

31st ESCO Maintenance Committee meeting
20 September 2019

Update on the development of the ESCO Skills and Knowledge Classification

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Main purposes of the hierarchy

- Search for and retrieve the 13,385 ESCO skill and knowledge concepts systematically to facilitate
 - Compilation of CVs and job vacancies
 - Annotation of qualifications with ESCO skill and knowledge concepts
 - Mapping of national skill and knowledge classifications to ESCO
 - Creation of skill (self-)assessment tools
 - Provision of targeted career guidance
- Match jobseekers with job vacancies based on their skills and competencies

Single all-embracing hierarchical framework

- 4 distinct sub-classifications structured according different principles and targeting different types of knowledge and skill/competence (KSC) concept:
 - Knowledge
 - Skills/competences
 - Attitudes & values
 - Language skills and knowledge
- All 13,865 KSC in the ESCO Skills Pillar to be classified to one and only one group in this 3 level hierarchical framework
 - Any cases where KSC might usefully be allocated to more than one category should be noted
- Existing transversal hierarchies to be retained
 - But linkages of individual sector and occupation specific KSC to these hierarchies should be reviewed

Overview of skills and knowledge hierarchy

K Knowledge

S Skills

- S01** Handling **and moving** goods, materials and plants
- S02** Working with animals
- S03** Constructing
- S04** Operating machinery, vehicles and specialised equipment
- S05** Interacting with computers
- S06** Installing, maintaining and repairing equipment and machinery
- S07** Assisting and caring for others
- S08** Cleaning **and waste disposal**
- S09** Creative thinking and expression
- S10** Communication, collaboration and social interaction
- S11** Obtaining, storing, monitoring, and using information
- S12** Managing people, activities, resources, and organisations

A Attitudes and values

- A1** Attitudes
- A2** Values

L Language skills and knowledge

Knowledge concepts

- The 2,837 ESCO knowledge concepts have been allocated to the 80 ISCED-F detailed fields of education
 - ✓ Internationally recognized comprehensive 3 level hierarchy developed by UNESCO adapted from EU FoET
 - ✓ Cover all knowledge gained through education.
 - ✓ comprehensive scope statements for each category and an alphabetical index to facilitate mapping
 - ✓ Linkage to educational programmes and qualifications classified to ISCED
 - ❖ ISCED F hierarchy **will** need adjustment for the purposes of ESCO.
 - Correspondence to ISCED-F should be retained

Principles for the skills section of the hierarchy

Criteria to arrange the remaining skill concepts into groups:

- Tools and equipment used
- The type of object on which the work is performed
- The function or outcome of the task or activity

When skills refer more than one of these variables (for example using x to do y) tools and equipment used should take priority

Groups should be homogeneous as possible in relation to at least one of these characteristics

Aggregate categories should not be sectorally based or reflect traditional methods of grouping occupations

- cross-sectoral, and thus transversal in character

Relevance for mobility between occupations should be the primary consideration

- in design of groups
- in the allocation of skill concepts to groups

Level of detail and number of layers

- Initial focus was on the first two layers of the Canadian Skills and Knowledge hierarchy
 - adapting or expanding its classes where necessary.
- allocating circa 10,000 skills concepts to 40 – 70 second level groups would result in excessively heterogeneous collections of skills.
- Additional layers allow subdivision of overcrowded and heterogeneous level 2 classes.
- A third (and in some cases even fourth) layer of specificity is beneficial for
 - testing coverage, clarity and demarcation of level 2 classes;
 - illustrating content and scope of level 2 classes;
 - guiding towards the right spot in the classification;
 - **matching jobseekers with job vacancies**

Development of third level

- 332 Intermediate Work Activities (IWA) specified in US O*NET were mapped to the second level of the hierarchy.
 - Mapped IWAs were used either singly or clustered to form Level 3 categories.
 - Keyword searches and filtering of ESCO skills to ensure the relevance of each category for ESCO.
- Skill concepts linked to more than 100 ESCO occupations were also mapped to the hierarchy.
- Additional Level 3 categories were created based on clustering of concepts found in the ESCO Skills Pillar
 - 2000 ESCO skills concepts allocated to the hierarchy.
 - Definitions and scope statements for level 3 categories content not obvious

Extract from the Skills Section – codes, group titles, definitions

S0400	Operating Machinery, Vehicles and Specialised Equipment	Controlling, operating and monitoring vehicles, stationary and mobile machinery and precision instrumentation and equipment.
S0410	Operating mobile machinery and equipment	Controlling the operation of vehicles and of machinery whose mobility is an integral part of its function.
S0411	Operating earthmoving equipment	Operating equipment for moving, excavating, smoothing or shaping earth
S0412	Operating agricultural or forestry equipment.	Operating mobile equipment specifically designed for agricultural or forestry purposes, such as cultivating land or harvesting crops and trees.
S0413	Operating lifting or moving equipment.	Operating equipment for lifting and moving objects, such as cranes, hoists, cable cars and lifting trucks
S0414	Driving heavy road vehicles.	Driving heavy vehicles, such as trucks and buses for the transportation of goods or people
S0415	Operating light vehicles	Controlling the movement of light vehicles such as motorcycles cars, taxis, vans and light trucks
S0416	Operating rail vehicles	Controlling the movement of rail vehicles such as trains and trams
S0417	Operating watercraft	Operating and controlling the movement of watercraft, including ships, boats and other vessels
S0418	Operating aircraft	Controlling the movement of aircraft including fixed wing aircraft, helicopters and drones

S0553 Using digital tools for collaboration, content creation and problem solving

Definition

Using ICT software and hardware to collaborate and communicate with others, creating and editing new content (from word processing to images and video) and solving conceptual, technical and practical problems.

Examples

Examples include:

1. Solve technical and navigational problems using global positioning systems
2. Use word processing software
3. Use hand-held ICT devices
4. Use email software and services
5. Use CAD software

Exclusions/scope notes

Excludes:

- Computer programming.
- Resolving computer problems.

Level 2 categories not further broken down

- S0170 Using hand tools
- S0510 Programming computer systems
- S0530 Setting up computer systems, networks, or other information systems
- S0540 Resolving computer problems
- S0820 Washing and maintaining textiles and clothing
- S1130 Managing information

Attitudes and values

16 transversal attitude and 3 transversal value concepts are listed in the transversal skills hierarchy.

- No occupation is linked directly to any transversal attitude or value,
- Numerous cross-sectoral and sector-specific skills/competences have been linked and are in turn allocated to occupations.

A1 Attitudes

- A101 Adapt to change
- A102 Attend to detail
- A103 Attend to hygiene
- A104 Cope with pressure
- A105 Deal with uncertainty
- A106 Demonstrate curiosity
- A107 Demonstrate enthusiasm
- A108 Demonstrate willingness to learn
- A109 Make an effort
- A110 Manage frustration
- A112 Manage quality
- A113 Meet commitments
- A114 Persist
- A115 Work efficiently
- A116 Work independently

A2 Values

- A201 Demonstrate consideration
- A202 Demonstrate good manners
- A203 Follow ethical code of conduct

Language skills and knowledge

- Each language is listed in the skills pillar as a **knowledge** concept
- 4 categories of language competence are listed as **skill/competence** concepts for almost all languages included in the Skills Pillar
- Separate categories for each language may be relevant for matching jobseekers with job vacancies

Language skills and knowledge

Generic language skills and knowledge

Speak different languages

Translate and interpret

English

Interact verbally in English

Write English

Understand spoken English

Understand written English

Technical language in English

Additional detail for two transversal attitudes

A1120	Manage quality	Pursue excellence in workplace processes, products and activities.
A1121	Assure quality of processes and products	Ensure the quality of all factors involved in a production process and establish quality standards and procedures for quality control
A1122	Apply quality standards	Follow defined procedures and standards which prevent errors in the creation and delivery of a product or a service to customers
A1123	Provide high quality client service	Respond to the expectations of clients and customers in a professional manner, anticipating and addressing their needs and desires, to ensure customer satisfaction and loyalty.
A1130	Meet commitments	Perform one's tasks in a self-disciplined, reliable and goal-oriented manner.
A1131	Meet deadlines	Ensure that operative processes are finished at a previously agreed time
A1132	Assume responsibility	Accept responsibility and accountability for one's own professional decisions and actions, or those delegated to others.
A1132	Stay within budget	Stick to an agreed budget and adapt work and materials to budget

Allocation of ESCO concepts to the hierarchy

ESCO team will map all remaining ESCO skill/competence concepts to the hierarchy using guidelines developed by the expert team.

1. bulk mapping using keyword searching similar to the process used for the knowledge concepts.
 2. concepts not mapped using this bulk method to be mapped individually.
- ❖ Correspondence table between the O*NET IWA and the ESCO hierarchy will be a useful resource to assist mapping.
 - Searching the IWA to identify terms used in the ESCO concepts can allow relevant categories in the ESCO hierarchy to be identified.
 - ❖ Each concept should be allocated to one and only one subcategory in the hierarchy
 - making note of any cases where ESCO KSCs might usefully be assigned to more than one higher level category
 - ❖ Exclude orphaned KSCs from structuring or add them to appropriate occupational skills profiles.

Review allocations and adjust the hierarchy

Once allocation of the ESCO Skill concepts has been completed we recommend that the allocations be reviewed by experts in labour market classification in order to:

- Validate the allocations;
- Propose adjustments to the hierarchy to accommodate concepts that could not be allocated to any of the substantive third level categories;
- Identify groups at all levels that are excessively heterogeneous
- Identify groups that are not linked to a sufficiently significant number of skill concepts or occupations to justify their separate identification
- Propose adjustments to the hierarchy to improve its useability, **including the ordering of categories at all levels.**
- Amend ESCO skills if they prove to be too heterogeneous, too vague or too complex to be allocated to the skills classification.

Finalising and rationalising

- Hierarchy should only be considered as a “final” Version 1 of European Skills and Knowledge Classification once.
 - ❖ all KSCs have been assigned to it
 - ❖ KSC's have been cleaned up
 - ❖ feedback from mapping national skill classifications has been incorporated.
- Many ESCO skills concepts in the ESCO skills pillar overlap with each other or are effectively the same
- It will be extremely difficult for member states to map their national classifications directly to the ESCO skill concepts unless these are first rationalised
- High priority should be given to reviewing and rationalising the skill concepts whilst structuring them.

Looking further ahead

- A skills classification for matching job-seekers with job vacancies should offer several layers of specificity leading from the rather generic to the more and more specific.
 - currently ESCO provides mostly highly contextualised skills
 - used, and useful, only for a limited set of occupations and vacancies.
- A fourth layer of specificity would allow these very similar concepts, with a high degree of skill transferability, to be grouped together,
 - reflecting the more deeply structured vocabularies commonly used in national skills classifications.
- **OR** the repository of skills and knowledge could be transformed into a thesaurus, leading from the general to the more specific, within the framework of a relatively flat classification hierarchy.
- Once ESCO's KSCs have been classified according to the hierarchy, options for further development may become clearer.

Thank you!

