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What counts as a skill? Comparing eight major skills taxonomies

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Abstract

Over the past decade, multiple major skills taxonomies have been developed or revamped, each presented by its developers as a ‘common language’ for skills. Despite this shared purpose, the taxonomies differ at two levels: in what each defines a skill to be, and in which skills each contains and how they are described. The result adds to the confusion rather than alleviating it. This impacts young people, who are asked to name their skills to employers yet struggle to do so. This study profiles eight major skills frameworks to identify how skill is defined within the documents, and which core skills are identified. Document analysis of the released files and method documents for eight skill taxonomies against a template covering purpose, method, structure, coverage, and definition, combined with reflexive thematic analysis of the core skills named within the taxonomies. The frameworks use common sources and share a dual-layer structure separating core from technical skills; construction methods combine expert, industry, and AI/ML approaches, and method shapes the hierarchy. At the level of the concept, the frameworks differ in whether and how each defines skill, and in where each places attributes and attitudes. At the level of the named skills, they largely agree: the same 12 core skills recur, described in similar terms under different titles. Skills taxonomies hold potential to improve access to, and clarity over, the labour market. Using familiar language for skills, sharing descriptions with other taxonomies, and allowing individuals to see and choose from alternative titles could improve usability.

Keywords: skills taxonomies, skill frameworks, core skills, technical skills

1. Introduction

To understand which skills benefit young people as they transition into the workplace, it is essential to first investigate which skills are recognised within formal skill development frameworks, how they are described and classified, and how they could be applied in educational and employment contexts. With the advent of multiple national skills taxonomies, the answers now arrive pre-packaged: some person (or machine) in a central office has already decided which skills count, sorted them into categories, and given them names. The impact of this is significant; young people are entering an uncertain labour market, disrupted by a global pandemic and an artificial intelligence (AI) revolution, which has reduced the number of entry-level opportunities for school leavers and graduates (Atkins et al., 2020; Mann et al., 2020), traditional tools and pedagogies may no longer be sufficient to prepare them (Shtaltovna, 2026), and some suggest the remedy lies outside qualifications, in the acquisition and demonstration of skills (OECD, 2026).

Skills are currently described and classified in a multitude of ways; for example, in higher education the discourse centres on employability skills that prepare graduates to leave work-ready (Cheng et al., 2022), some not-for-profit organisations develop skill frameworks to aid in development initiatives (World Economic Forum, 2021), and national bodies develop complex hierarchical taxonomies to assist in workforce analysis (Elias et al., 2023). Eight of these frameworks and taxonomies form the corpus for the present study: O*NET, the European Skills, Competences, Qualifications and Occupations (ESCO), the United Kingdom's Standard Skills Classification (SSC), Canada's Skills and Competencies Taxonomy (SCT), the now defunct Australian Skills Classification (ASC), SkillsFuture Singapore, the World Economic Forum (WEF) Global Skills Taxonomy (GST), and the International Labour Organization (ILO) Global Framework on Core Skills (Table 1).

Despite differences in definition and categorisation, all eight taxonomies in the corpus claim within their official documentation to have developed a 'common language' for skills for the purposes of improving transferability of skills across the labour market. This study compares the taxonomies and investigates how each conceptualises and defines skill and identifies their lineage, methodology, and governance. Two findings emerged from the analysis: that taxonomies agree on substance but disagree on nomenclature, and that early, and often-undocumented, choices of definition and method lead to inconsistencies and duplication within the taxonomies. From this, practical considerations are suggested that educators, careers practitioners, and system designers could use to evaluate any taxonomy before adopting it for work with young people.

2. Literature Review

The question of 'which skills count' is not an abstract one for young people, who often struggle to identify and articulate their own skill sets; within the graduate employability literature the skills gap has been recharacterised not simply as a 'skills' gap but as an 'articulation' of skills gap (Tomasson Goodwin et al., 2019). In a quasi-experimental study of 3,398 Canadian undergraduates, less than a third could connect one of their identified skills to a future situation, and neither a year of study nor work placements made any improvement (Tomasson Goodwin et al., 2019). Australian students similarly report persistent difficulty articulating their achievements and capabilities (Jackson & Edgar, 2019), and students rate soft skills lower than

the employers who will assess them (Succi & Canovi, 2020). Articulation depends on language, and for most young people the language available is what the official taxonomies supply; what they name, and what they leave unnamed, matters. The difficulty may begin further upstream, in the construct itself. A review of the soft skills for employability literature found clear agreement that employability and career preparedness "cannot be simply defined, quantified, or put into practice" (Villegas, 2024, p. 200), while a review of 119 business and management studies found no consensus on the definitions of soft skills or competencies, the two terms used interchangeably (Marin-Zapata et al., 2022). Where skills are defined in the literature, they are often considered through a narrow, individualistic lens; in a systematic scoping review, Hvalby et al. (2024) identified that studies were silent on collectivist perspectives.

Efforts to resolve this disagreement have tended to produce further frameworks rather than consensus. One line of work has built taxonomies computationally from labour market texts, so the taxonomy need not be agreed in advance (Djumaieva et al., 2018; Gallagher et al., 2022; Khaouja et al., 2019), while institutions continue to declare common languages from above; in Australia, Jobs and Skills Australia is currently consulting on a National Skills Taxonomy intended to "establish a common language through which all Australians can meaningfully discuss skills" (Jobs and Skills Australia, 2026), less than a decade after the Australian Skills Classification was built with the same stated purpose. The proliferation of taxonomies and their rapid turnover, have been linked to limited engagement and slow uptake in higher education, with gaps growing between educators, students, industry, and government (Doherty & Zhang, 2025, p. 1).

The taxonomies themselves have begun to attract study. Commissioned reviews have catalogued them, typically starting from O*NET as "an obvious starting choice" (Popov et al., 2022, p. 6). Albert and Weko (2025, p. 12) compared a set of skill related taxonomies on their purpose, scale, granularity and governance, describing four broad models by which they are constructed. While this work examines how taxonomies are made and maintained, it does not explore their lineage, whether they are structurally the same kind of object, or what each means by 'skill'. That is the gap this review addresses.

3. Method

This study employs document analysis (Bowen, 2009) to investigate eight recently developed, large-scale skill frameworks (Table 1), including their published rationale and methodology, online instructional materials, and the taxonomy files themselves. Frameworks were included if they were official national or supranational instruments; developed through a research-backed and open method, with methodology and validation accessible; adopted within their jurisdiction; carrying definitions and sufficient detail to determine their definition of skill; and covering the breadth of the workforce rather than a single industry. Frameworks falling outside these criteria include three national taxonomies that are not publicly available: Chile's catalogue of competencies (Comisión del Sistema Nacional de Certificación de Competencias Laborales, 2026), Japan's O*NET-based occupational information network (Kamakura et al., 2020), and China's occupational classification (Xu et al., 2020).

TABLE 1. EIGHT FRAMEWORKS AND VERSIONS

Framework	Jurisdiction	Developer	Released	Version	Licence
O*NET Content Model	United States	US Department of Labor; National Center for O*NET Development	1998	Database 30.3 (May 2026)	CC BY 4.0
ESCO skills pillar	European Union	European Commission	2017 (v1)	v1.2.1 (December 2025)	CC BY 4.0
UK Standard Skills Classification (SSC)	United Kingdom	Skills England, with the Institute for Employment Research	2023 (design); 2026 (v1.0)	v1.0.0	Open Government Licence v3.0
Skills and Competencies Taxonomy (SCT)	Canada	Employment and Social Development Canada	2019	2025 release, v6.0	Open Government Licence (Canada)
Australian Skills Classification (ASC)	Australia	National Skills Commission, then Jobs and Skills Australia	2021	v3.0 (December 2023); retired	CC BY 4.0
SkillsFuture (TSC and CCS)	Singapore	SkillsFuture Singapore, with sector partners	2015	2026 dataset (updates to April 2026)	Government terms: attribution required
Global Skills Taxonomy (GST)	Global	World Economic Forum	2021	No version – current August 2026	CC BY-NC-ND 4.0
Global framework on core skills	Global	International Labour Organization	2021	v1	ILO publication rights

Source: own compilation

Taxonomies which focus on one sector in isolation were also excluded, such as the European Union's DigComp (Cosgrove & Cachia, 2025) or the OECD Learning Compass (OECD, 2018), as were non-state frameworks such as the VIA classification of character strengths (Littman-Ovadia et al., 2021), as they answer to their own governance rather than to a jurisdiction and were not built to describe a whole workforce. The two international frameworks retained, the ILO's and the WEF's, are issued by an intergovernmental agency and an international organisation respectively; the WEF is the edge case, included for its documented derivation from O*NET and ESCO and its adoption, through Singapore, into a national system. Each was analysed at its most current release in August 2026 (Table 1).

The ASC is no longer maintained but is still available for research. Each framework was read against a single template covering purpose, methodology, validation, governance, structure and composition, coverage, and definition. Purpose, methodology, validation, and governance were identified in each framework's own documentation, and recorded as unclear where the documents were silent; Albert and Weko's (2025) four methods of taxonomy development were used as a lens for understanding methodology: expert survey or field research, AI/ML analysis of large-scale occupational data, collaboration with industry associations, and adaptation of

existing taxonomies. Structure and composition were identified from the taxonomy itself and its files, rather than taken as described in the official documentation, and where there is a discrepancy, it has been noted. The lineage of each taxonomy was identified through the statements of sources, while the overall definition of skill and descriptions of individual skills were extracted verbatim; where no definition is given, the absence is recorded as a finding.

Coverage was examined by thematic analysis of the core, essential, or transferable skills each framework names (Braun & Clarke, 2021). Taking the first skill layer in each framework, along with the adjacent person-descriptor categories (O*NET's Work Styles and Abilities; the SCT's Personal Attributes and Abilities), and setting aside knowledge items, I compared the named skills across the eight taxonomies, grouping those that name the same concept under different labels, and recording where a concept sits outside the core list and where it is absent. The themes and the frameworks' own titles under each are reported in the findings. The structural and definitional material was then read for recurring patterns, identified and named by me rather than counted from a codebook. In the findings section below, for brevity, quoted skill titles and descriptions are attributed by framework abbreviation (SSC, SCT) and come from the framework's released files at the version in Table 1, with full citations in the reference list.

4. Findings

4.1. Purpose

All eight frameworks share a common purpose: to provide a 'common language' of skills present in the labour market. The SSC aimed to provide "a coherent framework and common language for describing the skills, tasks, and knowledge required across the labour market" (Bachelor et al., 2026, p. 5). ESCO and the SCT frame the same aim as a common language that "can be used by different stakeholders" (European Commission, 2025b, para. 2), a "common competency dictionary" (Employment and Social Development Canada, 2025a, para. 1). The WEF, more ambitiously, wanted to create "a 'universal adapter' for existing taxonomies" as the "first step toward making skills the currency of the labour market" (World Economic Forum, 2021, pp. 2, 6). The ILO states the same problem from the other side: "there is currently no framework that adequately addresses the impact of global drivers of transformative changes... there is also a lack of coherence in the definition and categorization of core skills," and it frames access to a common language as a human right, enshrined in international law (International Labour Organization, 2021, p. 17). Most of the taxonomies hold back from critiquing their fellow developers, but the WEF does not, observing that few have "considered the practical functionality for end users such as job seekers, employers and learning providers" (World Economic Forum, 2021, p. 17), at odds with the other seven frameworks' stated purposes.

4.2. Methodology and Validation

Each taxonomy was developed through its own methodology, though approaches recur, and Albert and Weko's (2025) four methods of taxonomy development (survey, AI, collaboration, adaptation) are clearly visible in the corpus.

TABLE 2. FRAMEWORK METHOD AND VALIDATION

Framework	Method	Validation
O*NET	Survey (incumbents, supervisors, analysts; expert review at revisions)	Validity of the descriptor system reported at development; trained analysts; scheduled data collection
ESCO	Adaptation (EURES; O*NET IWAs; Canadian glossary; ISCED-F) + Collaboration (reference groups) + AI analysis from 2024	v0 piloted 2013 to v1; ongoing evaluation in use
UK SSC	AI analysis (embeddings, clustering over statement libraries and vacancy data) + Adaptation (O*NET DWAs, ESCO level 4, NCS libraries), with expert review	Expert review; checks against vacancy-extracted skills; planned CV-library validation abandoned as too costly
Canada SCT	Adaptation (internal products, O*NET, other capability frameworks) + consultation with stakeholders	None reported; continuing consultation
ASC	AI analysis (clustering for specialist tasks) + Adaptation (O*NET DWAs; VET Employability Skills Framework), with human refinement	Employer surveys, job-ad data and course documentation; expert review
SkillsFuture	Collaboration (government with employers, unions, and professional bodies, sector by sector) + AI extraction to unify sector frameworks	Extraction evaluated on course and job-posting datasets; expert validation planned
WEF GST	Collaboration (CLOs, CHROs, providers, data experts) + Adaptation (O*NET, ESCO, members' frameworks)	Expert review and user testing
ILO	Adaptation (literature review of core-skills frameworks) + Collaboration (academia, experts, UN agencies, national authorities)	Expert review and user testing; usage guides and toolkit; users adapt to context

Source: own compilation

Within this corpus (Table 2), O*NET is the only taxonomy that has utilised (and continues to utilise) survey or field-based research methods, which may contribute to its reputation as the taxonomy to ‘borrow’. AI and data-driven approaches are popular with the most recent taxonomies: the SSC drew statements from several datasets, with AI models used “to generate embeddings, cluster concepts, and propose labels, while manual reviews ensured accuracy, reliability, and UK relevance” (Bachelor et al., 2026, p. 5), and the ASC was built “using a mix of machine learning and human judgement,” its specialist tasks clustered by three algorithms and its core competencies taken from the vocational sector’s Employability Skills Framework (Jobs and Skills Australia, 2023, p. 13).

Both Canada and Singapore took a more collaborative approach: Canada combined existing Canadian source documents with O*NET’s structure and consultation with industry experts (Employment and Social Development Canada, 2025b), while Singapore’s frameworks were “developed for the Singapore workforce by the government in partnership with employers, industry associations, unions, and professional bodies” (Skills & Workforce Development Agency, Singapore, 2026b, “Skills Frameworks” section), sector by sector, recently unified into one skills list by AI extraction and semantic mapping (Tan et al., 2025). The WEF and ILO combined consultation with expert review: the WEF consulted chief learning and human-resource officers, learning providers, and data experts (World Economic Forum, 2021, p. 17), while the ILO distilled its 19 skills from “a thorough literature review of international and

national core skills frameworks” and consultations with academia, UN agencies, and national authorities (International Labour Organization, 2021, p. 26).

Validation across the corpus is uneven and thinly reported. O*NET set the course with validity standards recorded in its founding report (Peterson et al., 1997), while the ESCO, ASC, and SSC document pilot programs and user feedback. Barriers were most often time and cost; the SSC's report records that “the initial design report included a step to validate the classification against a large CV library but licensing this, or an up-to-date equivalent, proved prohibitively complex and expensive” (Bachelor et al., 2026, p. 30). For the SCT, WEF, and ILO, validation sat inside the development process itself, through consultation, expert review, and user testing, with no separate validation reported.

4.3. Governance

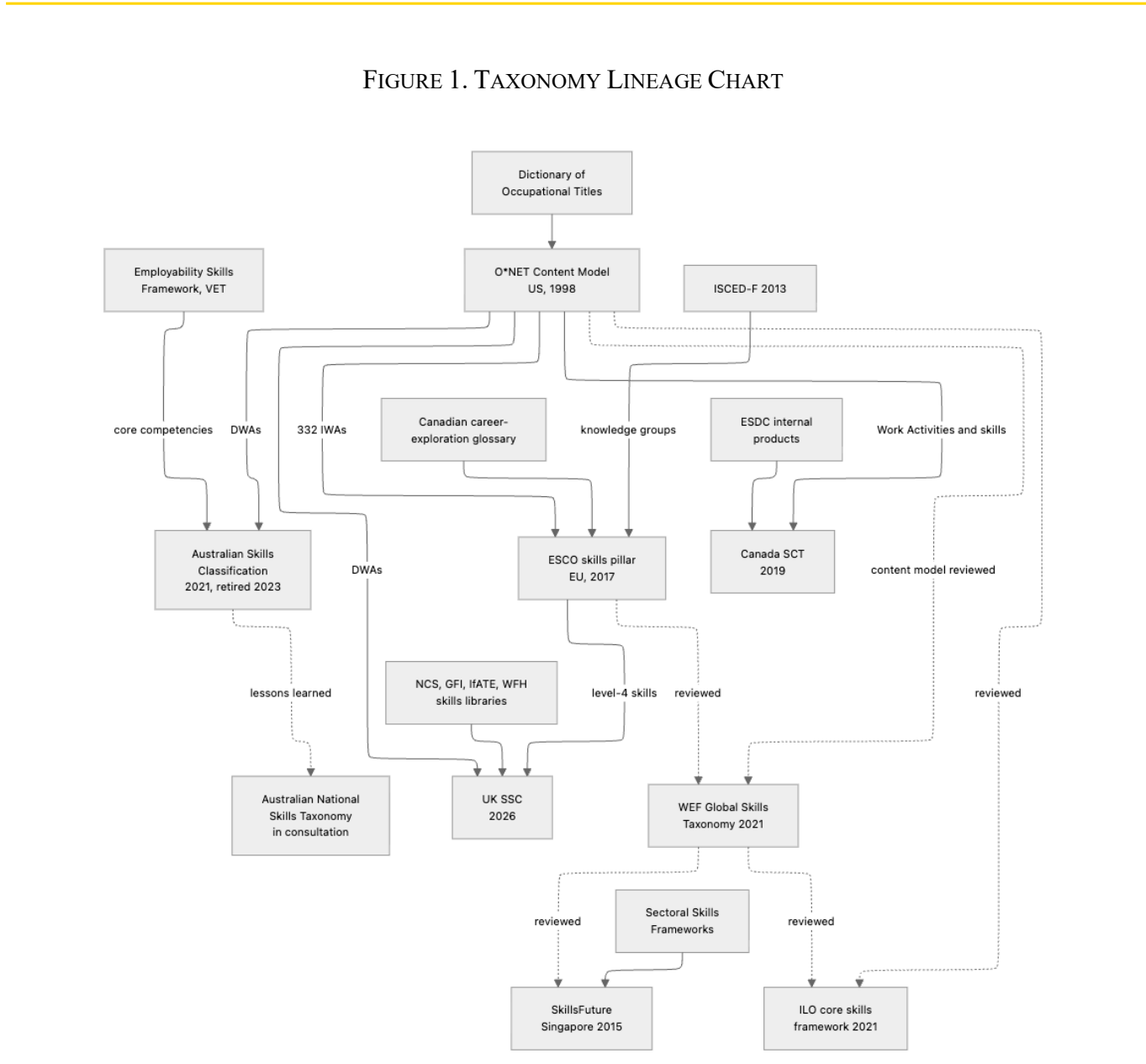
Ongoing maintenance, review, and governance was generally robust: most are actively maintained and reviewed to a schedule, with documentation produced for each review. Most of the developers consider these ‘living’ taxonomies, expected to change shape with the labour market. ESCO and SkillsFuture have incorporated AI/ML into the maintenance processes (European Commission, 2025c; Tan et al., 2025) while O*NET outsources occupation changes to expert analysts (Green & Allen, 2020). The WEF reviews its taxonomy biennially with one of its key reports but publishes no version numbers or update documents, and I could find no evidence of updates or reviews for the ILO taxonomy. The ASC was retired within a few years, with consultations on its successor under way (Jobs and Skills Australia, 2026).

4.4. Lineage

On the surface the taxonomies appear unconnected, each organising and naming its hierarchy differently, yet the sources behind each reveal connections (Figure 1); five explicitly name O*NET among their key sources (ESCO, SCT, SSC, ASC, WEF).

The SSC lists O*NET Detailed Work Activities beside ESCO level four skills, National Careers Service skills, and several UK standards libraries (Bachelor et al., 2026, p. 27); ESCO's developers “mapped the 332 Intermediate Work Activities (IWA) specified in US O*NET to the second level of the hierarchy” and took upper-layer groups from a Canadian career exploration glossary (European Commission, 2025a, “Structure of the skills pillar” section); and a WEF-published account reports that Singapore's skills taxonomy was developed with the Forum from the sectoral skills frameworks (World Economic Forum, 2025). Only the ILO states no parent, having arrived there by reviewing everyone else's frameworks; its ‘nil’ lineage is about adoption rather than influence.

Each framework developed its own set of core or transferable skills, most beginning with skills from the sources, commonly O*NET's 35 Essential and Transferable skills, refined using local references such as the ASC's vocational sector Employability Skills Framework (Jobs and Skills Australia, 2023). For the technical skills, each took a level of the O*NET Work Activities as a seed: Canada the Generalized Work Activities almost verbatim (Employment and Social Development Canada, 2025b), ESCO the Intermediate Work Activities for its third level (European Commission, 2025a), and the SSC and ASC the Detailed Work Activities as a starting place for their own technical skills and tasks (Bachelor et al., 2026; Jobs and Skills Australia, 2023).



Source: own composition

4.5. Structure and Composition

Whatever their differences in method, the eight frameworks converge on one structural habit: they separate a short list of core, transferable, or critical skills from a much larger body of technical or occupational skills, and the two layers are named, sourced, and maintained differently (Table 3). The exceptions are the two international frameworks: the ILO's 19 skills and the WEF's 81 sit in one flat list each, mixing basic digital and green skills with social, emotional, and cognitive ones (International Labour Organization, 2021), and around a third of the WEF's leaves are technical items sitting beside creative thinking and empathy (World Economic Forum, 2021). They are, in effect, core layers without a framework around them, and this paper's comparison concerns the six national taxonomies.

TABLE 3. STRUCTURE OF SKILL TAXONOMIES

Framework	Core Layer	Technical Layer	Layer Connections
O*NET	Essential and Transferable Skills (35); dispositions separate as Work Styles (21)	Work Activities: generalized, intermediate, detailed (2,087)	Crosswalks from each skill to GWAs only; 39 of 41 covered; nothing at detailed level
ESCO	Transversal skills and competences (97)	Skills (10,338); knowledge (3,145) and language (359) separate	60 skill-to-skill relations touch transversal concepts; otherwise via occupation profiles
UK SSC	Core Skills (13)	Occupational Skills (3,350), with 22,583 tasks and 5,056 knowledge concepts	Every occupational skill scored 1 to 5 on all 13 core skills; a weighted many-to-many profile
Canada SCT	Skills (43), with Personal Attributes (32) and Abilities (56) beside them	Work Activities (44, at O*NET's generalised grain)	Siblings in one tree; no crosswalk; connected via occupation profiles
ASC	Core competencies (10)	Specialist tasks (1,686); technology tools (94)	No task-competency mapping; both attach to occupations; competencies scored per occupation on a 10-point scale
SkillsFuture	Critical Core Skills (16)	Technical Skills and Competencies (2,300)	None; only 75 of 2,001 job roles list any Critical Core Skill
WEF, ILO	The whole framework (81; 19)	none	not applicable

Source: own compilation

The core layers differ most in what their builders decided a short list may contain. ESCO's transversal concepts each carry a description and alternative labels, and the SSC writes levelled proficiency descriptors under each Core Skill (Bachelor et al., 2026); the ASC's core competencies carry a one-line description and nothing else (Jobs and Skills Australia, 2023). The sharper split, though, is over what counts as a skill at all. O*NET files creativity, adaptability, and stress tolerance under Work Styles, "personality tendencies exhibited at work" (National Center for O*NET Development, n.d., "Worker Characteristics" section), and the SCT copies the split with its Personal Attributes and Abilities (Employment and Social Development Canada, 2025b). ESCO draws the same line by exclusion, admitting attitudes and values into the transversal layer "only to the extent that they can be learned and developed" (Hart et al., 2021, p. 3). The SSC, the ASC, and SkillsFuture make no such separation, publishing one short core list in which adapting and self-management sit beside numeracy as skills of the same kind. As the next section argues, the split aligns with each framework's definition: where the definition of skill includes how it is acquired, the framework needs somewhere to put the things a person has but did not learn, and where the definition speaks only of use, one list is enough.

The technical layers are more alike; all six are hierarchical, and all connect, usually at the lowest level, to the jurisdiction's standard occupational classification. They vary at the higher levels: O*NET categorises by subject of activity, and the SCT inherits this structure; the ASC, the SSC, and SkillsFuture organise by sector, with trees that read as industries; ESCO sits between the two. This structure makes sense given their lineage, as O*NET and the SCT share

methodology, and the sector-based trees belong to the frameworks that clustered their statements from occupational and industry text.

The level of detail at the statement level is broadly common: most technical skills carry a title and a one- or two-line definition; ESCO adds alternative labels, scope notes, and collections that cut across its hierarchy (European Commission, 2025a). SkillsFuture differs in register, naming many of its Technical Skills and Competencies as noun phrases rather than actions. In general, though, the technical skills take one grammatical form: a verb applied to a subject, occasionally qualified by an outcome or domain (“monitor equipment operation to ensure proper functioning”), which is precisely the shape their occupational-task parentage would predict.

4.6. Definition

Each taxonomy phrases its definition of ‘skill’ differently, but the elements repeat. Every taxonomy describes skills in relation to their application, meaning how they are used in a job, task, or occupation: O*NET to “work performance,” the SCT to “a job, role, function, task, or duty,” the ILO to transfer between occupations. None of the eight defines a skill as a property of a person independent of employment, and three fail to define ‘skill’ as an independent concept at all; the ASC describes its core competencies as “skills that are common to all jobs” without actually defining skill (Jobs and Skills Australia, 2023, p. 7), SkillsFuture likewise defines the skills without defining ‘skill’ itself or distinguishing it from competency (Skills & Workforce Development Agency, Singapore, 2026a), and the WEF separates ‘skills, knowledge, and abilities’ from ‘attitudes’ at the top level of its taxonomy without defining either (World Economic Forum, 2021).

Beyond that, the taxonomies split into two traditions – one which includes method of acquisition or development, and one which concentrates solely on use of the skill. The three which reference skill development, O*NET, SCT, and ESCO, separate acquired skill from “innate and developed aptitudes” and personal attributes (Employment and Social Development Canada, 2025b, “Note on the nuance” section) and house qualities they consider valued but not learned in adjacent categories, such as O*NET’s Work Styles or the SCT’s Personal Attributes and Abilities. The taxonomies which define skill by application alone, the SSC and ILO, have no need to separate out attributes or attitudes.

Even where a definition exists, there is confusion within the taxonomies about how skill should be defined. The SCT’s own pages acknowledge the skills-and-competencies debate and concede that “the title of the Taxonomy is not accurate” (Employment and Social Development Canada, 2025b, “Note on the nuance” section); ESCO defines skills and competences as different and then records “no distinction between skills and competences” in the pillar itself (European Commission, 2025a, “Knowledge, skills and competences” section); and the ILO’s founding rationale for adding an eighth framework to the seven was “a lack of coherence in the definition and categorization of core skills” (International Labour Organization, 2021, p. 17). A young person using any of these taxonomies will first have to navigate duplications and overlap, then determine whether their skills are transferable skills, attributes, attitudes, values, work styles, or work activities before they can begin to search for meaning.

4.7. Thematic Coverage: The Twelve Named Core Skills

Each taxonomy contains a grouping of core skills which is both shorter and usually flatter than the group of technical skills. While the titles and structure of these groups differ, the same common skills appear across them when analysed thematically. By grouping the 294 items from the highest skill layers (and their adjacent categories) by concept, rather than by name, and setting aside concepts named by fewer than half of the frameworks, this leaves 12 concepts present in at least half of the taxonomies (Table 4). What was discarded is itself informative: environmental and civic skills appear only in the international instruments, career management only in the ILO and ESCO, and a handful survive only inside others (decision making inside problem solving, conflict resolution inside leadership, emotional intelligence inside teamwork). None of the surviving concepts is technical, and the shared core of thinking, communicating, organising, and self-management has the least consistent definitional patterns.

TABLE 4. TWELVE CORE SKILL CONCEPTS

Concept	Named in	Adjacent category (if so)	Absent from
Literacy (reading and writing)	7 of 8	–	SkillsFuture
Numeracy	7 of 8	–	SkillsFuture
Communication	8 of 8	–	–
Problem solving (incl. decision making)	8 of 8	–	–
Learning	8 of 8	partly Work Styles (O*NET) and Personal Attributes (SCT)	–
Teamwork	8 of 8	partly Work Styles (O*NET) and Personal Attributes (SCT)	–
Planning and organising	8 of 8	–	–
Creativity and innovation	8 of 8	Work Styles (O*NET); Personal Attributes (SCT)	–
Digital Literacy	8 of 8	Software Skills, a tools list (O*NET)	–
Adaptability and initiative	7 of 8	Work Styles (O*NET); Personal Attributes (SCT)	ASC (initiative only, adaptability absent)
Leadership and Developing Others	7 of 8	partly Work Styles (O*NET); Personal Attributes (SCT)	ASC
Critical and analytical thinking	6 of 8	Personal Attributes, in part (SCT)	UK SSC (inside problem solving), ASC

Source: own compilation

Read across the frameworks, the concepts converge in meaning while diverging in title. Literacy and numeracy appear as a pair everywhere except SkillsFuture, which treats them in a separate part of its framework (Skills & Workforce Development Agency, Singapore, 2026c), and both are defined as applied (‘apply mathematical techniques’, SSC). Communication is read as oral and interpersonal, echoing the literature (see Hargie & Dickson, 2004), with an implied or explicit ‘other’ in every definition. Problem solving, named identically in all eight, is the closest the corpus gets to a universal skill and usually carries decision making inside it; its descriptions follow one pattern of identifying, analysing, evaluating, and implementing. Learning shows the widest spread of titles, ‘active learning’, ‘willingness to learn’, ‘learning agility’, ‘self-reflection and learning to learn’, over essentially one meaning. Teamwork descriptions carry an undercurrent of harmony, “a tendency to be pleasant, helpful, and willing

to assist others at work” (O*NET). Creativity, adaptability, initiative, and learning are reframed as personal qualities in O*NET’s Work Styles and the SCT’s Personal Attributes, exactly the frameworks whose definitions of skill include acquisition. Digital literacy reads more task-like than the rest; critical and analytical thinking splits most, one named skill in some frameworks and seven in the SCT; and leadership travels with persuasion, negotiation, and developing others, which leans towards teaching rather than directing.

Three themes emerged from the grouping of the core skills. First, the way the taxonomy defines ‘skill’ as an overarching concept dictates where self-directed skills (such as creativity, initiative, and resilience) are placed within the taxonomy’s categories; where a taxonomy specifies that ‘skill’ is something that can be developed, self-directed skills are pulled out of core skills and into adjacent categories, such as O*NET’s Work Styles. Where the taxonomy does not mention how ‘skill’ is developed in the concept definition, all core skills are grouped within the same single list. Second, the meaning of the 12 core skill concepts is stable between the taxonomies, while the titles used for these concepts are not: for example, the ASC kept O*NET’s description verbatim, but chose new names, with no rationale for the variation within the methodology. This suggests that there is commonality between the concepts, if not the labels. Third, as the core skill groups are flat with little or no internal structure, this hides granularity that is present in a closer reading of the descriptions. Using a taxonomic or hierarchical internal structure within the core skill groups could allow each high-level concept to be split into its components, and may be more useful than a flat list which places all skills at the same level.

5. Discussion

Two arguments follow: the first concerns the commonality of the taxonomies, the second the descriptions underneath them. The eight taxonomies were built using different methods in different decades, yet they arrive at substantially the same place: they state the same purpose, draw on a small shared pool of sources, converge on a dual-layer structure, and name the same 12 core concepts, with descriptions that differ far less than the titles above them.

Should the response therefore be a single taxonomy for everyone? Each taxonomy is fitted to its own jurisdiction and occupational classification, yet retains its own unique linguistic structure and nomenclature, and the real difference between them could turn out not to be the skills included, or their descriptions, but rather the names each skill is assigned. Existing approaches to classifying and studying skills have focused on individualistic interpretations (Hvalby et al., 2024), which limit the scope of the conversation to impacts on the individual and fail to consider the surrounding ecosystem (Donald et al., 2024), and a socially just approach could lie in providing access to multiple frameworks and the critical consciousness to choose between them (Sattler, 2025). If so, interoperability may matter more than exact agreement on names, and ESCO already has a working mechanism: one canonical title per concept, with alternative labels recording synonyms in common use.

The second argument concerns definition. Three of the eight taxonomies (the ASC, SkillsFuture, and the WEF) never defined skill at the outset, and where a definition exists, its content shaped the taxonomy: definitions that specify how a skill is acquired produced side categories for attributes and attitudes, somewhere to put the qualities a person *has* but did not *learn*, while definitions which only specified application of skill led to a single list of core skills. The method of construction also constrained what could count as a skill: clustering occupational

text can only surface skills already named in it, while expert authoring and consultation produced person-centred categories the clustered taxonomies lack. In several taxonomies, what counts as a skill was decided by the construction method itself, and the inconsistencies between the eight follow from those early, largely undocumented choices.

For young people, the consequence returns to the articulation gap described in the literature review. Tomasson Goodwin et al. (2019) found that few students could articulate their own skills without explicit teaching; the workplaces they are entering no longer offer traditional vertical career paths, and they will need to understand how their skills transfer to navigate a path for themselves (Sabra & Chan, 2025). If a school leaver asked to name their skills reaches for resilience, they will find it named as a skill by the WEF and ESCO, treated as a personality trait by O*NET and the SCT, and not listed at all by the SSC or the ASC; whether the system reading their application recognises resilience as a skill depends on which taxonomy sits behind it. Each of the eight taxonomies was built to resolve this confusion, but the lack of coherence the ILO identified in the field (International Labour Organization, 2021) appears within the taxonomies themselves.

6. Conclusion

Read against one template, the eight taxonomies share a stated purpose, a dual-layer structure, and a largely common set of core concepts; they differ in how they were built, and in whether and how each defines skill, and what each allows to count as a skill follows from that choice.

For educators, careers practitioners, and system designers, five questions could be put to a taxonomy before adopting it for work with young people:

1. How it was constructed, and what shape the method has given it;
2. What it means by skill, and where it places the qualities its definition excludes;
3. Whether its core and technical layers connect;
4. What alternative titles exist for the skills in the taxonomy; and
5. Whether it is maintained and current.

For those who commission and build taxonomies, four design lessons follow: a definition of skill settled at the outset, which determines where the qualities outside the definition are placed; a core layer with internal structure and full descriptions rather than a short, bare list; interoperability mechanisms, such as alternative labels and published crosswalks, that let national taxonomies stay fitted to their own systems while remaining mutually readable; and, open publication of the files and methodology, which facilitates comparison and translation between systems. This matters for the shift toward skills-based hiring, intended partly to improve outcomes for marginalised young people (OECD, 2026), where the skill a candidate names must be understood by whichever system is reading it.

This analysis was conducted from a stated position: I am a researcher working with young people and often refer to both formal and informal skill taxonomies in that work. My main concerns are validity and usability, and it is from that position that I approached this study. The study reads the taxonomies as released and documented; it did not consult their developers or users, and the corpus is limited to open, official taxonomies. Future work could examine the language used within the descriptions of skill, the impacts of the methods in terms of which

skills are included and which are absent, and the relevance of machine learning and large-scale data sets for the identification and organisation of skill.

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Ethics Statement

The analysis involved no human participants and required no ethics approval. The author confirms that the study adhered to applicable ethical guidelines.

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