Competences for the future: Trends and challenges

Introduction

Mary Gobbi
Editor

When analysing the four papers that comprise this edition of the Journal, there were some quite similar themes, albeit with different perspectives. Essentially, the papers are considering different types of competences, their evolution over time, and the future needs of the work force in specific disciplines. What is fascinating is the emergence of a discourse of competences that is paradoxically extending and becoming more sophisticated on the one hand, yet on the other is confused, locally situated and difficult to define. We find competences being described as global, generic, scientific, technical, and associated with workplace learning. The geography of the papers provides a hierarchy of analysis from an international and global perspective to a sub-regional analysis of five countries (Europe), country based (Chile) and programme specific (The Netherlands). Matched with this, two papers focus on the scientific and technical domains.

First, Beneitone and Yarosh in "*Measuring global competences in the framework of internationalized curricula*" review the generic competences associated with graduates as potential actors in a global context. The article is a meta-analysis of data from eight Tuning studies across four continents (Europe, Latin America, Africa, and Asia) with a sample of one hundred countries. The data were collected between 2005 and 2018 and comprised the ratings of different stakeholder groups with respect to the importance and achievement of eleven global (generic) competences as judged by over 71,000 graduates, employers, students, and academics. Despite the inevitable limitation of comparing studies separated by time, this study enables cross-country as well as constituent stakeholder comparisons. At the heart of the paper is the thorny question as to the elements of competence that are necessary to be a 'global citizen'. The authors acknowledge the problems not only of definition, but also the process of determining such competences and the level to which they should be achieved. Some readers will find the methods section of particular interest. Here the authors outline how they

addressed the hierarchical challenge mentioned earlier. Namely, how to address the fact that an individual academic department may be 'nested' within an institution which itself is located within a country, or pan-national grouping. From the analysis of the eleven competences reviewed, the authors were able to conclude that these competences are deemed important across the countries studied, irrespective of differences in weighting in specific regions. Clearly further work in other regions is necessary and an in depth understanding of what the competences mean in context.

From the global we move to country -specific in the second paper from Sandoval and Ormazábal, "*The Generic skills challenge for higher education institutions: Experience of public universities in Chile*". Here we see situated development of the discourse(s) of generic competences emerging from a cacophony of terms, local histories and stakeholder engagement where there was no standard or language in common. This paper provides a foundation from which subsequent students of Chilean High Education can trace the emergence of generic skills within the public universities. The paper charts the impact of internal and external forces upon Chile, the engagement with Tuning Latin America and the 'curricula innovation' process of government-funded development in the first decade of the century. The empirical work involved documentary analysis and structured interviews with eighteen teaching directors in public universities in Chile. The findings revealed the plethora of terms used to refer to generic skills, some particular to the university concerned. One hundred and seventeen generic competences were identified, although these could often be clustered into domains. Over time these competences have been reduced in number, integrated, or refined. The authors also noted that the interpretation of the meaning of the competences occurs at institutional level.

An interesting feature of the Chilean system is something called the 'institutional seal' which does not have the status of a generic competence but is rather a cluster of generic competences which together represent the mission, identity, or training characteristic of the institution. The 'seal' is a relatively new development. Perhaps it is a modern form of 'socialisation' to enable the student to graduate with the externally recognised features of the institution. A surprising 50% of the generic competences elicited in the study were judged to contribute to the institutional seal. These competences are emphasised within the intra and extracurricular activities of the institution. As the authors point out, these institutional seal competences are difficult to assess. The characteristic features of the 'seal competences' vary from region to region in contrast to those found in urban areas like the capital city. The regional demographics and environment provide nuances to the seal

competences reflecting the characteristics of the place and the student population. The paper explores the pedagogical strategies used to develop the generic competences.

From this detailed account of the emergence, development, and refinement of the competences at institutional level, what is apparent is that there remains no uniform or unifying standard of generic competences at national level.

Reading this paper after Beneitone and Yarosh, it is evident that undocumented local interpretations of what a given competence *means,* can undermine comparative studies within and between countries. Another interesting observation from Sandoval and Ormazábal is the recognition that the speed of change in the scientific, technological, and social arenas has implications for the generic skills required for employability. This latter point forms part of the focus of the third paper by Cesco, Zara, De Toni, Lugloi, Evans and Orzes, "*The future challenges of scientific and technical higher education"*.

The paper by Cesco, Zara, De Toni, Lugloi, Evans and Orzes—a study conducted in Europe—considers the extent to which the programmes under investigation (1) prepare students for their professional future; and (2) can meet the needs of current and future students. The context is technical-scientific study programmes. The authors commence by reviewing the future demands upon the labour market with respect to scientific and technical development and skills. They draw attention not only to the speed of development, but also the impact of digital technologies, new materials, and new processes like Artificial Intelligence upon several employment sectors. Looking to the future and the educational needs of Generation Z and Alpha to remain employable at graduation and subsequently through lifelong learning. The analysis was conducted using the then top five European Countries with respect to their Gross Domestic Product (Germany, UK, France, Italy, and Spain). The definitions used in this paper for competences and skills are technical, methodological, personal, and social (the latter three being part of so called 'soft' skills).

What emerges from their detailed analysis of a range of data sources is that in some subject areas there are insufficient numbers of graduates (at bachelor level or masters level or both) to fulfil the needs of specific sectors within the labour market. In some cases, the gender balances needs addressing. The paper provides a helpful review of the respective educational needs and preferences of the different generations of students in Higher Education. A strength of the paper is the comprehensive analysis of modern educational techniques and technologies that may best help current and future students.

When discussing the challenge of digitally enabled teaching tools, the authors remind us that not only are we dealing with the *'characteristics, needs and expectations of the different generations of students'* we are also managing with different generational differences amongst faculty and staff. In the latter part of the paper, the authors discuss the various structural relationships between the Higher Education (HE) systems and the Vocational Higher Education and Training (VET) sector. Here there is room for improvement with respect to the interface between HE and VET, the location of courses and their need to provide lifelong learning programmes for the labour market.

Our next paper from The Netherlands is a case study that focuses specifically on the design and delivery of a Science, Business and Policy (SBP) track within a multidisciplinary, work -based learning (WBL) Masters programme that enabled students to have a subsequent career in science and policy. In Grooters, Zaal, Menno and Gerkema "*Science, Business, and Policy: A long-term reflection on multidisciplinary work-based learning in a master's track for societal integration of Science*" we discover how a structured workplace learning package embedded within the programme improved student grades in theory and practice. At the heart of the Dutch Higher Education system is the parallel system of research -knowledge based universities (like the study institution) and universities of applied sciences that focus more upon professional practical knowledge and skills. Hence this programme was specifically designed to enable science, business, and policy students to learn together in an applied manner through engaging in a combination of theoretical modules, project work and work placements. Students are provided with preparatory courses and workshops that enable to apply for their work placements, developing independence, writing, leadership, and employability skills.

Readers interested in a 'how to do this paper' that offers a logical, coherent, rationale, evidenced and critical reflection upon events will find this paper extremely helpful. The strength of the paper is that it draws together both the theory and practice associated with general pedagogic literature, research on work-based learning, application of science to society, multidisciplinary education, and the engagement of stakeholders in the design of the programme. The authors propose a theoretical model of design and identified six critical success factors to the curriculum design and implementation. To investigate any impact of the reports the students wrote, a Directed Content Analysis was undertaken. This analysis included data on the students (origins, attrition), work placement setting, (type, location), tools use and grades and subsequent employability. Research continues on the evaluation of this project.

So, once more we explore the debates, concerns and nuances associated with defining competences and skills. We are reminded about the complexity of competences and skills and how difficult they can be to define, measure and evaluate their relevance and impact.

Some lyrics from the Sound of Music song 'Maria' come to mind, so please forgive my paraphrasing but-

> How do you solve a problem like a competence?
> How do you catch a couple and pin them down?
> How do you find the words that really say it?
> A seal! A verb!! A noun!
>
> Many a skill you know you'd like to show them
> Many a thing we ought to understand.
>
> But how do we make them stay and -listen to what we say?
> How do you keep a soft skill on the sand?
>
> How do you solve a problem like a competence?
> How do you hold a value in your hand?

(*Music* by Richard Rodgers with lyrics written by Oscar Hammerstein II. 1959)

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