and harvesting, trees crops and other plants
- S6.5 – assembling and manufacturing products
 - S6.5.0 - assembling and fabricating products
 - S6.5.1 - fabricating precision instruments or jewellery
 - S6.5.2 - fabricating medical and prosthetic devices
 - S6.5.3 - assembling electrical and electronic products
 - S6.5.4 - assembling mechanical products
 - S6.5.5 - assembling furniture
 - S6.5.6 - fabricating garments and textile products
 - S6.5.7 - fabricating food and related products
 - S6.5.8 - fabricating tobacco products
- S6.6 – creating casts, models and samples
 - S6.6.0 - making moulds, casts, models and patterns
 - S6.6.1 - making production moulds and casts
 - S6.6.2 - making patterns and templates
 - S6.6.3 - making models
- S6.7 – using and mastering hand tools
 - S6.7.0 - using hand tools
 - S6.7.1 - cutting materials and drilling holes
 - S6.7.2 - shaping materials to create products
 - S6.7.3 - smoothing surfaces of objects or equipment
 - S6.7.4 - using precision hand tools
 - S6.7.5 - hammering, nailing and riveting
- S6.8 – placing materials, tools or equipment
 - S6.8.0 - positioning materials, tools or equipment
 - S6.8.1 - positioning tools or equipment
 - S6.8.2 - positioning workpieces or materials
- S6.9 – farming
 - S6.9.0 - handling animals
 - S6.9.1 - tending and breeding animals
 - S6.9.2 - tending and breeding aquatic animals
 - S6.9.3 - moving and herding animals
 - S6.9.4 - hunting, trapping and slaughtering animals
 - S6.9.5 - feeding and grooming animals
 - S6.9.6 - training animals
 - S6.9.7 - providing therapy or veterinary treatment for animals
- S6.11 – cleaning and keeping order
 - S6.11.0 - cleaning
 - S6.11.1 - cleaning tools, equipment, workpieces and vehicles
 - S6.11.2 - cleaning interior and exterior of buildings
 - S6.11.3 - cleaning outdoor spaces
- S6.12 – washing and maintaining textiles and clothing
- S6.13 – managing dangerous waste materials
 - S6.13.0 - handling and disposing of waste and hazardous materials
 - S6.13.1 - handling and disposing of hazardous materials
 - S6.13.2 - disposing of non-hazardous waste or debris



S7 – Building, repairing and installing

S7.0 – hand working

S7.1 – building and repairing structure

- S7.1.0 - building and repairing structures
- S7.1.1 - installing structural masonry materials
- S7.1.2 - installing metal structural components
- S7.1.3 - installing wooden structural components
- S7.1.4 - installing concrete components
- S7.1.5 - installing roofing
- S7.1.6 - joining parts using soldering, welding or brazing techniques
- S7.1.7 - installing and assembling building fixtures
- S7.1.8 - installing and assembling rigging equipment

S7.2 – Installing indoor or outdoor infrastructure

- S7.2.0 - installing interior or exterior infrastructure
- S7.2.1 - installing heating, ventilation and air conditioning equipment
- S7.2.2 - installing plumbing or piping equipment or systems
- S7.2.3 - installing insulation materials

S7.3 – finishing the interior or exterior of structures

- S7.3.0 - finishing interior or exterior of structures
- S7.3.1 - applying material to fill gaps in surfaces
- S7.3.2 - applying textured or masonry coatings
- S7.3.3 - applying protective or decorative solutions or coatings
- S7.3.4 - installing floor and wall coverings

S8 – Working with specialized machinery and equipment

S8.0 – working with specialized machinery and equipment

S8.1 – using non-common vehicles

- S8.1.0 - operating mobile plant
- S8.1.1 - operating earthmoving equipment
- S8.1.2 - operating agricultural or forestry equipment
- S8.1.3 - operating lifting or moving equipment

S8.2 – driving vehicles

- S8.2.0 - driving vehicles
- S8.2.1 - driving heavy vehicles
- S8.2.2 - driving light vehicles
- S8.2.3 - operating rail vehicles

S8.3 – driving boats

S8.4 – using extraction machinery and treating raw materials

- S8.4.0 - operating machinery for the extraction and processing of raw materials
- S8.4.1 - operating mining, drilling and mineral processing machinery
- S8.4.2 - operating metal processing and finishing machinery
- S8.4.3 - operating pumping systems or equipment
- S8.4.4 - operating energy production or distribution equipment
- S8.4.5 - operating petroleum, chemical or water processing systems or equipment
- S8.4.6 - operating wood processing and papermaking machinery
- S8.4.7 - operating kilns, furnaces and drying equipment

S8.5 – using machinery for products manufacturing

- S8.5.0 - operating machinery for the manufacture of products
- S8.5.1 - operating painting or coating machinery
- S8.5.2 - operating packaging machinery
- S8.5.3 - operating machinery for the manufacture and treatment of textiles, fur and leather products
- S8.5.4 - operating food processing machinery
- S8.5.5 - operating mixing and separating machinery
- S8.5.6 - operating print and photographic production equipment
- S8.5.7 - operating metal, plastic or rubber forming equipment
- S8.5.8 - operating cutting, grinding and smoothing machinery

S8.6 – using precision instruments and equipment

- S8.6.0 - using precision instrumentation and equipment
- S8.6.1 - operating medical equipment
- S8.6.2 - operating audio-visual equipment



- S8.6.3 - operating scientific and laboratory equipment
- S8.6.4 - operating communications equipment
- S8.6.5 - operating precision industrial equipment
- S8.6.6 - using precision measuring equipment
- S8.7 – installing, maintaining and repairing mechanical equipment
 - S8.7.0 - installing, maintaining and repairing mechanical equipment
 - S8.7.1 - repairing and installing mechanical equipment
 - S8.7.2 - maintaining mechanical equipment
- S8.8 – installing, maintaining and repairing electrical, electronic and precision equipment
 - S8.8.0 - installing, maintaining and repairing electrical, electronic and precision equipment
 - S8.8.1 - installing and repairing electrical, electronic and precision equipment
 - S8.8.2 - maintaining electrical, electronic and precision equipment
- S8.9 – piloting aircraft

What followed immediately after was the draft of a very simple matrix (Table 1) where we displayed the relevance and consistency of each skill for every single EntreComp competence. In other words, if *that* skill might be perceived or not as a relatable component of any considered EntreComp competence.

Let's take a look at the skills associated to S 4.1 (developing objectives and strategies) from the macro-cluster S4 (Managerial skills): these skills reoccur with such frequency because of the strong consistency with all of the EntreComp competences, from "Creativity" to "Taking the Initiative".

For the same identical *ratio*, all sub-components of A2 (Values) cannot but be a firm essential of "Ethical and sustainable thinking", "Self-awareness and self-efficacy" and "Mobilizing others".

The same goes for the great majority of the S1 elements (Communication, collaboration and creativity); among the ten, the category with the highest and most robust correlation with the EntreComp competences – which we might easily consider by counting the overall number of S1-related skills that can be legitimately included within the matrix.



Table 1: ESCO-EntreComp: Cross-Assessment Matrix (Skills/Competences Pillar)

	A1	A2	S1	S2	S3	S4	S5	S6	S7	S8
1.2 creativity	A 1.1 A 1.2 A 1.6 A 1.7 A 1.8		S 1.0 S 1.11 S 1.1 S 1.12 S 1.6 S 1.13 S 1.9 S 1.14	S 2.4 S 2.7		S 4.1 S 4.2 S 4.5 S 4.9		S 6.1 S 6.0 S 6.3 S 6.6	S 7.0	
1.5 Ethical and sustainable thinking	A 1.3 A 1.13	A 2.0 A 2.1 A 2.2 A 2.3	S 1.3 S 1.5 S 1.7 S 1.8 S 1.9	S 2.7 S 2.8 S 2.9	S 3.0 S 3.1 S 3.2 S 3.3 S 3.4 S 3.6	S 4.1 S 4.8	S 5.2	S 6.13		
2.1 Self-awareness and self-efficacy	A 1.0 A 1.8 A 1.1 A 1.13 A 1.2 A 1.14 A 1.4 A 1.15 A 1.7 A 1.16	A 2.0 A 2.1 A 2.2 A 2.3	S 1.1 S 1.8 S 1.2 S 1.9 S 1.3 S 1.10 S 1.4 S 1.11 S 1.5 S 1.12 S 1.6 S 1.13 S 1.7 S 1.14 S 1.15	S 2.0 S 2.4 S 2.1 S 2.6 S 2.2 S 2.7 S 2.3 S 2.8 S 2.9	S 3.4 S 3.6	S 4.0 S 4.5 S 4.1 S 4.6 S 4.2 S 4.7 S 4.3 S 4.8 S 4.4 S 4.9	S 5.5 S 5.6		S 7.0 S 7.1 S 7.2 S 7.3	S 8.0 S 8.5 S 8.1 S 8.6 S 8.2 S 8.7 S 8.3 S 8.8 S 8.4 S 8.9
2.5 Mobilizing others	A 1.7 A 1.9	A 2.0 A 2.1 A 2.2 A 2.3	S 1.0 S 1.2 S 1.3 S 1.4 S 1.5 S 1.8 S 1.14		S 3.1 S 3.6	S 4.0 S 4.1 S 4.2 S 4.5 S 4.6 S 4.7 S 4.8	S 5.6			
3.3 Coping with uncertainty, ambiguity and risk	A 1.0 A 1.5 A 1.1 A 1.8 A 1.2 A 1.10 A 1.4 A 1.14 A 1.15		S 1.7 S 1.9	S 2.1 S 2.6 S 2.2 S 2.7 S 2.3 S 2.8 S 2.4 S 2.9		S 4.1 S 4.2 S 4.3 S 4.8 S 4.9	S 5.2 S 5.5 S 5.6			
3.5 Taking the initiative	A 1.0 A 1.8 A 1.1 A 1.13 A 1.6 A 1.14 A 1.7 A 1.15 A 1.16		S 1.0 S 1.7 S 1.2 S 1.8 S 1.4 S 1.9 S 1.6 S 1.14	S 2.2 S 2.3 S 2.4 S 2.8 S 2.9		S 4.0 S 4.1 S 4.2 S 4.4 S 4.5 S 4.9	S 5.5 S 5.6	S 6.3 S 6.5		



ESCO/EntreComp cross-assessment: Occupations

Quoting the official ESCO website:

In ESCO, each occupation is mapped to exactly one ISCO-08⁹ code. ISCO-08 can therefore be used as a hierarchical structure for the occupations pillar. ISCO-08 provides the top four levels for the occupations pillar [...] Each occupation also comes with an occupational profile. The profiles contain an explanation of the occupation in the form of description, scope note and definition. Furthermore, they list the knowledge, skills and competences that experts considered relevant terminology for this occupation on a European scale.

When it came to the Occupations pillar, we followed the same approach as before: firstly, we provided an overview of the single units considered, then, on the basis of a mutual relevance and consistency criteria, we explored the potential “intersection” between them and each EntreComp Competence (Table 2).

0 – Armed Forces

Armed forces occupations include all jobs held by members of the armed forces. Members of the armed forces are those personnel who are currently serving in the armed forces, including auxiliary services, whether on a voluntary or compulsory basis, and who are not free to accept civilian employment and are subject to military discipline. Included are regular members of the army, navy, air force and other military services, as well as conscripts enrolled for military training or other service for a specified period.¹⁰

01 Commissioned Armed Forces Officers

02 Non-commissioned Armed Forces Officers

03 Armed Forces Occupations, Other Ranks

1 – Managers

Managers plan, direct, coordinate and evaluate the overall activities of enterprises, governments and other organizations, or of organizational units within them, and formulate and review their policies, laws, rules and regulations.¹¹

11 Chief Executives, Senior Officials and Legislators

- **111 Legislators and senior officials**
 - 1111 Legislators
 - 1112 Senior Government Officials
 - 1113 Traditional Chiefs and Heads of Villages
 - 1114 Senior Officials of Special-interest Organizations
- **112 Managing directors and chief executives**

12 Administrative and Commercial Managers

- **121 Business services and administration managers**
 - 1211 Finance Managers
 - 1212 Human Resource Managers
 - 1213 Policy and Planning Managers

⁹ ISCO – International Standard Classification of Occupation, ISCO 08: Structure, definitions and correspondence tables (<https://www.ilo.org/public/english/bureau/stat/isco/isco08/index.htm>)

¹⁰ Armed Forces: A Definition from ESCO

¹¹ Managers: A Definition from ESCO



- 1219 Business Services and Administration Managers Not Elsewhere
- **122 Sales, marketing and development managers**
 - 1221 Sales and Marketing Managers
 - 1222 Advertising and Public Relations Managers
 - 1223 Research and Development Managers

13 Production and Specialized Services Managers

- **131 Production Managers in Agriculture, Forestry and Fisheries**
 - 1311 Agricultural and Forestry Production Managers
 - 1312 Aquaculture and Fisheries Production Managers
- **132 Manufacturing, Mining, Construction and Distribution Managers**
 - 1321 Manufacturing Managers
 - 1322 Mining Managers
 - 1323 Construction Managers
 - 1324 Supply, Distribution and Related Managers
- **133 Information and Communications Technology Services Managers**
- **134 Professional Services Managers**
 - 1341 Child Care Services Managers
 - 1342 Health Services Managers
 - 1343 Aged Care Services Managers
 - 1344 Social Welfare Managers
 - 1345 Education Managers
 - 1346 Financial and Insurance Services Branch Managers
 - 1349 Professional Services Managers Not Elsewhere Classified

14 Hospitality, Retail and Other Services Managers

- **141 Hotel and Restaurant Managers**
 - 1411 Hotel managers
 - 1412 Restaurant managers
- **142 Retail and Wholesale Trade Managers**
- **143 Other Services Managers**
 - 1431 Sports, Recreation and Cultural Centre Managers
 - 1439 Services Managers Not Elsewhere Classified

2 – Professional

Professionals increase the existing stock of knowledge; apply scientific or artistic concepts and theories; teach about the foregoing in a systematic manner; or engage in any combination of these activities.¹²

21 Science and Engineering Professionals

- **211 Physical and Earth Science Professionals**
 - 2111 Physicists and Astronomers
 - 2112 Meteorologists
 - 2113 Chemists
 - 2114 Geologists and Geophysicists
- **212 Mathematicians, Actuaries and Statisticians**
- **213 Life Science Professionals**
 - 2131 Biologists, Botanists, Zoologists and Related Professionals
 - 2132 Farming, Forestry and Fisheries Advisers
 - 2133 Environmental Protection Professionals

¹² Professionals: A Definition from ESCO



- **214 Engineering Professionals (excluding Electrotechnology)**
 - 2141 Industrial and Production Engineers
 - 2142 Civil Engineers
 - 2143 Environmental Engineers
 - 2144 Mechanical Engineers
 - 2145 Chemical Engineers
 - 2146 Mining Engineers, Metallurgists and Related Professionals
 - 2149 Engineering Professionals Not Elsewhere Classified
- **215 Electrotechnology Engineers**
 - 2151 Electrical Engineers
 - 2152 Electronics Engineers
 - 2153 Telecommunications Engineers
- **216 Architects, Planners, Surveyors and Designers**
 - 2161 Building Architects
 - 2162 Landscape Architects
 - 2163 Product and Garment Designers
 - 2164 Town and Traffic Planners
 - 2165 Cartographers and Surveyors
 - 2166 Graphic and Multimedia Designers

22 Health Professionals

- **221 Medical Doctors**
 - 2211 Generalist Medical Practitioners
 - 2212 Specialist Medical Practitioners
- **222 Nursing and Midwifery Professionals**
 - 2221 Nursing Professionals
 - 2222 Midwifery Professionals
- **223 Traditional and Complementary Medicine Professionals**
- **224 Paramedical Practitioners**
- **225 Veterinarians**
- **226 Other Health Professionals**
 - 2261 Dentists
 - 2262 Pharmacists
 - 2263 Environmental and Occupational Health and Hygiene Professionals
 - 2264 Physiotherapists
 - 2265 Dieticians and Nutritionists
 - 2266 Audiologists and Speech Therapists
 - 2267 Optometrists and Ophthalmic Opticians
 - 2269 Health Professionals Not Elsewhere Classified

23 Teaching Professionals

- **231 University and Higher Education Teachers**
- **232 Vocational Education Teachers**
- **233 Secondary Education Teachers**
- **234 Primary School and Early Childhood Teachers**
 - 2341 Primary School Teachers
 - 2342 Early Childhood Educators
- **235 Other Teaching Professionals**
 - 2351 Education Methods Specialists
 - 2352 Special Needs Teachers
 - 2353 Other Language Teachers
 - 2354 Other Music Teachers
 - 2355 Other Arts Teachers



- 2356 Information Technology Trainers
- 2359 Teaching Professionals Not Elsewhere Classified

24 Business and Administration Professionals

- **241 Finance Professionals**
 - 2411 Accountants
 - 2412 Financial and Investment Advisers
 - 2413 Financial Analysts
- **242 Administration Professionals**
 - 2421 Management and Organization Analysts
 - 2422 Policy Administration Professionals
 - 2423 Personnel and Careers Professionals
 - 2424 Training and Staff Development Professionals
- **243 Sales, Marketing and Public Relations Professionals**
 - 2431 Advertising and Marketing Professionals
 - 2432 Public Relations Professionals
 - 2433 Technical and Medical Sales Professionals (excluding ICT)
 - 2434 Information and Communications Technology Sales Professionals

25 Information and Communications Technology Professionals

- **251 Software and applications developers and analysts**
 - 2511 Systems Analysts
 - 2512 Software Developers
 - 2513 Web and Multimedia Developers
 - 2514 Applications Programmers
 - 2519 Software and Applications Developers and Analysts Not Elsewhere Classified
- **252 Database and network professionals**
 - 2521 Database Designers and Administrators
 - 2522 Systems Administrators
 - 2523 Computer Network Professionals
 - 2529 Database and Network Professionals Not Elsewhere Classified

26 Legal, Social and Cultural Professionals

- **261 Legal Professionals**
 - 2611 Lawyers
 - 2612 Judges
 - 2619 Legal Professionals Not Elsewhere Classified
- **262 Librarians, Archivists and Curators**
 - 2621 Archivists and Curators
 - 2622 Librarians and Related Information Professionals
- **263 Social Professionals**
 - 2631 Economists
 - 2632 Sociologists, Anthropologists and Related Professionals
 - 2633 Philosophers, Historians and Political Scientists
 - 2634 Psychologists
 - 2635 Social Work and Counselling Professionals
 - 2636 Religious Professionals
- **264 Authors, Journalists and Linguists**
 - 2641 Authors and Related Writers
 - 2642 Journalists
 - 2643 Translators, Interpreters and Other Linguists
- **265 Creative and Performing Artists**
 - 2651 Visual Artists



- 2652 Musicians, Singers and Composers
- 2653 Dancers and Choreographers
- 2654 Film, Stage and Related Directors and Producers
- 2655 Actors
- 2656 Announcers on Radio, Television and Other Media
- 2659 Creative and Performing Artists Not Elsewhere Classified

3 – Technician and Associate Professionals

Technicians and associate professionals perform technical and related tasks connected with research and the application of scientific or artistic concepts and operational methods, and government or business regulations.¹³

31 Science and Engineering Associate Professionals

- **311 Physical and Engineering Science Technicians**
 - 3111 Chemical and Physical Science Technicians
 - 3112 Civil Engineering Technicians
 - 3113 Electrical Engineering Technicians
 - 3114 Electronics Engineering Technicians
 - 3115 Mechanical Engineering Technicians
 - 3116 Chemical Engineering Technicians
 - 3117 Mining and Metallurgical Technicians
 - 3118 Draughtspersons
 - 3119 Physical and Engineering Science Technicians Not Elsewhere Classified
- **312 Mining, Manufacturing and Construction Supervisors**
 - 3121 Mining Supervisors
 - 3122 Manufacturing Supervisors
 - 3123 Construction Supervisors
- **313 Process Control Technicians**
 - 3131 Power Production Plant Operators
 - 3132 Incinerator and Water Treatment Plant Operators
 - 3133 Chemical Processing Plant Controllers
 - 3134 Petroleum and Natural Gas Refining Plant Operators
 - 3135 Metal Production Process Controllers
 - 3139 Process Control Technicians Not Elsewhere Classified
- **314 Life Science Technicians and Related Associate Professionals**
 - 3141 Life Science Technicians (excluding Medical)
 - 3142 Agricultural Technicians
 - 3143 Forestry Technicians
- **315 Ship and Aircraft Controllers and Technicians**
 - 3151 Ships' Engineers
 - 3152 Ships' Deck Officers and Pilots
 - 3153 Aircraft Pilots and Related Associate Professionals
 - 3154 Air Traffic Controllers
 - 3155 Air Traffic Safety Electronics Technicians

32 Health Associate Professionals

- **321 Medical and Pharmaceutical Technicians**
 - 3211 Medical Imaging and Therapeutic Equipment Technicians
 - 3212 Medical and Pathology Laboratory Technicians
 - 3213 Pharmaceutical Technicians and Assistants
 - 3214 Medical and Dental Prosthetic Technicians

¹³ Technician and Associate Professional: A Definition from ESCO



- **322 Nursing and Midwifery Associate Professionals**
 - 3221 Nursing Associate professionals
 - 3222 Midwifery Associate professionals
- **323 Traditional and Complementary Medicine Associate Professionals**
- **324 Veterinary Technicians and Assistants**
- **325 Other Health Associate Professionals**
 - 3251 Dental Assistants and Therapists
 - 3252 Medical Records and Health Information Technicians
 - 3253 Community Health Workers
 - 3254 Dispensing Opticians
 - 3255 Physiotherapy Technicians and Assistants
 - 3256 Medical Assistants
 - 3257 Environmental and Occupational Health Inspectors and Associates
 - 3258 Ambulance Workers
 - 3259 Health Associate Professionals Not Elsewhere Classified

33 Business and Administration Associate Professionals

- **331 Financial and Mathematical Associate Professionals**
 - 3311 Securities and Finance Dealers and Brokers
 - 3312 Credit and Loans Officers
 - 3313 Accounting Associate Professionals
 - 3314 Statistical, Mathematical and Related Associate Professionals
 - 3315 Valuers and Loss Assessors
- **332 Sales and Purchasing Agents and Brokers**
 - 3321 Insurance Representatives
 - 3322 Commercial Sales Representatives
 - 3323 Buyers
 - 3324 Trade Brokers
- **333 Business Services Agents**
 - 3331 Clearing and Forwarding Agents
 - 3332 Conference and Event Planners
 - 3333 Employment Agents and Contractors
 - 3334 Real Estate Agents and Property Managers
 - 3339 Business Services Agents Not Elsewhere Classified
- **334 Administrative and Specialized Secretaries**
 - 3341 Office Supervisors
 - 3342 Legal Secretaries
 - 3343 Administrative and Executive Secretaries
 - 3344 Medical Secretaries
- **335 Government Regulatory Associate Professionals**
 - 3351 Customs and Border Inspectors
 - 3352 Government Tax and Excise Officials
 - 3353 Government Social Benefits Officials
 - 3354 Government Licensing Officials
 - 3355 Police Inspectors and Detectives
 - 3359 Government Regulatory Associate Professionals Not Elsewhere Classified

34 Legal, Social, Cultural and Related Associate Professionals

- **341 Legal, Social and Religious Associate Professionals**
 - 3411 Legal and Related Associate Professionals
 - 3412 Social Work Associate Professionals
 - 3413 Religious Associate Professionals
- **342 Sports and Fitness Workers**
 - 3421 Athletes and Sports Players



- 3422 Sports Coaches, Instructors and Officials
- 3423 Fitness and Recreation Instructors and Programme Leaders
- **343 Artistic, Cultural and Culinary Associate Professionals**
 - 3431 Photographers
 - 3432 Interior Designers and Decorators
 - 3433 Gallery, Museum and Library Technicians
 - 3434 Chefs
 - 3435 Other Artistic and Cultural Associate Professionals

35 Information and Communications Technicians

- **351 Information and Communications Technology Operations and User Support Technicians**
 - 3511 Information and Communications Technology Operations Technicians
 - 3512 Information and Communications Technology User Support Technicians
 - 3513 Computer Network and Systems Technicians
 - 3514 Web Technicians
- **352 Telecommunications and Broadcasting Technicians**
 - 3521 Broadcasting and Audio-visual Technicians
 - 3522 Telecommunications Engineering Technicians

4 – Clerical support workers

Clerical support workers record, organize, store, compute and retrieve information, and perform a number of clerical duties in connection with money-handling operations, travel arrangements, requests for information, and appointments.¹⁴

41 General and Keyboard Clerks

- **411 General Office Clerks**
- **412 Secretaries (general)**
- **413 Keyboard Operators**
 - 4131 Typists and Word Processing Operators
 - 4132 Data Entry Clerks

42 Customer Services Clerks

- **421 Tellers, Money Collectors and Related Clerks**
 - 4211 Bank Tellers and Related Clerks
 - 4212 Bookmakers, Croupiers and Related Gaming Workers
 - 4213 Pawnbrokers and Moneylenders
 - 4214 Debt Collectors and Related Workers
- **422 Client Information Workers**
 - 4221 Travel Consultants and Clerks
 - 4222 Contact Centre Information Clerks
 - 4223 Telephone Switchboard Operators
 - 4224 Hotel Receptionists
 - 4225 Inquiry Clerks
 - 4226 Receptionists (general)
 - 4227 Survey and Market Research Interviewers
 - 4229 Client Information Workers Not Elsewhere Classified

43 Numerical and Material Recording Clerks

¹⁴ Clerical support workers: A Definition from ESCO



- **431 Numerical Clerks**
 - 4311 Accounting and Bookkeeping Clerks
 - 4312 Statistical, Finance and Insurance Clerks
 - 4313 Payroll Clerks
- **432 Material Recording and Transport Clerks**
 - 4321 Stock Clerks
 - 4322 Production Clerks
 - 4323 Transport Clerks

44 Other Clerical Support Workers

- **441 Other Clerical Support Workers**
 - 4411 Library Clerks
 - 4412 Mail Carriers and Sorting Clerks
 - 4413 Coding, Proof-reading and Related clerks
 - 4414 Scribes and Related Workers
 - 4415 Filing and Copying Clerks
 - 4416 Personnel Clerks
 - 4419 Clerical Support Workers Not Elsewhere Classified

5 – Service and Sales workers

Services and sales workers provide personal and protective services related to travel, housekeeping, catering, personal care, protection against fire and unlawful acts; or demonstrate and sell goods in wholesale or retail shops and similar establishments, as well as at stalls and on markets.¹⁵

51 Personal Services Workers

- **511 Travel Attendants, Conductors and Guides**
 - 5111 Travel Attendants and Travel Stewards
 - 5112 Transport Conductors
 - 5113 Travel Guides
- **512 Cooks**
- **513 Waiters and Bartenders**
 - 5131 Waiters
 - 5132 Bartenders
- **514 Hairdressers, Beauticians and Related Workers**
 - 5141 Hairdressers
 - 5142 Beauticians and Related Workers
- **515 Building and Housekeeping Supervisors**
 - 5151 Cleaning and Housekeeping Supervisors in Offices, Hotels and Other Establishments
 - 5152 Domestic Housekeepers
 - 5153 Building Caretakers
- **516 Other Personal Services Workers**
 - 5161 Astrologers, Fortune-tellers and Related Workers
 - 5162 Companions and Valets
 - 5163 Undertakers and Embalmers
 - 5164 Pet Groomers and Animal Care Workers
 - 5165 Driving Instructors
 - 5169 Personal Services Workers Not Elsewhere Classified

52 Sales Workers

¹⁵ Service and Sales workers: A Definition from ESCO



- **521 Street and Market Salespersons**
 - 5211 Stall and Market Salespersons
 - 5212 Street Food Salespersons
- **522 Shop Salespersons**
 - 5221 Shopkeepers
 - 5222 Shop Supervisors
 - 5223 Shop Sales Assistants
- **523 Cashiers and Ticket Clerks**
- **524 Other Sales Workers**
 - 5241 Fashion and Other Models
 - 5242 Sales Demonstrators
 - 5243 Door-to-door Salespersons
 - 5244 Contact Centre Salespersons
 - 5245 Service Station Attendants
 - 5246 Food Service Counter Attendants
 - 5249 Sales Workers Not Elsewhere Classified

53 Personal Care Workers

- **531 Child Care Workers and Teachers' Aides**
 - 5311 Child Care Workers
 - 5312 Teachers' Aides
- **532 Personal Care Workers in Health Services**
 - 5321 Health Care Assistants
 - 5322 Home-based Personal Care Workers
 - 5329 Personal Care Workers in Health Services Not Elsewhere Classified

54 Protective Services Workers

- **541 Protective Services Workers**
 - 5411 Firefighters
 - 5412 Police Officers
 - 5413 Prison Guards
 - 5414 Security Guards
 - 5419 Protective Services Workers Not Elsewhere Classified

6 – Skilled agricultural, forestry and fishery workers

Skilled agricultural, forestry and fishery workers grow and harvest field or tree and shrub crops; gather wild fruits and plants; breed, tend or hunt animals; produce a variety of animal husbandry products; cultivate, conserve and exploit forests; breed or catch fish; and cultivate or gather other forms of aquatic life in order to provide food, shelter and income for themselves and their households.¹⁶

61 Market-oriented Skilled Agricultural Workers

- **611 Market Gardeners and Crop growers**
 - 6111 Field Crop and Vegetable Growers
 - 6112 Tree and Shrub Crop Growers
 - 6113 Gardeners, Horticultural and Nursery Growers
 - 6114 Mixed Crop Growers
- **612 Animal Producers**
 - 6121 Livestock and Dairy Producers
 - 6122 Poultry Producers

¹⁶ Skilled agricultural, forestry and fishery workers: A Definition from ESCO



- 6123 Apiarists and Sericulturists
- 6129 Animal Producers Not Elsewhere Classified
- **613 Mixed Crop and Animal Producers**

62 Market-oriented Skilled Forestry, Fishery and Hunting Workers

- **621 Forestry and Related Workers**
- **622 Fishery Workers, Hunters and Trappers**
 - 6221 Aquaculture Workers
 - 6222 Inland and Coastal Waters Fishery Workers
 - 6223 Deep-sea Fishery Workers
 - 6224 Hunters and Trappers

63 Subsistence Farmers, Fishers, Hunters and Gatherers

- **631 Subsistence Crop Farmers**
- **632 Subsistence Livestock Farmers**
- **633 Subsistence Mixed Crop and Livestock Farmers**
- **634 Subsistence Fishers, Hunters, Trappers and Gatherers**

7 – Craft and related trades workers

Craft and related trades workers apply specific technical and practical knowledge and skills to construct and maintain buildings; form metal; erect metal structures; set machine tools or make, fit, maintain and repair machinery, equipment or tools; carry out printing work; and produce or process foodstuffs, textiles, wooden, metal and other articles, including handicraft goods.¹⁷

71 Building and Related Trades Workers (excluding electricians)

- **711 Building Frame and Related Trades Workers**
 - 7111 House Builders
 - 7112 Bricklayers and Related Workers
 - 7113 Stonemasons, Stone cutters, Splitters and Carvers
 - 7114 Concrete Placers, Concrete Finishers and Related Workers
 - 7115 Carpenters and Joiners
 - 7119 Building Frame and Related Trades Workers Not Elsewhere Classified
- **712 Building Finishers and Related Trades Workers**
 - 7121 Roofers
 - 7122 Floor Layers and Tile Setters
 - 7123 Plasterers
 - 7124 Insulation Workers
 - 7125 Glaziers
 - 7126 Plumbers and Pipe Fitters
 - 7127 Air Conditioning and Refrigeration Mechanics
- **713 Painters, Building Structure Cleaners and Related Trades Workers**
 - 7131 Painters and Related Workers
 - 7132 Spray Painters and Varnishes
 - 7133 Building Structure Cleaners

72 Metal, Machinery and Related Trades Workers

- **721 Sheet and Structural Metal Workers, Moulders and Welders, and Related Workers**
 - 7211 Metal Moulders and Coremakers
 - 7212 Welders and Flame Cutters

¹⁷ Craft and related trades workers: A Definition from ESCO



- 7213 Sheet Metal Workers
- 7214 Structural Metal Preparers and Erectors
- 7215 Riggers and Cable Splicers
- **722 Blacksmiths, Toolmakers and Related Trades Workers**
 - 7221 Blacksmiths, Hammersmiths and Forging Press Workers
 - 7222 Toolmakers and Related Workers
 - 7223 Metal Working Machine Tool Setters and Operators
 - 7224 Metal Polishers, Wheel Grinders and Tool Sharpeners
- **723 Machinery Mechanics and Repairers**
 - 7231 Motor Vehicle Mechanics and Repairers
 - 7232 Aircraft Engine Mechanics and Repairers
 - 7233 Agricultural and Industrial Machinery Mechanics and Repairers
 - 7234 Bicycle and Related Repairers

73 Handicraft and Printing Workers

- **731 Handicraft Workers**
 - 7311 Precision-instrument Makers and Repairers
 - 7312 Musical Instrument Makers and Tuners
 - 7313 Jewellery and Precious metal Workers
 - 7314 Potters and Related Workers
 - 7315 Glass Makers, Cutters, Grinders and Finishers
 - 7316 Decorative Painters, Engravers and Etchers
 - 7317 Handicraft Workers in Wood, Basketry and Related Materials
 - 7318 Handicraft Workers in Textile, Leather and Related Materials
 - 7319 Handicraft Workers Not Elsewhere Classified
- **732 Printing Trades Workers**
 - 7321 Pre-press Technicians
 - 7322 Printers
 - 7323 Print Finishing and Binding Workers

74 Electrical and Electronics Trades Workers

- **741 Electrical Equipment Installers and Repairers**
 - 7411 Building and Related Electricians
 - 7412 Electrical Mechanics and Fitters
 - 7413 Electrical Line Installers and Repairers
- **742 Electronics and Telecommunications Installers and Repairers**
 - 7421 Electronics Mechanics and Servicers
 - 7422 Information and Communications Technology Installers and Servicers

75 Food Processing, Woodworking, Garment and Other Craft and Related Trades Workers

- **751 Food Processing and Related Trades Workers**
 - 7511 Butchers, Fishmongers and Related Food Preparers
 - 7512 Bakers, Pastry-cooks and Confectionery Makers
 - 7513 Dairy Products Makers
 - 7514 Fruit, Vegetable and Related Preservers
 - 7515 Food and Beverage Tasters and Graders
 - 7516 Tobacco Preparers and Tobacco Products Makers
- **752 Wood Treaters, Cabinetmakers and Related Trades Workers**
 - 7521 Wood Treaters
 - 7522 Cabinetmakers and Related Workers
 - 7523 Woodworking Machine Tool Setters and Operators
- **753 Garment and Related Trades Workers**
 - 7531 Tailors, Dressmakers, Furriers and Hatters



- 7532 Garment and Related Patternmakers and Cutters
- 7533 Sewing, Embroidery and Related Workers
- 7534 Upholsterers and Related Workers
- 7535 Pelt Dressers, Tanners and Fellmongers
- 7536 Shoemakers and Related Workers
- **754 Other Craft and Related Workers**
 - 7541 Underwater Divers
 - 7542 Shotfirers and Blasters
 - 7543 Product Graders and Testers (excluding Foods and Beverages)
 - 7544 Fumigators and Other Pest and Weed Controllers
 - 7549 Craft and Related Workers Not Elsewhere Classified

8 – Plant and machine operators and assemblers

Plant and machine operators and assemblers operate and monitor industrial and agricultural machinery and equipment on the spot or by remote control; drive and operate trains, motor vehicles and mobile machinery and equipment; or assemble products from component parts according to strict specifications and procedures.¹⁸

81 Stationary Plant and Machine Operators

- **811 Mining and Mineral Processing Plant Operators**
 - 8111 Miners and Quarriers
 - 8112 Mineral and Stone Processing Plant Operators
 - 8113 Well Drillers and Borers and Related Workers
 - 8114 Cement, Stone and Other Mineral Products Machine Operators
- **812 Metal Processing and Finishing Plant Operators**
 - 8121 Metal Processing Plant Operators
 - 8122 Metal Finishing, Plating and Coating Machine Operators
- **813 Chemical and Photographic Products Plant and Machine Operators**
 - 8131 Chemical Products Plant and Machine Operators
 - 8132 Photographic Products Machine Operators
- **814 Rubber, Plastic and Paper Products Machine Operators**
 - 8141 Rubber Products Machine Operators
 - 8142 Plastic Products Machine Operators
 - 8143 Paper Products Machine Operators
- **815 Textile, Fur and Leather Products Machine Operators**
 - 8151 Fibre Preparing, Spinning and Winding Machine Operators
 - 8152 Weaving and Knitting Machine Operators
 - 8153 Sewing Machine Operators
 - 8154 Bleaching, Dyeing and Fabric Cleaning Machine Operators
 - 8155 Fur and Leather Preparing Machine Operators
 - 8156 Shoemaking and Related Machine Operators
 - 8157 Laundry Machine Operators
 - 8159 Textile, Fur and Leather Products Machine Operators Not Elsewhere Classified
- **816 Food and Related Products Machine Operators**
- **817 Wood Processing and Papermaking Plant Operators**
 - 8171 Pulp and Papermaking Plant Operators
 - 8172 Wood Processing Plant Operators
- **818 Other Stationary Plant and Machine Operators**
 - 8181 Glass and Ceramics Plant Operators
 - 8182 Steam Engine and Boiler Operators
 - 8183 Packing, Bottling and Labelling Machine Operators
 - 8189 Stationary Plant and Machine Operators Not Elsewhere Classified

¹⁸ Plant and machine operators and assemblers: A Definition from ESCO



82 Assemblers

- **821 Assemblers**
 - 8211 Mechanical Machinery Assemblers
 - 8212 Electrical and Electronic Equipment Assemblers
 - 8219 Assemblers Not Elsewhere Classified

83 Drivers and Mobile Plant Operators

- **831 Locomotive Engine Drivers and Related Workers**
 - 8311 Locomotive Engine Drivers
 - 8312 Railway Brake, Signal and Switch Operators
- **832 Car, Van and Motorcycle Drivers**
 - 8321 Motorcycle Drivers
 - 8322 Car, Taxi and Van Drivers
- **833 Heavy Truck and Bus Drivers**
 - 8331 Bus and Tram Drivers
 - 8332 Heavy Truck and Lorry Drivers
- **834 Mobile Plant Operators**
 - 8341 Mobile Farm and Forestry Plant Operators
 - 8342 Earthmoving and Related Plant Operators
 - 8343 Crane, Hoist and Related Plant Operators
 - 8344 Lifting Truck Operators
- **835 Ships' Deck Crews and Related Workers**

9 – Elementary occupations

*Elementary occupations involve the performance of simple and routine tasks which may require the use of hand-held tools and considerable physical effort.*¹⁹

91 Cleaners and Helpers

- **911 Domestic, Hotel and Office Cleaners and Helpers**
 - 9111 Domestic Cleaners and Helpers
 - 9112 Cleaners and Helpers in Offices, Hotels and Other Establishments
- **912 Vehicle, Window, Laundry and Other Hand Cleaning Workers**
 - 9121 Hand Launderers and Pressers
 - 9122 Vehicle Cleaners
 - 9123 Window Cleaners
 - 9129 Other Cleaning Workers

92 Agricultural, Forestry and Fishery Labourers

- **921 Agricultural, Forestry and Fishery Labourers**
 - 9211 Crop Farm Labourers
 - 9212 Livestock Farm Labourers
 - 9213 Mixed Crop and Livestock Farm Labourers
 - 9214 Garden and Horticultural Labourers
 - 9215 Forestry Labourers
 - 9216 Fishery and Aquaculture Labourers

93 Labourers in Mining, Construction, Manufacturing and Transport

¹⁹ Elementary occupations: A Definition from ESCO



- **931 Mining and Construction Labourers**
 - 9311 Mining and Quarrying Labourers
 - 9312 Civil Engineering Labourers
 - 9313 Building Construction Labourers
- **932 Manufacturing Labourers**
 - 9321 Hand Packers
 - 9329 Manufacturing Labourers Not Elsewhere Classified
- **933 Transport and Storage Labourers**
 - 9331 Hand and Pedal Vehicle Drivers
 - 9332 Drivers of Animal-drawn Vehicles and Machinery
 - 9333 Freight Handlers
 - 9334 Shelf Fillers

94 Food Preparation Assistants

- **941 Food Preparation Assistants**
 - 9411 Fast Food Preparers
 - 9412 Kitchen Helpers

95 Street and Related Sales and Services Workers

- **951 Street and Related Services Workers**
- **952 Street Vendors (excluding Food)**

96 Refuse Workers and Other Elementary Workers

- **961 Refuse Workers**
 - 9611 Garbage and Recycling Collectors
 - 9612 Refuse Sorters
 - 9613 Sweepers and Related Labourers
- **962 Other Elementary Workers**
 - 9621 Messengers, Package Deliverers and Luggage Porters
 - 9622 Odd-job Persons
 - 9623 Meter Readers and Vending-machine Collectors
 - 9624 Water and Firewood Collectors
 - 9629 Elementary Workers Not Elsewhere Classified

The emerging results display a very interesting picture; here below few take-aways:

- 1.5 (Ethical and sustainable thinking), 2.1 (Self-awareness and self-efficacy) and 2.5 (Taking the Initiative) are a recurrent competence for all considered occupations. In other words, regardless of the underlie duty, each task shows some degree of civil and moral obligation towards society; some sort of compliance with self-efficacy beliefs and some trait of initiative and goal-oriented mindset – this is true for armed forces as well as financial managers and mining operators.
- 2.5 (Mobilizing others) is a competence that pertains specifically to five occupations out of the ten listed. Armed force profiles, managers, professionals, technicians/associated professionals and service/sales workers are the ones with the most tangible predisposition to “Inspire, enthuse and get others on board”.
- 1.2 (Creativity) as a mean to “Explore and experiment with innovative approaches combining knowledge and resources to achieve valuable effects” come in many different forms. We have been able to adapt this concept to the vast majority of the considered occupations, from armed forces to



craft workers. This testifies that, “Creativity” is a distinctive feature of labour itself, regardless of its entrepreneurial demonstration.

- Same can be said for 3.3; risk, ambiguity and uncertainty come in many different forms: as assumption, 3.3 is related to “Make decisions when the result of that decision is uncertain, when the information available is partial or ambiguous, or when there is a risk of unintended outcomes”, so an agricultural worker deals with risk as much as a general, a broker or a marketing manager.



Table 2: ESCO-EntreComp: Cross-Assessment Matrix (Occupations Pillar)

	0. Armed Forces	1. Managers	2. Professionals	3. Technician & Associate Professionals	4. Clerical Support workers	5. Service & Sales workers	6. Skilled Agricultural, Forestry & Fishery workers	7. Craft & related trades workers	8. Plant & Machinery operators & Assemblers	9. Elementary occupations
1.2 creativity	01 02 03	111 132 112 133 121 134 122 141 131 142 143	211 234 212 235 213 242 214 243 215 251 216 252 231 263 232 264 233 265	311 333 313 335 314 341 325 342 331 343 332 351	411 413 421 422 431 432 441	511 512 513 514 521 522 524	621 622 631 632 633 634	711 732 712 741 713 742 721 751 722 752 723 753 731		921
1.5 Ethical and sustainable thinking	01 02 03	111 112 121 122 131 132 133 134 141 142 143	211 232 212 233 213 234 214 235 215 241 216 242 221 243 222 251 223 252 224 261 225 262 226 263 231 264 265	311 331 312 332 313 333 314 334 315 335 321 341 322 342 323 343 324 351 325 352	411 412 413 421 422 431 432 441	511 512 513 514 515 516 521 522 523 524 531 532 541	621 622 631 632 633 634	711 712 713 721 722 723 731 732 741 742 751 752 753 753	811 812 813 814 815 816 817 818 821 831 832 833 834 835	911 912 921 921 931 932 933 941 951 952 961 962
2.1 Self-awareness and self-efficacy	01 02 03	111 112 121 122 131 132 133 134 141 142 143	211 234 212 235 213 241 214 242 215 243 216 251 221 252 222 261 223 262 224 263 225 264 226 265 231 233 232	311 331 312 332 313 333 314 334 315 335 321 341 322 342 323 343 324 351 325 352	411 412 413 421 422 431 432 441	511 512 513 514 515 516 521 522 523 524 531 532 541	621 622 631 632 633 634	711 712 713 721 722 723 731 732 741 742 751 752 753 753	811 812 813 814 815 816 817 818 821 831 832 833 834 835	911 912 921 921 931 932 933 941 951 952 961 962
2.5 Mobilizing others	01 02	111 141 112 142	221 234 222 235	321 341 325 342		511 521				



	03	121 143 122 131 132 133 134	223 242 224 243 226 263 231 264 232 265 233	331 343 332 351 333 352 335		522 524				
3.3 Coping with uncertainty, ambiguity and risk	01 02 03	111 112 121 122 131 132 133 134 141 142 143	211 241 212 242 213 243 214 251 215 252 221 261 222 263 223 224 225 226	311 332 312 333 313 335 314 341 315 342 321 351 322 352 323 324 325 331	411 412 413 421 422 431 432 441	531 532 541	621 622 631 632 633 634	811 812 817		
3.5 Taking the initiative	01 02 03	111 112 121 122 131 132 133 134 141 142 143	211 231 212 232 213 233 214 234 215 235 216 241 221 242 222 243 223 251 224 252 225 261 226 263 264 265	311 331 312 332 313 333 314 334 315 335 321 341 322 342 323 343 324 351 325 352	411 412 413 421 422 431 432 441	511 512 513 514 515 516 521 522 523 524 531 532 541	621 622 631 632 633 634	711 712 713 721 722 723 731 732 741 742 751 752 753 753	911 912 921 931 932 933 941 951 952 961 962	