

THE WORLDSKILLS RESPONSE TO TRANSVERSAL SKILLS

EL REFLEJO DE LAS HABILIDADES DEL MUNDO REAL EN LAS HABILIDADES TRANSVERSALES

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ABSTRACT

Developing and maintaining the skills of an increasingly global workforce is a challenge all governments face, particularly as the world emerges from the effects of the 2020/21 pandemic. Coupled with the impact of the “Fourth Industrial Revolution” working lives are changing at an unprecedented rate. This article looks at the critical role of transversal skills in enabling ‘employability’, as traditional occupations reconfigure, shift and new roles rapidly appear. Whilst definitions and classifications vary it is agreed that transversal skills are those which an individual can apply across all work roles and life situations, - they are a platform for flexibility, adaptability, and progression.

For over 70 years WorldSkills International (WSI) has been working with governments to raise the profile of technical and vocational education (TVET), principally through a biennial global skills competition focusing on excellence. In recent years WSI has been investing in a strong research base working with global partners such as the OECD, ILO and UNESCO. In 2012 it began a project to develop WorldSkills Occupational Standards (WSOS). This article plots the journey WSI has taken to strengthen and embed transversal skills within its standards to ensure the currency of the Competition and more widely drive global skills development forward.

Key words: Global Skills, Transversal Skills, TVET, WorldSkills International, WorldSkills, Occupational Standards

RESUMEN

Desarrollar y mantener las habilidades de una fuerza de trabajo cada vez más global es un desafío al que se enfrentan todos los gobiernos, especialmente a medida que el mundo emerge de los efectos de la pandemia 2020/21. Junto con el impacto de la "Cuarta Revolución Industrial", la vida laboral está cambiando a un ritmo sin precedentes. Este artículo analiza el papel fundamental de las competencias transversales para permitir la "empleabilidad", a medida que las ocupaciones tradicionales se reconfiguran, cambian y aparecen rápidamente nuevas funciones. Aunque las definiciones y clasificaciones varían, se ha acordado que las competencias transversales son aquellas que una persona puede aplicar en todos los roles laborales y situaciones de la vida, - son una plataforma para la flexibilidad, la adaptabilidad y el progreso.

Durante más de 70 años, WorldSkills International (WSI) ha estado trabajando con los gobiernos para elevar el perfil de la educación técnica y profesional (EFTP), principalmente a través de un concurso bienal e internacional de habilidades, centrado en la excelencia. En los últimos años, WSI ha estado invirtiendo en una sólida base de investigación al trabajar con socios globales como la OCDE, la OIT y la UNESCO. En 2012 comenzó un proyecto para desarrollar Estándares Ocupacionales de WorldSkills (WSO). Este artículo traza el camino que WSI ha emprendido para fortalecer e integrar las habilidades transversales dentro de sus estándares, para garantizar la vigencia de la Competencia y, de manera más amplia, impulsar el desarrollo de habilidades globales.

Palabras clave: Competencias Globales, Competencias Transversales, EFTP, WorldSkills International, Estándares Ocupacionales de WorldSkills

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INTRODUCTION

WorldSkills International (WSI) has existed and developed as a global membership organization for over 70 years and is best known for the international competition it orchestrates for young people every two years. The WorldSkills Competition (WSC) is a laboratory and showcase for global skills development and excellence in vocational practice. WSI is a unique organization which is well positioned to influence and support the progress of technical and vocational education and training (TVET) systems globally.

Since 2012 WSI has been proactive in developing transversal skills. This is due to both need and opportunity: the stimulus of WSI research which started to put the spotlight on the importance of transversal skills, particularly in achieving skills mastery and excellence, and the need to improve its skill competitions. Research has expanded to working with global partners and the outcomes have been fed into WSI practice, principally through the WorldSkills Occupational Standards (WSOS), (which was formerly called the WorldSkills Standards Specifications). This article provides an overview of how WSI has researched, developed and taken forward transversal skills to enable young people to navigate the increasingly fast pace of change, in industry and business, as they develop their careers. The key objectives of the article are to highlight:

- The increasing significance of transversal skills in the global workplace.
- How transversal skills contribute to skills excellence.
- The role WSI plays in facilitating the development of transversal skills for its Member countries, and the world beyond.

This article starts with a short profile of WSI as an organization, the way work is changing and the impact on the skills that industry and business need. Transversal skills are explored in detail in part two with a comparison of how they are classified and defined. The third part puts the focus on the WSOS: how and why they were researched, developed, and introduced in 2012, and their role up to the present time including how they support the development of global TVET and the aim of the future WSOS Development Centre in guiding national TVET systems. Finally, conclusions are drawn and recommendations for further research are outlined.

1. WORLDSKILLS INTERNATIONAL

WSI emerged following the Second World War, one consequence of which was a major skills shortage across Europe. In 1950, in Madrid, Francisco Albert Vidal created a skills competition for young people in Spain and Portugal. This was the start of an international movement which in 2019 saw Russia host the 45th WSC in Kazan, where 1,354 young people from 63 countries competed across 56 skill competitions.

WSI currently has 85 Members, drawn from every continent; it is global in all respects and is politically and denominationally neutral. It is firmly anchored to the needs of industry/business, Member countries invest in WSI because it presents them with the challenge to meet high level industry/business led standards in order to test the worth of their own TVET and to gain information and intelligence. without which there would be no Competition. In 2020 its Membership represented two-thirds of the world's population. The aim of WSI is to develop and further international cooperation between governments, industry and business to achieve higher standards and status for TVET across the world. Member organisations are agencies or bodies which have an official responsibility for promoting TVET in their respective countries and regions. Depending on their character and circumstances Members use their participation, nationally, regionally, and internationally, to greater or lesser effect, practically, systematically, and/or strategically.

The continued, sustained growth of WSI, what it does, and its position, has led to engagement with global partners such as the OECD, UNESCO, UNIDO, UNEVOC, EC/CEDEFOP, ILO and World Bank. From 2016 WSI's collaboration with each of Cedefop, ILO, and UNESCO has grown and become continuous, because all four organisations have values and goals in common. Since 2017 Cedefop has reviewed the extent to which the “Occupational Information Network” (O*Net), the “European Skills, Competences, Qualifications and Occupations” European multilingual classification of Skills, Competences and Occupations” (ESCO), and the WSOS can provide benchmarks for TVET and a draft report has been produced. More recently WSI contributed to the publication event of the seventh, synthesis report (Cedefop, 2019) into “The changing nature and role of vocational education and training in Europe”. The event provided an opportunity for WSI to review the extent of change to make to its competition portfolio. In 2001 craft and related trades skills dominated the Competition, while in 2020 technicians and associate professionals were leading the way. This reflects the shared needs of Members which are responding more actively to their labour markets and economic demands. The changing face of the WSC represents the upward and outward movement of the demand for skill, and the consequent challenge for TVET. This change has been underpinned by capacity building for individuals, Members, and the WorldSkills movement, within which occupational mastery associated with transversal skills has been central in achieving a “future proofed” WSC. Table 1 shows the dramatic expansion and upward shift of competitions relative to labour market need, and with the capacity to achieve full, authentic differentiation between competence and excellence.

Table 1: The Changing Profile of the WorldSkills Competition: 2001-2020

ILO CLASSIFICATION 2-5	2001	2020	ILO CLASSIFICATION 6-8	2001	2020
Professionals	0	3	Skilled agricultural workers	1	1
Technicians and associate professionals	7	30	Craft and related trades workers	14	11
Clerical support workers	1	1	Plant and machine operators and assemblers	9	6
Service and sales workers	7	11	Total Skill Competitions	39	63

Source: WorldSkills International

Understanding how the global workplace is changing and how these changes will affect future work and skills is vital for WSI. In 2020 the World Economic Forum (WEF) reported that the heightened uncertainty of the labour market was one key consequence of the global pandemic along with the continuing impact of technology. The report's findings included a focus on skills gaps up to 2025. Employers highlighted the rising importance of critical thinking, analysis, problem solving and skills in self-management, for example, active learning, resilience, stress tolerance and flexibility.

The ways industry and business operate, and people work and interact with them, will experience significant change. The seismic shift that took place in how some people worked in 2020 is expected to make a real difference to the way they live their lives in the longer term. Countries will need to develop and accelerate their TVET and general education policies to foster the skills individuals need to navigate the changing global employment landscape.

In 2018, the former UK Commission for Education and Skills (UKCES) concluded that transversal skills are the basis for the effective implementation of cognitive or technical knowledge and skills and noted that soft skills represented £88 billion to the UK economy (Development Economics, 2015). Research undertaken by Oxford University, NESTA and Pearson (Bakhshi, Downing, Osborne and Schneider, 2017) suggested that social skills will become more important as artificial intelligence and technology become more dominant. Their report proposed that the future is about people and technology working together, drawing on transversal skills. Korte (2018), the Director-

General for Employment, Social Affairs and Inclusion at the European Commission, noted that TVET will need to develop flexible skills:

In my view, VET curricula will need to address two objectives: first, to enable employability of graduates and, second, to equip people with the means for lifelong adaptability, meaning, a high-level of basic skills, including digital skills and transversal competences, including a career management competence and transitions. (p. 6)

The next section of this paper provides a review of the literature on the range of definitions and classifications of transversal skills.

2. TRANSVERSAL SKILLS

A major challenge of discussing ‘non-academic’ or ‘non-technical’ skills is the different terminology used to describe what is necessary and integral to life in today’s world. This includes transversal, transferable, soft, generic, core, key, and ‘21st Century’ skills. Whatever terms are adopted it is generally accepted that they are the “skills that are typically considered as not specifically related to a particular job, task, academic discipline or area of knowledge and that can be used in a wide variety of situations and work settings” (UNESCO (IBE), 2013, p.58). Transversal skills are broad based, encompassing technological advances and intercultural communication (UNESCO, 2015). UNESCO (2016) has identified six domains of transversal skills:

- Critical and innovative thinking
- Interpersonal skills
- Intrapersonal skills
- Global citizenship
- Media and information literacy
- Others

The UNESCO definition makes clear that transversal skills are critical for success in employment. As stated earlier UNESCO identifies and categorises skills, competences, qualifications, and occupations relevant for the European Union (EU) labour market and education and training. It provides the following definition:

Transversal knowledge, skills and competences are relevant to a broad range of occupations and sectors. They are often referred to as core skills, basic skills or soft skills, the cornerstone for the personal development of a person. Transversal knowledge, skills and competences are the building blocks for the development of the "hard" skills and competences required to succeed in the labour market. (EU, ESCO).

Whittemore (2018) proposes that transversal skills have the following characteristics:

- they are transferable across domains, geographies, work and life contexts;
- they typically relate to social and interpersonal relations;
- they are cross-functional and cross-curricular in training and education, but can be combined in a blended learning approach, for example, collaborative problem-based learning;
- communication is the key element in manifesting and evidencing transversal skills; if not communicated explicitly, they can remain undervalued or unrecognised;
- they are essential tools in any context of significant and accelerated change;
- they can be observed, evidenced and developed, whereas developing values such as integrity in adults and changing ingrained character traits is extremely difficult;
- they are learnt through experience and development and cannot be easily taught, except through highly interactive learning processes;
- in their development, they have a symbiotic relationship with improved self-

awareness and self-knowledge.

Whittemore (2018) proposed seven essential transversal skills which relate well to the WorldSkills Occupational Standards (WSOS):

- Collaborative problem solving
- Learning to learn, continuing to learn
- Digital skills and mindset
- Initiative and independent thinking
- Resilience
- Adaptability
- Cultural awareness and expression.

Collaborative problem solving has grown in importance as the global workplace has become smaller and individuals and teams from different nations work together more regularly, as in the development of vaccines in the 2020/21 global pandemic. Industry and business operate in an increasingly competitive marketplace and need to work harder to survive, thus it is critical that individuals and teams can collaborate to combine their skills and experience and develop solutions. Collaborative problem-solving combines creativity, resilience, initiative, culture awareness and critical thinking (Whittemore, 2018).

The WEF (2016a) highlighted the significance of problem-solving, collaboration and critical thinking skills, along with adaptability, persistence, resilience and cultural awareness, as essential ingredients for success in life and education. In the same year, the WEF (2016b) published a report on the labour market and jobs, focusing on the impact of the “Fourth Industrial Revolution” and the digital age. Both reports identified problem-solving as a top critical skill. The vital importance of problem-solving, especially in collaboration, was also noted by the UKCES, which defined it as one of the “key skills for the future” (2014). Wagner (2008) in his research held discussions with business leaders, amongst others, to identify future skill needs. As one of his interviewees commented: “Yesterday’s answers won’t solve today’s problems” (p.21).

Learning to learn and continuing to learn is another important transversal skill. To stay in work individuals and organisations need to learn quickly and continuously. Work is increasingly a dynamic learning environment. “Self-directed learning means: becoming aware and demonstrating agency in one’s process of learning, including the development of dispositions that support motivation, perseverance, resilience, and self-regulation” (Ontario Ministry of Education, 2017, p.1). The United Nations (UN) (2016) has 17 development goals, one of which (goal 4) is to: “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (p.18). The OECD (2018) states that “Acquiring global competence is a life-long process – there is no single point at which an individual becomes completely globally competent” (p.7). A critical element of learning to learn, for individuals and organisations, is self-knowledge.

Whittemore (2018) states that: “Well-developed digital skills enable organisations to be more agile operationally, to apply unprecedented levels of business intelligence, to navigate changing marketplaces, and to respond to customer expectations, which are radically different to those of just 15 years ago” (p.25). Whittemore (2018) also states: “The digital skillset involves the effective and integrated use of a wide range of soft skills, which provide the ability to deploy the technical skills and the digital tools in the service of organisational strategy and business objectives” (p.26). Traditional organisational structures and hierarchies are being replaced by more flexible and dynamic ways to cope with fast-changing environments present both opportunities and threats. The fluidity of the workplace requires individuals to be proactive, show initiative and be enterprising. Initiative is explored in the Institute for the Future’s Report (Davies, Fidler and Gorbis, 2011) which notes the need for “novel, adaptive thinking’ and ‘sense-making” (p.6). The Report also highlights “cognitive load management” (p.12). With the speed of global change initiative, proactivity, and independent thinking are essential for the future workplace. Wagner

(2008) includes the following quotation from his research: “You'll never be blamed for failing to reach a stretch goal, but you will be blamed for not trying. One of the problems of a large company is risk aversion. Our challenge is how to create an entrepreneurial culture in a larger organization” (p. 22).

The advancement of global change creates pressure on organisations and individuals in the workplace. Resilience enables individuals to remain productive when encountering challenges and demands and to recover speedily. East (2017) identifies five key traits of a resilient organisation as:

- The ability to identify emerging threats and understand their impact on all aspects of the business, its workers and their broader community.
- Strong and supportive relationships with key stakeholders.
- Staff who are committed to working as a unified team.
- Clear organisational objectives, supported by staff.
- Clear direction from leadership.

Adaptability and flexibility are rated highly in the list of ‘Life and Career Skills’ needed in the 21st Century (Partnership for 21st Century Skills, 2015). The WEF (2016a) also highlights adaptability as one of the key character qualities. Whittemore (2018) makes the following point: “Good adaptability skills enable us to “change gear” without “stalling the engine” when faced with changing priorities and demands” (p.36). Wagner (2008) includes a quotation from the President of a large US corporation to explain the significance of adaptability and agility. The President talks about the need for individuals in his organisation to be able to:

Think, be flexible, change, and use a variety of tools to solve new problems. We change what we do all the time. I can guarantee the job I hire someone to do will change or may not exist in the future, so this is why adaptability and learning skills are more important than technical skills. (p. 22)

The WEF, EU, Institute of the Future and the OECD all consider culture awareness as a core transversal skill.

The OECD (2018) proposed “Global Competencies” are concerned with constructive cultural interaction and the Institute for the Future (Davies, Fidler and Gorbis, 2011) refers to “Cross Cultural Competency” As Whittemore (2018) states: “The ability to work across cultural boundaries and adapt to different cultural norms with agility, respect and efficiency is therefore paramount” (p.37).

As has been highlighted there are many frameworks which describe the skills the world demands (Binkley et al., 2012; Lippman et al., 2015; Delors et al., 1996; Gordon et al., 2009), and in so doing they display strong commonalities. These include descriptions of how people think, act, use tools, and interact. There is a debate about the extent to which education systems focus on ‘cognitive skills’ at the expense of the more challenging to assess ‘non-academic skills’ which are important for the world of work and for the quality of life in an ever-changing global environment (UNESCO, 2015). There is, however, evidence that some national curricula have in the past two decades moved to integrate transversal skills (Hipkins, Boyd and Joyce 2005, Voogt and Pelgrum 2005). Ananiadou and Claro (2009) identified that transversal skills are integrated in a cross-curricular manner in many countries, for example, Belgium, New Zealand, Finland, and Republic of Korea.

In research undertaken on transversal skills in education policies and practice (UNESCO, 2015) the rationale for the integration of transversal skills into education systems was “classified into three discourses available at three broad levels of perspectives: economic, social and humanity discourse, and global, national and personal perspective”(p.6). The holistic development of young people and society was considered to be highly dependent on the integration of transversal skills. The research identified two ways in which transversal skills are approached by different countries: the holistic approach gives teachers a degree of freedom to design activities, and the analytical approach is more prescriptive with a focus on specific activities which in theory are more

measurable. The research identified that the different ways in which transversal skills are developed within the curriculum are: as a stand-alone subject, cross-subject, or extra-curricular, and that these ways are not mutually exclusive.

Developing transversal skills can be challenging (UNESCO, 2015); for example, some teachers reported the lack of a precise definition and clear learning outcomes as barriers, together with the need for appropriate teaching and learning resources, a change in assessment practices, and the pressure to meet academic targets.

The ILO (2020) reported that 267 million young people (15-24) were not in employment. Global TVET systems are currently re-thinking how to respond to challenges including the impact of the 2020/21 pandemic. In essence TVET is re-balancing to ensure transversal skills support individuals through their increasingly dynamic working lives. Transversal skills are now well recognised as essential in work, driven by the pace and range of change. Traditional education systems have not, however, always been able to keep up with the multi-faceted transformation that is taking place, so transversal skills do not always feature strongly in learning programmes. The way in which countries and education systems approach transversal skills varies, driven by differing histories, structures, needs, and ambitions.

In order to move forward and establish transversal skills more firmly within education there needs to be a convergence of definitions and a definitive classification. As has been indicated above, the definition of transversal skills is wide and varied and it is difficult to identify which are the most critical and how they fit with the more understood cognitive and technical skills. Furthermore it can be challenging to integrate transversal skills into established education and training systems and to gain formal recognition where systems and cultures of learning are often quite traditional and embedded (Whittemore, 2018).

The ILO believes that certain transversal skills will become increasingly important for employees to succeed in the labour market. Its aim for transversal skills is to improve the quality and relevance of training and the recognition of skills and qualifications in TVET. The Swiss Federal Institute for Vocational Education and Training (SFIVET) has been awarded a project from the ILO which involves creating a digital toolkit. The main focus of the toolkit is to establish instructions and proven procedures for the successful integration of the development of transversal skills into its national education and training system. This project is due to complete by the end of Spring 2021. The next section of this paper provides an overview of the specific research which has been undertaken, within the WorldSkills community, to recognize and embed transversal skills within the WSOS, thus raising their profile to the 85 WorldSkills Member countries/governments.

3. WORLDSKILLS OCCUPATIONAL STANDARDS AND BEYOND

Since 2012 WSI has worked to develop high level industry/business-led occupational standards. The theoretical underpinning was a WSI Member research initiative, Modelling Vocational Excellence (MoVE), supporting:

- skills improvement and Competition best practice
- international skills benchmarking, and
- promotion of vocational excellence to young people, employers and policy makers.

MoVE is based on national level research initiated in 2007 by Professor Petri Nokelainen at the Research Centre for Vocational Education at the University of Tampere Finland, with the support of the Finnish Ministry of Education and Culture. The Finnish MoVE project was the first research to address the individual attributes which characterise vocational expertise and support the pursuit of excellence. MoVE is a multidimensional model comprising three main explanatory factors: natural abilities, intrinsic characteristics and self-reflection, plus extrinsic conditions (James, Nokelainen, Rahimi, Smith, and Stasz, 2012).

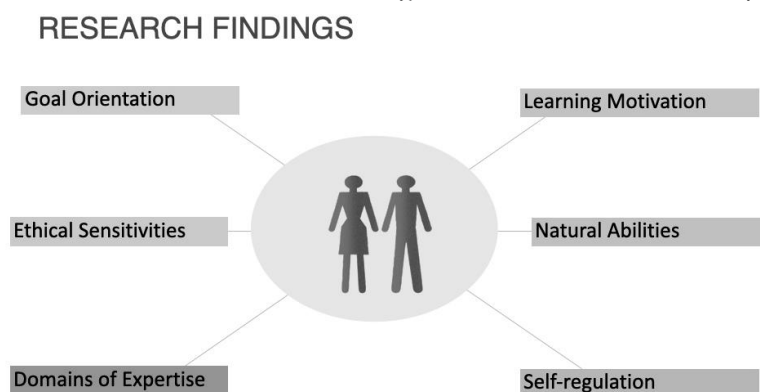
The background to the MoVE research was the changing nature of work and the increasing demand for high level cognitive and affective skill development in occupations in which manual expertise was previously the highest priority (Lowry et al 2008; Richardson and Teese 2008). Levy and Murnane and colleagues (e.g., Autor et al., 2003) showed that automation was replacing the need for human resources for repetitive and routine tasks. It was argued that new skills were required for increasingly sophisticated and complex problem solving, communication and co-ordination skills.

Nokelainen and Ruohotie argued that all individuals are required to have cognitive skills and to take part in the decision-making process at work. Skilled people have a strong technical/professional knowledge, the ability to transfer their skills and knowledge plus high meta-cognitive skills. It is the combination that leads to competence and excellence (Nokelainen and Ruohotie 2009). Based on the research of Pillay (1998), Nokelainen and Ruohotie proposed that workplace cognition is based on complex domain-specific knowledge and that expert work practice requires high level abilities to analyze domain-specific information and understand different work activities (Ruohotie, 2004). They suggest that ‘work-based knowledge’ differs from ‘scholarly knowledge’ as it relates to performance – analyzing, problem solving and applying knowledge to new situations as opposed to learning knowledge as a separate activity (Nokelainen and Ruohotie 2009).

Data from the Finnish MoVE research provided education authorities with strategies to improve vocational performance in skill competitions. The research also pointed to ways in which the quality and relevance of technical and vocational outcomes could be enhanced by offering young people opportunities to develop the attributes and characteristics associated with excellence.

In 2009, Professor Nokelainen presented his research at the Calgary WorldSkills Competition seminar series and invited other WorldSkills member organisations to join the MoVE research project. WorldSkills UK and WorldSkills Australia became involved in the research, and formed partnerships respectively with the University of Oxford, UK, and RMIT University, Australia, to conduct national studies on key aspects of excellence in skill formation. Thus, the research expanded with its focus on understanding the factors which promote development of high quality vocational skills. The MoVE research (James, Nokelainen, Rahimi, Smith, and Stasz (2012) gave WSI its ‘direction of travel’ in planning the development of the new WSOS. Figure 1 is a distillation of the attributes, identified in the research, that distinguish excellence from competence, however expansively competence is articulated.

Figure 1: The Attributes that Distinguish Excellence from Competence



Source: Adapted from *What Contributes to Vocational Excellence? Characteristics and experiences of Competitors and Experts in WorldSkills London 2011*, by S. James, P. Nokelainen, M. A. Rahimi and C. Stasz, 2012, p.27.

While MoVE provided a theoretical underpinning for the WSC's purpose and role, acute pressure to change lay in the lack of common understanding or agreement as to what should be in a skill competition, and how it should be assessed. Without guidance and an overarching conceptual and design framework, WSC Experts, (who input to the content), were defaulting to skill competitions that reflected the dominant view of a job as articulated through their national training programmes. This had been viable and to some extent useful while a smaller WSC represented a broadly similar view of jobs, but was no longer valid for a global competition that brought together the political, economic, and social diversity of the world (Schleicher, 2014) The lessons of MoVE were therefore embedded in a framework that related competitions to occupations linked in turn to the ILO occupational taxonomy - ISCO 2008.

By doing this, WSI gained several practical and strategic advantages, which continue to grow. Practically, the WSOS were introduced as public, authorised standards against which all Members could prepare for the WSC, and be confident that each skill competition would be based on that standard alone. Strategically, it enabled the WSOS to be designed using both primary and secondary sources: expert testimony and employer feedback on the one hand, and the emerging continental and global occupational descriptions on the other. This had two immediate benefits: it enabled Members to link their preparation for the WSC to their domestic labour markets, hence enabling two-way feedback. It also enabled the WSOS to connect with and be part of the realignment and convergence of occupational and educational classifications around the knowledge, skills and behaviours of people (Chakroun and Keevy, 2015).

As a major partner within the global TVET community the success of WSI is firmly rooted in its close relationship with international industry and business. The WSOS is entirely independent of TVET; its orientation is occupational, based on the discussions leading to the “United Nations’ Sustainable Goals”, and specifically Goal 8, in alignment with the values and goals of the ILO (“UN High-Level Political Forum 11 - 20 July 2016, New York”): “to promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all” (p. 26).

For coherence, the classification of the transversal skills embedded within the WSOS required a similar orientation. This was found in the OECD's (2010) broad description at the time of transversal skills because it was socio-economic, brief, relevant to work, and authentically applicable to all occupations, without exception. Pragmatically, this approach also minimised the potential for confusion with educational classifications and standards.

Korte (2018) highlights the responsibility TVET has to be responsive to changes in the demand for skills given it is the education sector closest to the world of work. It follows that occupational standards for TVET must, therefore, be derived from industry and business, relating directly to their purposes and occupations and set within a strong conceptual framework. Traditionally education standards tend to be carefully and slowly developed, strongly linked to national qualifications and regulation, reflect work organization and composition at the time, owned by particular parts of the education and skills system with special expertise, but often unable to keep up with the changes in markets, technology, and changes in work organization and composition. In contrast the key features of the WSOS are:

- based on the knowledge of WSI Experts across the world
- validated by global industry and business
- focused on excellence – connected to best practice in industry and business
- include high level transversal skills
- weighted to reflect industry's priorities
- guaranteed to be up-dated every two years.

When designing standards, it is important to know their purpose. Regulation, safety, selection and elimination, design and organization of work and market advantage are major reasons for the establishment of standards. The WSOS provide a basis for aspirational learning programmes/qualifications development and a mechanism for “closing the higher level technical standards gap”. The standards must also be capable of assessment according to sound principles and indicate the nature of the skill developed. Korte (2018) in focusing on programmes/qualifications states: “We may see a future shift from narrow occupation-specific curricula to broader qualifications corresponding to groups of occupations. We will probably experience even more vocational education at higher qualification levels as a response to growing skills requirements” (p.6). WSOS are focussed on outputs and outcomes. WSOS:

- Use and reference occupational boundaries recognised by global occupational classifications.
- Provide a “common language”.
- Provide a basis for comparisons, equivalence, and transferability.
- Are pitched at the level of mastery (all-round expertise) in an occupation, rather than a specific job.
- Are aligned with ILO classifications and levels.
- Have scope for performance between competence and excellence.

The WSOS is designed to provide a description of the occupation: what the practitioner does, what they do it with, where they do it, the occupation’s significance, risks and opportunities plus their most important knowledge, skills and behaviours. This is coupled with the specific detail of the occupational and transversal knowledge, understanding, skills and behaviours of a fully work-ready individual.

The WSOS are designed to summarize the specialist, technical and transversal skills that comprise intermediate work roles across the world, they:

- set out what a capable practitioner must know, understand, and do
- are prepared with the guidance of industry and business, and commented upon by technical and vocational WorldSkills Experts
- are consulted upon and updated biennially with industry and business worldwide
- indicate the relative importance of each section of the standards, as advised by industry and business.

The prime value of the WSOS is two-fold:

- as the reference points for the WSC they establish the baseline from which to grow and reward authentic vocational performance
- for WorldSkills Members and more widely, they provide a benchmark for national and regional standards as economies and markets become increasingly international

The origin of the first suite of the WSOS, in 2012, was a collaboration with a project in the UK. Within the UK, as part of the WorldSkills London 2011 legacy investment by the government, a project was launched to research how international standards could transfer and add value to the UK TVET system. The aim was to raise UK standards and provide greater “stretch” as aspiration for individuals and by so doing benefit the wider skills system. The outcome of the Project was a suite of occupational standards and a set of multi-agency case studies, (Association of Colleges and Find a Future, 2014). The timing of the occupational standards development related well to the government review of apprenticeships in the UK and as a consequence the WSOS are still used as a benchmark by the Ministerial Approvals Panel for England and Wales.

The first strand of the research for the development of the WSOS in 2012/13 took the form of in-depth 1:1 interviews with WorldSkills Experts. This was followed by an industry/business consultation exercise. Interviews were undertaken in the UK with thirty-eight industry/business representatives and stakeholders across:

- construction and building technology
- manufacturing, engineering technology and transport
- information and communication technology
- social and personal services
- creative arts and fashion.

The sample was a mix of micro, small, medium and large organisations, some of which operated internationally. In the main the organisations selected had a strong reputation for investing in the development of their people and/or their involvement in competitions at regional/national level and for having some experience of WSI. The individuals taking part in the interviews varied in their experience in the workplace: there was a combination of senior executive, “middle management” and “new entrant” contributions. The interviews were semi-structured to enable a rich discussion and lasted 60 to 90 minutes.

There were two major areas of discussion: key features of outstanding performance and feedback on the draft international standards. The themes generated from the discussions across the five major sectors resulted in the conclusion that ‘outstanding performance’ is, to a large extent, about transversal attributes and skills. Regardless of the sector/industry, to a greater or lesser extent, the interviewees were “of one mind”. The findings concurred with the MoVE (James, Nokelainen, Rahimi, Smith and Stasz, 2012) research commissioned by WSI.

“Commitment” and “communication” were identified as the most significant features of “outstanding performance”. Commitment was linked to learning, a desire to improve, create a product to a visibly high standard, pride, enthusiasm and relishing a challenge. The “communication” themes were collaborative team working, good interpersonal skills, strong customer relationships and an ability to coach and teach others – to simplify complexity.

Five additional features were identified as important: quality, work organization and self-management, leadership, interpretation and analysis plus a deep technical knowledge. “Quality” was considered to be about “attention to detail” and having a pride in setting and maintaining high standards. There was a realization that precision and detail “make the difference” and that “taking care” is an important underlying skill which relates to consistently producing excellent results.

“Work organization” had a focus on meeting deadlines, targets and being productive, coupled with effective stress/pressure management. “Leadership” related to initiative, independence and entrepreneurial characteristics. Transparency, resolve, vision, creativity, risk-taking, and being solutions driven all emerged within the leadership discussion.

For “interpretation and analysis” there was a high level of consistency around reading and understanding technical information, with a strong underpinning of mathematics and problem solving. A “deep technical knowledge base” was identified as critical for fast evolving/dynamic industries, together with the need to be able to communicate effectively with a wide range of stakeholders.

The outcomes of the analysis of what industry/business considers to be “outstanding performance” contributed to the final design of the WSOS by including a clear focus on work organization and self-management, problem solving, innovation and creativity, plus communication and interpersonal skills.

TVET programmes and qualifications are normally allocated to levels. Levelling is based on the extent of responsibility, autonomy and complexity that might be of value to an occupation. The midpoint of WSOS for trades, crafts, and services is around European Qualification Framework (EQF) level 4; for associate professions and technical level it is around level 5. Examples of strong Level 4 qualifications can be seen in Austria and Finland. Level 5 is generally considered to be higher education TVET. WSI does not focus on where levels sit within the education system, their focus is firmly on industry, business and occupations. The WSOS are tied to the labour market and are expressed in terms of learning outcomes.

The WSOS is an example of a standard that is linked to international classifications and databases. This statement appears in all WSOS:

WorldSkills is committed to ensuring that the WorldSkills Occupational Standards fully reflect the dynamism of internationally recognized best practice in industry and business. To do this WorldSkills approaches a number of organisations the world that can offer feedback on the draft Description of the Associated Role and WorldSkills Occupational Standards on a two-yearly cycle. In parallel to this, WSI consults three international occupational classifications and databases:

- ISCO-08: (<http://www.ilo.org/public/english/bureau/stat/isco/isco08/>)
- ESCO: (<https://ec.europa.eu/esco>)
- O*NET OnLine (www.onetonline.org/)

The WSOS are structured to encompass:

- Knowledge and understanding
 - comprehensive, specialized, factual and theoretical knowledge
 - awareness of the boundaries of that knowledge
- Skills
 - critical thinking
 - the ability to develop creative solutions to abstract problems
 - work organization and self-management
 - reflection and development
 - the use of new ways of working, including communication, creativity and innovation
 - the use of new tools for working, including the ability to recognize and exploit the potential and new technologies
- Attributes
 - performance related (e.g. adaptability, persistence, resilience)
 - ethical (e.g., personal integrity, responsibility for oneself, a sense of justice, empathy).

Whilst job-related knowledge and skills form the greater part of each WSOS, the following transversal skills are also included with a minimum weighting of 5% for each one:

- Work Organization and Self-Management
- Problem Solving, Innovation and Creativity
- Communication and Interpersonal Skills.

The WSOS provide a clear line of sight to a “pinnacle”, the highest point in occupational mastery: excellence, which only a relatively small proportion of any country’s workforce will attain. These are the masters of their skill and leaders in their occupation, for example WorldSkills Experts. Thus, every TVET system will have a gap between their national occupational standards and the WSOS because the majority of the workforce will be in jobs that do not demand them to be operating at international level. Careful thought, therefore, needs to be given to how the WSOS can be referenced, positioned and “transferred”.

In the WSC the assessment of knowledge and understanding takes place through the assessment of performance via a “Test Project” which normally lasts for four days. For example, one of the competitions at the WSC in Kazan in 2019 focused on “Cloud Computing”. The test project assessed Competitors based on their ability to effectively and securely deploy, maintain and scale a web application over four consecutive days.

The experience of a WSC is an important contributor to transversal skills development. Thus research within the WSI community has been carried out on how competitors view the development of their transversal skills (Chankseliani, James, Laczik and Mayhew, 2013). The research was undertaken under the theme ‘Developing and Understanding Vocational Excellence (DUVE)’. The purpose of the initial projects undertaken was to understand better how UK

participation in a WSC improves the skills base in the UK. The research identified that whilst the main benefit of taking part in a WSC for a young competitor was the development of their technical skills the majority of competitors also reported enhancement of communication skills, time management capabilities, self-reflection and confidence.

When asked about the most important benefits of transversal skills within the WSC, communication was placed at the top of the ranking. Improved communication skills were described as helping young people to relate better to a wide range of customers and their managers. Competitors also acquired skills that enabled them to give talks and presentations. The development of communication skills aligned with the findings of the MoVE Australia research which demonstrated that competitors considered the development of communication skills as an important benefit of participating in a WSC (Smith and Rahimi, 2011).

Time management emerged as a significant benefit of the training process for a WSC, and it was also identified as a key reason for poor performance. Self-reflection was defined by Nokelainen and Ruohotie (2009) as the combination of calmness, stress tolerance and good nerves. They concluded that experts are better at identifying and dealing with their emotions. Competitors considered self-reflection as an important transversal skill that they gained from their training and which was often linked to confidence building. MoVE Australia research illustrated that circa 19 per cent of competitors considered building confidence as a benefit of taking part in a WSC (Smith and Rahimi, 2011).

The WSOS is the ‘golden thread’ of a WSC but, as indicated previously, its value goes beyond the Competition to support the development of global TVET. As has been stated the organisation is increasingly reaching out to the international TVET research community. Initially it contributed to a mapping exercise undertaken by CEDEFOP, ETF and UNESCO (Bjornavold and Chakroun, 2017) to identify occupational and transversal knowledge, skills and behaviours within ten occupations/nationally recognized qualifications across nine European countries. The research amply demonstrated significant differences in how and to what extent transversal skills are included within qualifications.

The mapping exercise also highlighted that countries, such as Finland, with a college led TVET system, are normally strong in featuring transversal knowledge, skills, and behaviours. Conversely occupational standards are stronger in a workplace led TVET system. Every country has a different profile with regard to occupational and transversal knowledge, skills, and behaviours because each has a different history and structure. Research and literature indicate that transversal skills are as important predictors of success in education and career as academic abilities (Rauber, 2007; Rosen et. al, 2010; Heckman and Kautz, 2012).

Since 2014 WSI has also contributed to UNESCO’s search for World Reference Levels (WRLs) (Chakroun and Keevy, 2015). Since 2019 an [online WRL tool](#) has been developed which, given its unifying purpose, is transversal in character. Table 2 sets out the work-related factors with which a person’s qualifications, and/or work performance, and/or personal knowledge, skills and behaviours acquired informally can be compared.

Table 2: World Reference Levels: Element Outcome Statements

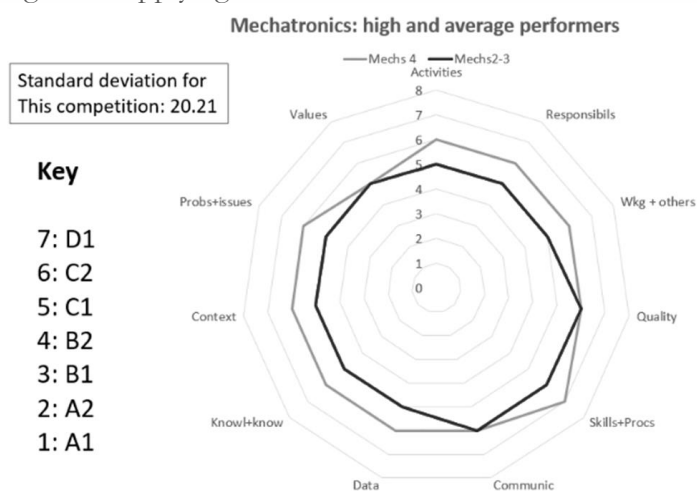
Accountabilities: carrying out and managing activities
1. scope and nature of activities (ACT)
2. scope and nature of responsibilities (RESP)
3. role in working with others (WWO)
4. role in monitoring performance and improving quality (QUAL)
Capacities: using skills, knowledge and know-how
5. scope and nature of skills and procedures (SKILL)
6. scope and nature of skills in communication (COMM)
7. scope and nature of skills for accessing and using data (DATA)
8. scope and nature of knowledge and know-how (K&K)
Contingencies: responding to contextual factors

9. the nature of contexts of activity (CNTX)
10. role in addressing problems and issues (PROBS)
11. role in addressing issues relating to values (VAL)

Source: World Reference Levels Organization. (2019). *World Reference Levels*.

Figure 2 exemplifies this.

Figure 2: Applying WRL Factors and Scales to WSC Results



Source: WorldSkills International

Global and regional organisations have worldwide recognition but may find it hard to penetrate national systems. From its Global Partners and Members, WSI now has support to establish a WSOS Development Centre to expand its reach and capability for Members' and wider benefit. While the WSOS is the hook and the vehicle, much of its value lies in its capture of excellence through the medium of transversal skills. Transversal skills hold the key to mastery in work and beyond, now and for the foreseeable future.

4. CONCLUSIONS

As has been noted the world is changing fast due to the impact of “continuous new technology” and the effects of the global pandemic of 2020/21. Globalization has become a major influencer on the conditions in which individuals work, and it is a shift that will continue for the long term. It is not possible to work in nation-state silos; the future is about working in an expansive, open and global environment. The challenge for all stakeholders is how the emerging trends are managed. There has been a step change in where, how, and when people work due to the global pandemic. Organisations are re-thinking their futures and their working arrangements to meet the needs of their customers and their teams. This is affecting the skills individuals need to survive and thrive in today and tomorrow’s global “workplace”. The focus is increasingly on transversal skills. Through its extensive membership of global TVET agencies, WSI tracks and anticipates the impact of changes in industry and business on the skills required for effective performance. This intelligence translates into global occupational standards. The WSOS are independent of educational systems, they are about the skills needs of leading edge industry and business and are consulted on globally. The WSOS are the cornerstone of the WSC but they have a wider role as a benchmark for WSI Member countries when designing and developing their individual TVET systems. WSOS are uniquely placed to support the advancement of established and new global skills, within which transversal skills are key to enduring value.

It should also be noted that by providing a focus for transversal skills development, via the WSOS, WSI acts as a catalyst for personal development plans which are undertaken for circa eighteen months within national squads and teams. The bespoke training and development and “stretch” that individuals receive, in preparation for a WSC, significantly develops their transversal skills and enables them to cope with the demands of taking part in an international competition. It also gives them an advantage in their working lives beyond the Competition.

While a challenge of reviewing and analyzing transversal skills is that definitions vary, there is common ground because they are not connected to a particular occupation or role. Instead, they can be applied to all work situations and life in general. However, some consolidation or alignment of the different definitions of transversal skills would enable industry, business and education to engage more easily in skills discussions and development projects. The complexity of the various definitions can be a barrier to progress.

Based on its own and international research, WSI has adopted and retained three critical transversal skills, which are included within each occupational standard: work organization and self-management; problem solving, innovation and creativity; communication and interpersonal skills. Their lasting relevance and value are due to their breadth, which enables them to have meaning across all societies and economies.

The initial MoVE project had inestimable value because it identified and explored the space between competence and excellence, leading to a set of identified behaviours, of which all were transversal. This chimed with the urgent need for both WSI and the wider world to think beyond national and continental boundaries, to find areas of commonality. As with international sport and trade, the quest for skills excellence can be a unifying international goal within a conflicted world. With each biennial WSC, Members are able to access additional data and intelligence to support their systems’ development, and to do so often more rapidly and straightforwardly than is possible within the complexity of their national arrangements. Occupational standards are relatively unfamiliar to educational practitioners within many countries and Members, because they are generally at one remove to them, the interface between occupational and educational standards normally being owned by intermediate bodies. This is particularly significant because of what Cedefop calls “path dependency”: the historical drag on national VET systems as they strive to keep up with the movement of work (Cedefop, 2019).

Transversal skills within the WSOS have a direct value as the bridge between VET and occupational mastery through the WSC’s competition design and implementation. Their role is to differentiate between performance that denotes basic competence in a work role, and truly outstanding performance in that work role. The gap may be three levels or more, in terms of qualification levels, depending on the scope of that occupation responsibility, autonomy, and complexity. Naturally, for this to happen also requires skilful assessment design, coupled with reference to a suitable taxonomy (Bloom et al, 1956).

The challenge represented by this has created the need for significant organisational and individual development within Member countries and across the WorldSkills movement. There has been a significant growth in their collective professionalism and strategic thinking. While transversal skills are most clearly on show in the WSOS, marking schemes, test projects, and competitor performance, they are actually all-embracing because they strongly influence participation and behaviour before and during the WSC. They inform the preparation of competitors, and therefore training design and practice; they govern the ability of competitors to manage themselves and their performance in all aspects of their participation at the WSC; they direct the growth and performance of the Experts responsible for competition design, assessment and marking.

As with most countries across the globe, WorldSkills Members approach transversal skills in a myriad of ways. The lack of coherence and commonality has stimulated research at all levels, for many purposes, and there is much still to learn. Given the current pandemic, an ILO-funded digital project in Switzerland to support the integration of transversal skills within their national system

will be of interest. Meanwhile, WSI is playing its part with plans for a permanent WSOS Development Centre to open in 2022. This is due to the growing recognition of transversal skills in developing excellence. As David Hoey (2021), Chief Executive Officer, WS, I states: “The same qualities of resilience, adaptability and flexibility are what put workers ahead, whatever their age or profession” (p.12).

Finally, looking to the future, as was outlined at the start of this paper jobs are changing at an unprecedented rate due to several factors. The future worker, therefore, needs to be increasingly agile, flexible, and adaptable within the dynamic global labour market. The need for strong transversal skills is on the rise; thus global VET systems will need to adjust accordingly. It is recommended, therefore, that further global research is undertaken to identify how national VET systems are identifying, integrating, and assessing transversal skills within their VET programmes, and how they might support the capacity of those systems to generate mastery in work, with and through occupational knowledge, skills, and behaviours.

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