
GiLE Journal of Skills Development

Can a Skill be Measured or Assessed? 6-Level Skills Development Approach to Skill Assessment

Yuliya Shtaltovna

International School of Management, Germany

Abstract

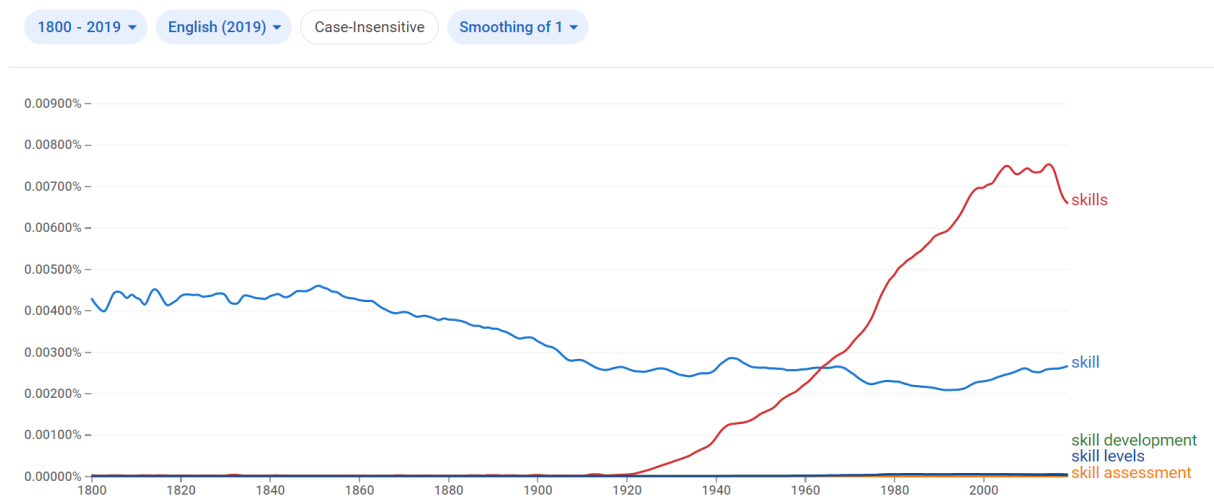
This paper reviews historic and current definitions of skill as a concept, as well as frameworks that have been applied to analyse levels of skills development across the academic and professional spectrum. The author proposes a 6-level chart of skill development based on the “can-do descriptors” approach by CEFR, also known as the ability assessment approach, for further discussion, development, and application. The proposed chart is based on six levels. These are organized into two Entry levels, two Operational Use levels and two Strategic Vision levels. Further debate on the typology of skills by Deloitte, LinkedIn Research and World Economic Forum is presented as of 2020 documentation. Its dynamic manner of paradigms changing the importance of a wide array of skills (alternatively denominated as employability skills, soft skills and/or 21st Century skills) are analysed, both for educators and employers.

Keywords: skills development, skills assessment, soft skills, 21st century skills

1. Introduction

In recent decades, lack of talent's skill capacity has been viewed as a critical precursor for creating economic growth in the knowledge economy worldwide (Deloitte, WE Forum, Bersin, LinkedIn Research). Interpersonal and intrapersonal competencies that are hard to measure, are commonly referred to as soft skills in comparison to hard skills to as "hard-to-assess" skills. Since the 2000's, a variety of groups have bombarded professional and academic arenas with concepts regarding which skills are and are going to be essential to obtaining and retaining employment. This includes domain-general and domain-specific skills, upskilling and reskilling and controversial calling to democratize educational curricula to teach skills rather than classic university subjects. Research has touched off fears relating to the need to develop AI-resistant skills in order to survive what is being called the fourth industrial revolution. Experts project that 47% of labour will be automated (WEF, 2020) and that 50% of employees will need reskilling by 2025 (WEF, 2020) to remain employable. Even though the "skills" N-gram got impressive attention, the ideas of skills levels, skills assessment and skill development are still used in a very limited number of professional books and research. The following graphs show the occurrence of the N-gram skill, skills, skill Development, skill Assessment and a phrase (*) skill, meaning any adjective used before the word skill as a part of an adjective-noun phrase in a distribution through the timeline up to 2019.

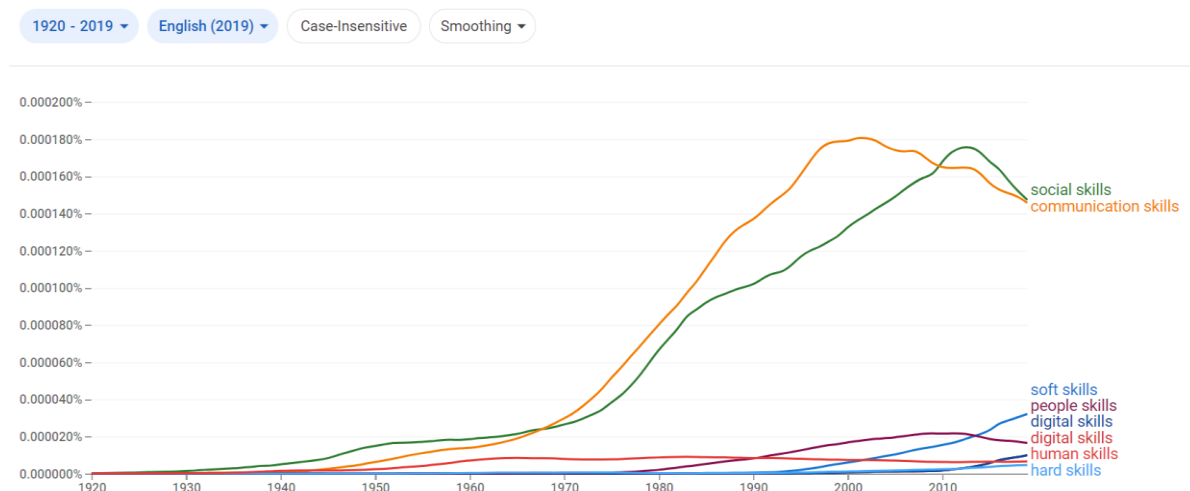
FIGURE 1. THE OCCURRENCE OF THE 5 "SKILL" PHRASES IN A CORPUS OF ENGLISH-LANGUAGE GOOGLE BOOKS OVER 1800-2020 BY GOOGLE BOOK N-GRAM VIEWER



<http://books.google.com/ngrams> accessed 07/12/2020

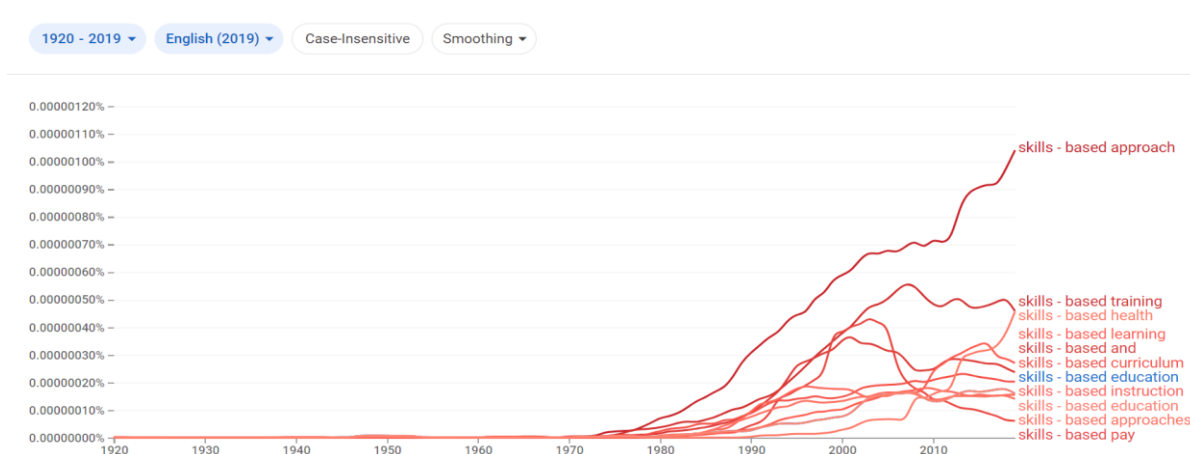
The very idea of a skills-based learning and education as well as of a skills-based portfolio has only reached its frequent use since the 1980's. However, even now in the 2020's, many applicants avoid including skills in their CV's, perhaps in part because objective assessment methodologies are virtually non-existent.

FIGURE 2. THE OCCURRENCE OF THE “* SKILLS” PHRASES IN A CORPUS OF ENGLISH-LANGUAGE GOOGLE BOOKS OVER 1920-2020 BY GOOGLE BOOK N-GRAM VIEWER.



<http://books.google.com/ngrams> accessed 07/12/2020

FIGURE 3. THE OCCURRENCE OF THE “SKILLS-BASED” PHRASES IN A CORPUS OF ENGLISH-LANGUAGE GOOGLE BOOKS OVER 1920-2020 BY GOOGLE BOOK N-GRAM VIEWER.



<http://books.google.com/ngrams> accessed 27/12/2020

The research question of ‘how a skill can be measured’ comes from the intersection of several areas of expertise, including skills-based adult education, teaching English as a foreign language, teaching communication and business, learning multiple languages, concept analysis research, and HR as well as career consultancy, both for the applicants and recruiters. Below are the anonymized excerpts from the CV’s mentioning the skills. Even with corpora of CV’s the results might look quite similar. Some applicants just mention the skills, sometimes adding the subjective quantifiable adjectives as good, great, extensive, excellent, strong, etc. Some avoid mentioning skills at all, claiming that just putting a skill name into a CV does not add value or any specific objective information about their skill levels.

FIGURE 4. ANONYMIZED EXCERPTS OF SEVERAL CVs SKILLS RUBRICS IN 2020

<p>OTHER SKILLS</p> <ul style="list-style-type: none"> • The ability to analyze complex technical information • Can analyze, design and implement database structures • Detail oriented • Excellent problem solver 	<p>SKILLS AND ABILITIES</p> <ul style="list-style-type: none"> - Microsoft Office Programs - Editing copy - Extensive knowledge of Anthropology - Research and data collection - Data assessment - Great communication skills
<p>SKILLS AND ABILITIES</p> <ul style="list-style-type: none"> ▪ Great communication and interpersonal skills ▪ Excellent organizational and multi-tasking skills ▪ Great writing skills ▪ Fluent in English and Spanish 	<p>Skills and Abilities</p> <ul style="list-style-type: none"> • Strong grasp of advertising creative process • Great communication skills for interacting with clients and agency team • Motivated team leader

Source: own compilation

Despite these reservations on the part of so many job applicants, Deloitte associates (Bersin, 2017; Hagel, Schwartz, Bersin, 2017) have claimed soft skills to be the first among four trends transforming the workplace in multiple reports and other publications. Common techniques used in soft skills assessment include (in descending order): behavioural questions, reading body language, situational questions, projects and tech-based assessments (Chanler, 2019). According to LinkedIn Research, 57% of talent professionals say they struggle to assess soft skills accurately (Global Talent Trends, 2019).

Even in 2020, the skills development interdisciplinary debate is far from reaching consensus on the definition or concept of a “skill”, “skill development”, how to categorize skills and how to name categories. Soft and Hard Skills, Digital and Personal, Interpersonal and Social, People Skills and Labour Skills, Business Skills and Employability Skills, Tech Skills and Data Skills - this is a never-ending list of inter-related, overlapping synonyms and opposites. More consensus is needed as to a situational sum of lower-level skills and higher-level skills and competencies reformulated for each industry, role, seniority, etc. However, whenever the set of the skills for a certain goal, project or a role is needed, rather than just presenting a list to the examinee/applicant, it might be more transparent and visually comprehensive to show what proficiency level is expected in which skills. In this manner, the tested applicants should be able to demonstrate their ability to perform under certain (job-bound) conditions and whether they can do so at a level that meets or exceeds the aforementioned expectations. Even anonymized portfolios of the applicants showing their strongest skills can be a reasonable way to reflect unique personality traits through the skills clusters presented in the portfolio.

In a similar manner, students can try to visualize their skill set level-wise, and choose disciplines, internships, extracurricular activities and mobility programs while having certain skill sets in mind long before they finish university. In this way they will not only increase their employability levels, but also better evaluate, and value, the diversity and uniqueness of each person in a team/group. An analogy here might be taken from computer games, where the characters are used according to their unique skills clusters and to which extent characters advance in each skill and choose to put time and effort to advance further in skill development to compete or accomplish the goal.

2. Methodology

In order to support the rise in skills development, the interdisciplinary investigation of the existing bottlenecks in the current research is generally seen as a challenging, but crucial step. Along with the rapid increase in the number of academic and corporate research publications concerning skills development, concept analysis, article review, and evaluation methods are proposed for this research stage. For further topic elaboration a more thorough and adequately funded interdisciplinary research is needed, including the systematic review methods, such as the rapid review, the scoping study, and the meta-analysis that focus on investigating the contents in the articles on skills levels in various domains with established skill levels classification.

The methodology behind this article comprises academic information classification and summarization method (Loures et al., 2017). Firstly, it will classify the academic and corporate research information on skills development and skills assessment from the collected academic articles. It will then use this result to generate a chart summarizing skills development from different perspectives within an academic faculty, identifying gaps and blind spots in structure. It will also unify the levels across the existing classifications to six levels in accordance with the CEFR chart methodology, the most extensively used in language skills assessment. The methodology workflow is divided into three main phases: the collection phase, the classification phase, and the summarization phase.

3. What is a skill level?

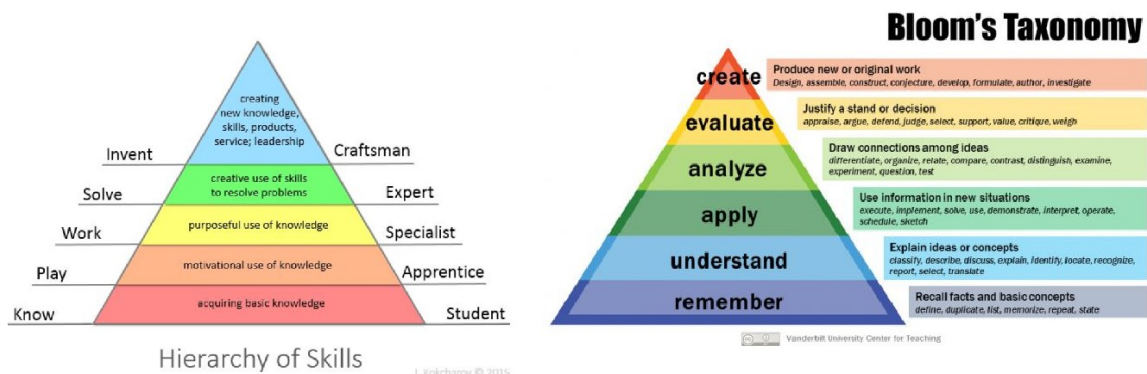
According to Welford, who derives his notion of skill, social or otherwise, from the man-man or man-machine interactions of the 1960's, it is "the use of efficient strategies to relate the demands of tasks or situations to the performer's capacities" (Welford, 1980). This can be traced back to the idea of an "information processing approach to human performance" from the study of automation by Crossman (1960). The idea of skill as an "upgrade-able" asset to brighten "employability perspectives" emerged in research in the 1980s (Adler, 1986; Hirschhorn, 1984; Vallas, 1990). It results in the pyramidal visualization of any skill development as having an attainable point, starting from the fundamental idea of being aware of the skill's existence. Skills are thus allegorically described as a tool in the craftsman's arsenal that eases the hardships of the job itself.

A second definition is frequently attributed to Maslow's pyramid, but adapted from Noel Burch by Igor Kokcharov (2015). It is illustrated in the pyramid in figure 5, which implies an upgrade, both in mastery and payment, per level: student > apprentice > specialist > expert > craftsman. The parallels can also be seen with Bloom's Taxonomy (1969) of the Educational Objectives, revised into "A Taxonomy for Teaching, Learning, and Assessment" (2001) by a group of renowned cognitive psychologists, curriculum theorists and instructional researchers, and testing and assessment specialists (Anderson et al., 2001). The revised Bloom's taxonomy retains the basic structure, adding Factual, Conceptual, Procedural and Meta-cognitive knowledge at each stage, forming a grid of 24 operations according to Oregon State Campus Extensions (2005).

The ability to create/produce new or original work could be aligned with the "artist" or "master" level, missing in the initial pyramid (Figure 5). The difference between these concepts has been debated for centuries and implies an almost sacred value given to what is seen as a unique and

rare ability to create/produce new and original work. The notion of a “Master” is also seen by some as adequate to suggest extending this classification further.

FIGURE 5 & 6. (LEFT) HIERARCHY OF NEEDS ADAPTED BY I. KOKCHAROV (2015)
(RIGHT) THE REVISED BLOOM’S TAXONOMY OF EDUCATIONAL OBJECTIVES (2001)



Source: Kokcharov (2015) and Anderson et al. (2001)

A third paradigm worth mentioning relates to the path of becoming an expert using a matrix rather than pyramidal framework. Noel Burch developed “the Four Stages of Skills Development” in the 1970s within his Conscious Competence Ladder (Burch, 1970), a concept later adapted by Bartlett. It represents a 2x2 matrix of (un)conscious (in)competence as the skill path to the expert level through intuition and analysis. An individual starts from complete unawareness of how little they know and being unconscious of their incompetence. From there they may grow into Unconscious Competence. At this point, they are able to play with the skill, which has become like second nature, and develop the ability and expertise to teach this skill to others.

4. Frameworks in Skills Research

In the early 2000s, more focus was given to skills self-assessment. The REFLEX project was funded by the EU 6th Framework Program (Contract No: CIT2-CT-2004-506-352) and several national funds. The project involves partners from sixteen countries (Austria, Belgium/Flanders, Czech Republic, Estonia, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK). It is coordinated by the Research Centre for Education and the Labour Market from Maastricht University, advising more research into “measures of the acquired and required level of different skills” and formulating the skills level assessment as “the level of skill actually possessed by individuals using the same basic yardstick as is used to measure the level required to perform adequately in a given situation” (Allen & van der Velden, 2005).

The REFLEX project differentiates between (a) assessment, “usually carried out in specialized centres, where subjects are confronted with real life” or simulated problems, and such (b) testing methods for school-leavers as The International Adult Literacy Survey (IALS) and its successors, the Adult Literacy and Life Skills Survey (ALL), The International Association for the Evaluation of Educational Achievement (IEA) Trends in Mathematics and Science Study (TIMMS) and the OECD Programme of International Students Assessment (PISA). Another two major skills assessment tools for adults and employees mentioned by the REFLEX Report are (c) job analysis, as a “classical instrument for personnel managers to assess the requirements

of individual jobs and to relate these to reward systems;” and (d) employer surveys. The latter concentrates on “most relevant skills for the present workforce or what skills employers think will become most important in the future” (Allen & van der Velden, 2005). Both are based on regional employer feedback. When aggregated, these 4 assessments are summarized as Employability skills in demand in the area. Thus, they focus either on school-level “carpet-bombing” skills assessment or making the lists of the skills for the employability (for the job, industry, or area) rather than describing the degree to which this skill might be required for professional roles.

The Common European Framework of Reference for Languages, or CEFR, has been using this 6-level grade successfully for 20 years now to assess the proficiency in Reading skills, Writing Skills, Listening and Speaking skills (Communication Skills). It was created with the purpose to provide “a method of learning, teaching and assessing which applies to all languages in Europe” (CEFR, 2001). The “can-do descriptors” charts devised for each skill and for each level have notably promoted methodological innovations and new approaches to designing teaching programmes according to the A1-A2-B1-B2-C1-C2 levels of communication skills. By performing the placement tests and exit tests, thus by identifying language needs and eventually the progress in acquiring the skills, they are able to pinpoint the knowledge and know-how required for attaining this communication threshold.

Global scale - Common Reference levels (CEFR, 2001) provided teachers, learners, assessment centres and employers with a simple and visual structure of the phenomenological path of learners reaching the next level/milestone in their journey to skills proficiency. Thus, they provide a clear ‘global’ representation of the system to non-specialist users. They also empower teachers and curriculum planners with orientation vectors and a comprehensive self-assessment table (CEFR, 2001) to track achievement. It celebrates the reaching of a certain point in learning any European language, for each of the skills: Listening, Reading, Writing and Speaking (speaking production and interaction). Qualitative aspects of spoken language use of the Common Reference levels (CEFR, 2001) are a section that focuses on different qualitative aspects of language skills and assesses the speaking skills of RANGE, ACCURACY, FLUENCY, INTERACTION and COHERENCE. It also introduces ways to assess the control and the range of the instruments used to perform to demonstrate the skills level.

5. Suggestion

In a similar manner, the assessment of learning and teaching of a wide range of skills, based on the linguistic skills reference and according to previous research on skills development may be performed. Thus, placing the Revised Bloom’s Taxonomy for learning assessment, Burch’s (Un)conscience (in)competence matrix and extending the 5-level pyramid in the same grid with the CEFR levels might open another page of discussion within the skills development interdisciplinary debate. We suggest calling these 6 levels of skills development from basic to high proficiency as follows: AWARENESS, ACQUISITION, APPLICATION, EXPERIMENT, EVALUATION and CREATION. It is organized into entry-level/Basic skill use (in yellow), operational level/Independent skills use (in green) and strategic level/Proficient use (in purple) of skill development and skills assessment.

TABLE 1. 6 LEVELS OF SKILLS DEVELOPMENT CHART FROM BASICS TO PROFICIENCY
(BOTTOM-UP)

	Adapted after Bloom/Revised	Adapted after Burch/Bartlett	Adapted after Burch/Kokcharov	CEFR
CREATION	Create Generating, Planning Producing	Unconscious Competence The individual has had so much practice with a skill that it has become “second nature” and can be performed easily. As a result, the skill can be performed while executing another task. The individual may be able to teach it to others, depending upon how and when it was learned.	(Artist? Master?)	C2 - Proficient User Reaching Mastery or proficiency
EVALUATION	Evaluate Checking Critiquing choose, support, relate, determine, defend, judge, grade, compare, contrast, argue, justify, support, convince, select, evaluate		Craftsman inventing new knowledge, skills, leadership, (extrapolating not only his own professional expertise to difficult cases requiring problem-solving)	C1 - Proficient User/Advanced Reaching Effective operational proficiency or advanced skills level
EXPERIMENT	Analyse Differentiating Organizing Reorganizing Attributing Improvising Adapting	Conscious Competence Gaining an understanding of how things work, through concentration is able to find and apply necessary elements /steps. Knowing where to focus and what to train to minimize mistakes. can perform it reliably at will, need to concentrate and think in order to perform the skill can perform the skill without assistance	Expert - (Experienced in applying in various contexts) creative/improvised use of skills to solve the problem	B2 - Independent/ Competent User Reaching Vantage or upper intermediate skills level
APPLICATION	Apply Executing Implementing Classifying, categorizing analysing, illustrating		Specialist (Confident) purposeful use of knowledge	B1 - Independent User Reaching Threshold or intermediate skills level
ACQUISITION	Understand Interpreting Exemplifying Classifying Summarizing Inferring Comparing Explaining	Conscious Incompetence Having recognized the deficit and the value of a new skill, the individual searches for the source of learning, become a learner/beginner and goes through mistakes and hardships	Apprentice (Knowledgeable) motivational use of knowledge, know how and when to use learnt elements	A2 - Basic User Reaching Waystage or elementary skills level
AWARENESS	Remember Retrieving, recognizing concepts and elements, recalling relevant knowledge from long-term memory	Unconscious Incompetence From the complete unawareness or denial of the skill use/help, individuals do not understand or know ow to do something and do not necessarily recognize the deficit	Student (Learner/ Novice) acquiring basic knowledge	A1 - Basic User Reaching Breakthrough or beginner skills level

Source: own compilation

6. Application

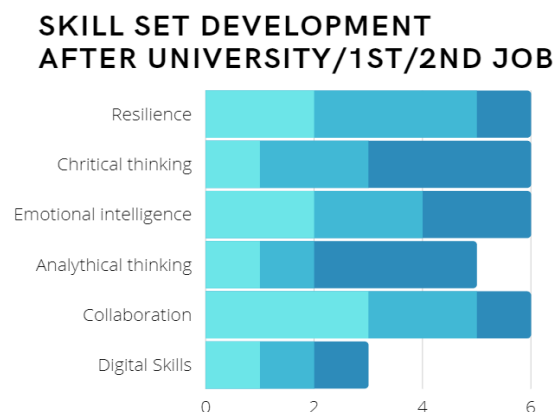
Applying the established model from the Council of Europe and Cambridge English Language Assessment and used by millions of people in 130 countries to take CEFR exams every year, could help solve the problem of the skills proficiency and assessment. It could provide all key stakeholders, including learners, job applicants and employers, with a comprehensive and clear self-assessment model for placement testing. It would lead to greater understanding of progress made and recognize specific strengths and weaknesses within a skill set. Additionally, it would lead to more accurate assessment regarding one's possible fit for an advertised position or career move. This could potentially enable a specific gradation of skills within the CV (Figure 8) rather than simply a general mention of their existence (Figure 4).

FIGURE 7. POSSIBLE SIMPLIFIED WAY OF REPRESENTING THE INDIVIDUAL SKILLS SET BASED ON THE PROPOSED 6-LEVELS OF SKILLS DEVELOPMENT CHART AS A CV EXCERPT



Source: own compilation

FIGURE 8. POSSIBLE MORE COMPLEX WAY OF REPRESENTING THE INDIVIDUAL SKILLS SET BASED ON THE PROPOSED 6-LEVELS OF SKILLS DEVELOPMENT CHART AS A CV EXCERPT



Source: own compilation

For employers and their HR departments, such a framework would provide a more accurate snapshot of an applicant's skills across the company, industry or area. Being able to measure degree of skill also means being able to improve and track its development. This may lead to the design of more targeted programs for upskilling and reskilling staff. It would also clarify expectations to all parties involved. The potential for using this grid stretches to the initial HR applicant screening processes, reducing the potential for bias in the hiring process. According to LinkedIn Research, 57% of talent professionals say they struggle to assess soft skills accurately (Global Talent Trends, 2019). Employing the proposed grid could potentially increase this efficiency.

Educators are another group that may benefit from using the proposed chart to broaden the scope of skills-based education in a user-friendly and recognizable form. With it, they could provide a more transparent, coherent and comprehensive basis for the elaboration of skills-based syllabuses and curriculum guidelines (including placement tests, self-assessment tests and exit tests). This would facilitate educational and occupational mobility. Bringing educational curricula into alignment with industry needs is one of the most ambitious and disputed goals of the 21st century. Attention to skills development allows for and even encourages “a wider range of learning approaches and its variations provides a sustainable and successful development and expansion of the standard understanding of education” (Shtaltovna, 2018) and therefore gives a chance for the education to democratize in the notion of "access to ..." as a causal manifestation of educational concepts and the creation of a (European) area without borders”. Just as most universities align their language teaching plans with CEFR, they could factor in the desired final degree of skill level to their course development considerations.

The Centre for Learning and Life Chances in Knowledge Economies and Societies debates in its “What is Skill? An Interdisciplinary Synthesis” research (Green, 2011) that the universality of skills in psychology, economics, pedagogy and in business realm bring in the untranslatable notions and systems of skills across these sciences and the interdisciplinary dialogue lacks the skilled global facilitator. According to Green, whether skills are addressed as cognitive (in education psychology as an equivalent to learning), interactive (communication/collaboration) or physical, the deficiency of all of the above has been noted across a wide variety of industries. This skills gap, or shortage, in the 21st century has led a number of think-tanks to create persuasive infographics on what specifically is missing.

7. Which skills to assess and skill set to form?

In 2015, the World Economic Forum proposed what it calls a New Vision for Education (WEF, 2015). It proposes 16 skills needed by students in the 21st century to succeed in a job market marked by frequent disruption. The WEF further discusses the existence of education gaps between economies and their outcome on 21st Century skill performance. New Vision for Education postulates these literacies, competencies and qualities as key sub-skills:

- Foundational literacies represent literacy and numeracy, scientific literacy, ICT literacy, financial literacy and cultural and civic literacy.
- Competencies comprise critical thinking/problem-solving, creativity, collaboration and communication.
- Character qualities including curiosity, initiative, persistence/grit, adaptability, leadership, social and cultural awareness.

In the Future of Jobs Report 2020, the World Economic Forum maps the jobs and skills of the even more immediate future, tracking the pace of change within the skills panorama, bringing in emerging and declining skills influenced by the COVID-19 disruption. and with the idea to leverage human potential. It delineates 15 skills and skills to be increasingly in demand until 2025. Its top 10 are categorized into four groups: Problem-solving, Self-management, Working with people (Collaboration), Technology and Development skills. The WEF also predicts declining demand in three more: Core literacies, Physical abilities, and Management and communication of activities.

Top 15 skills for 2025 which employers see as rising in prominence in the lead-up to 2025, according to WEF Report (WEF, 2020):

1. Analytical thinking and innovation
2. Active learning and learning strategies
3. Complex problem-solving
4. Critical thinking and analysis
5. Creativity, originality and initiative
6. Leadership and social influence
7. Technology use, monitoring and control
8. Technology design and programming
9. Resilience, stress tolerance and flexibility
10. Reasoning, problem-solving and ideation
11. Emotional intelligence
12. Troubleshooting and user experience
13. Service orientation
14. Systems analysis and evaluation
15. Persuasion and negotiation

The WEF report sets a new bar for skills categorization based on the industry demands. However, there is almost no mention of assessment or evaluation, in terms of what constitutes a basic, sufficient or advanced skill level. It also fails to mention “skills development” or “skill level” even once on its 163 pages of otherwise impeccable analysis. Recently, researchers seeking for unification of the skills set suggested finding a correspondence between the WEF’s 21st Century skills framework, the competencies 2020 framework and the newly devised Global Skills framework (WEF, 2020). The chart below was devised by experts in digital skills development and assessment for university staff members and students. In it, overlaps in the concepts defining skills from 3 frameworks were coordinated into semantic blocks to find the common ground and perspective to address different frameworks as described in Table 1.

TABLE 2. 21ST CENTURY SKILLS VS. COMPETENCIES 2020 VS. GLOBAL SKILLS

21st Century Skills	Competencies 2020	Global Skills
critical thinking and problem solving	complex problem solving critical thinking argumentation and decision making	critical thinking and analysis
learning and innovation flexibility and adaptability ICT-literacy	cognitive flexibility creativity	creativity, originality and initiative active learning and learning strategies
communication/ collaboration skills	integration negotiation teamwork	leadership and social influence coordination time management
initiative and drive	emotional intellect human resources management	attention to detail trustworthiness self-management
social skills and cross-cultural skills	emotional intellect service orientation	emotional intelligence coordination time management reasoning and ideation

Source: Makhachashvili et al., 2020

By using the proposed 6-level chart for skills development and assessment, the qualities required for a given job, project or goal are more accurately described, giving the reader a clearer sense of whether the degree required is achievable or not considering their individual current abilities. With this added information, students can set SMART (Specific, Measurable, Achievable, Relevant, and Time-bound) goals and practice their time management when achieving their goals for skills development, understanding their KPIs (key performance indicators) and tracking progress in achieving short and long-term goals. As management consultant Peter Drucker once (allegedly) said: “If you can’t measure it, you can’t improve it.” Using degree-sensitive rather than simplistic evaluation measures can help students and staff track their own progress toward a desired outcome. Asking students to reflect on which skills they improved during the semester, and how much they used certain learning opportunities to do so in their SMART-defined goals through levels can dramatically improve their performance, intrinsic motivation and reflection skills, compared to such an increase in language learning path using CEFR levels and “can-do descriptors” according to CEFR’s Companion Volume with New Descriptors (Council of Europe, 2018). Using degree-sensitive self-assessment instruments to track skill development can also provide a way to stay focused on the correspondent level, choosing manageable materials and relevant courses, as well as to celebrate achieved milestones with certification or level completion, just as language learners benefited from CEFR implementation into worldwide curricula as reported by Council of Europe.

In this article we have discussed applying the CEFR level identification structure for language skills to a broader set of skills as 21st Century skills, soft skills, social skills. In addition, we have considered the necessity of “can-do descriptors” for the skills level identification and the possible implications of such use in both academic and professional arenas. It is hoped that experts in the evolving areas highlighted will join forces to expedite the development of a 6-levels grid for skills.

Summary

This paper has focused on the potential value of even an imperfect chart of skills levels. It can increase understanding of how skills are assessed at any given moment, as well as be used to track skill development over time. A degree-sensitive chart format can be used in CV’s, in job descriptions and career development plans in corporate Human Resources. They can be used as a tool for self-assessment, education planning and in final vocational study evaluations. Obviously, more in-depth interdisciplinary research should be undertaken to identify its potential and limitations. No method of measuring skills is without its flaws. However, the benefits of using such charts will almost certainly outweigh the possible disadvantages.

NLP-based linguistic research on the concept of “skill” is necessary to achieve greater consensus regarding hierarchy, typology, classifications and procedures to assess current and developing skill levels. Interdisciplinary research on more nuanced methods for ability-based dynamic evaluation is long overdue, especially in societies and economic systems so prone to AI- and environmentally related disruptions. The success of business models that rely on a workforce that is not only skilled, but able to be upskilled and reskilled, depends greatly on a shared understanding of the key terms involved in assessing status quo and progression. The proposed skills development chart is a draft, and an invitation to discussion and further research

and development to achieve a functional, accurate assessment framework applicable across a plethora of skill areas within both academic and professional settings.

References

- Allen, J. P., & van der Velden, R. K. W. (2005). The role of self-assessment in measuring skills. *ROA. REFLEX Working Paper Series No. 2ROA External Reports*. Retrieved 24.12.2020 from <https://cris.maastrichtuniversity.nl/ws/portalfiles/portal/4047131/guid-3b801703-f49b-46e5-bd15-adfe7eef189e-ASSET1.0.pdf>
- Anderson, Lorin W., David R. Krathwohl, and Benjamin S. Bloom (2001). *A Taxonomy for Learning, Teaching, and Assessing: a Revision of Bloom's Taxonomy of Educational Objectives* / Editors, Lorin W. Anderson, David Krathwohl; Contributors, Peter W. Airasian ... (et al.). Complete ed. New York: Longman. Print.
- Bersin, J. (2017). Catch the wave: The 21st Century career, *Deloitte Review 21*, Deloitte University Press, July 31, 2017.
- Bersin, J. (2019). *LinkedIn Skills Assessments: A Disruptive and Strategic Move*. Retrieved 20.12.2020 from <https://www.linkedin.com/pulse/linkedin-skills-assessments-disruptive-strategic-move-josh-bersin/>
- Bennett, N., Dunne, E., & Carré, C. (2000). *Skills Development in Higher Education and Employment*. Taylor & Francis, Inc., 7625 Empire Dr., Florence, KY 41042.
- Burch, N. (1970). *The four stages for learning any new skill*. Gordon Training International, CA.
- Chanler, M. (2019). *2019 Global talent trends: the four trends transforming your workplace*. Retrieved 26.12.2020 from <https://app.box.com/s/c5scskbsz9q6lb0hq7euqeb4fr8m0bl/file/388525098383>
- Council of Europe, Council for Cultural Co-operation. Education Committee. Modern Languages Division. (2001). *Common European Framework of Reference for Languages: learning, teaching, assessment*. Cambridge University Press.
- Council of Europe (2018). *Common European framework of reference for languages: Learning, teaching, assessment. Companion volume with new descriptors*. <https://rm.coe.int/cefr-companion-volume-with-new-descriptors-2018/1680787989>.
- Crossman, E. R. F. W. (1960). "Automation and Skill", D.S.I.R. Problems of Progress in Industry No. 9, H.M.S.O., London.
- Deloitte (2016). *Talent for survival: Essential skills for humans working in the machine age*, <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/Growth/deloitte-uk-talent-for-survival-report.pdf>.
- Dweck, C. S. (2009). *Mindsets: Developing talent through a growth mindset*. Olympic Coach, 21(1), 4-7.
- Green, F (2011) *What is Skill? An Interdisciplinary Synthesis*. Centre for Learning and Life Chances in Knowledge Economies and Societies Retrieved Dec 06, 2020 from: https://www.researchgate.net/publication/264874441_What_is_Skill_An_Inter-Disciplinary_Synthesis.
- Hagel, J., Schwartz, J., & Bersin, J. (2017). *Navigating the future of work*. Deloitte Rev, 21, 27-45.
- Kokcharov, Igor (2015). *Hierarchy of Skills*, Ženeva, Švajcarska. Postavljeno. Retrieved 21.12.2020 from <http://www.slideshare.net/igorkokcharov/kokcharov-skillpyramid2015>
- LinkedIn Research (2019). *Global Talent Trends 2019: The 4 ideas changing the way we work*. LinkedIn Talent Solutions Retrieved 27.12.2020 from <https://business.linkedin.com/talent-solutions/resources/talent-strategy/global-talent-trends-2019>
- Loures, E. R., Liao, Y., & Consiglieri J. O. (2017). *A classification and summarization method for analysis of research activities in an academic faculty*. Production, 27 (spe), e20162163. Retrieved 22.12.2020 from <http://dx.doi.org/10.1590/0103-6513.216316>
- Makhachashvili, R., Semenist, I. & Bakhtina, A. (2020). *Digital Skills Development and ICT Tools for final Qualification assessment: Survey study for students and staff of European and Oriental Philology programs*. Open Educational E-Environment of Modern University, (9), s. 54–68. <https://doi.org/10.28925/2414-0325.2020.9.5>
- Shtaltovna, Y. (2018). *The pursuit of democratization in education-knowing where to go. Concept analysis for the correct use of the term democratization of education*. Electronic scientific professional publication Open Educational E-Environment (4), p. 74–82. <https://doi.org/10.28925/2414-0325.2018.4.7482>
- Welford A.T. (1980). *The Concept of Skill and Its Application to Social Performance*. In: Singleton W.T., Spurgeon P., Stammers R.B. (eds) *The Analysis of Social Skill*. NATO Conference Series, vol 11. Springer, Boston, MA. https://doi.org/10.1007/978-1-4684-3623-5_2
- World Economic Forum (2015). *New vision for education: Unlocking the potential of technology*. Vancouver, BC: British Columbia Teachers' Federation.
- World Economic Forum (2020). *The future of jobs report 2020*. World Economic Forum, Geneva, Switzerland.