TA VIE: Global Competence Eurostyle

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Internationalization and global competence from a European perspective

Internationalization as a topic of real concern for academia is a surprisingly late one in the European context, with most regular activities taking place only during the last two decades. While presently using the language and logic heard at universities in North America and Australia, the European trajectory has been markedly different. The late start may seem odd, given the geopolitical landscape of Europe, the historically international character of the Latin-speaking medieval universities, and the continent's troubling history of colonization. The fact that internationalization has not been a topic of real concern for longer can perhaps be understood as a legacy of a Eurocentric worldview traditionally held (and lived) by the European educated and wealthy elite. At a certain social level, national borders within Europe simply became less relevant and linguistic skills were already provided as part of a "good upbringing". On the other hand, national schools and universities were of course also explicitly agents of strictly national dreams, ambitions and aspirations.

The situation clearly changed during the late 20th century thanks to democratization, the emergence of social welfare regimes and mass education. In spite of this, internationalization of Higher Education Institutions (HEI) has nevertheless limited itself to a predominant Eurocentric agenda due to the overarching project of the European Union. A project where increased international student mobility *within* the Union has been – and continues to be – one of the more important means to foster a sense of European identity within the common market and increase the region's competitiveness in a world where the educational market is increasingly seen in terms of economic success (de Wit, Egron-Polak & Hunter 2015).

At the same time, it should be noted that the intended outcome of internationalization of HEIs is also in Europe increasingly viewed in line with the definition proposed by de Wit and Hunter in 2015, i.e., as "the intentional process of integrating an international, intercultural or global dimension into the purpose, functions and delivery of post-secondary education, in order to enhance the quality of education and research for all students and staff, and to make a meaningful contribution to society." Both the notion of "meaningful contribution" and of "society" are of course open to widely different interpretations but is in not uncommonly connected to strivings to meet the UN's Sustainable Development Goals, including the idea of cultivating a sense of "global citizenship" as an important part of quality education. These are themes that look well beyond both the EU project and the business side of higher education, and indeed also far beyond the university.

The European scenario is now changing for several reasons and is perhaps at a critical junction (de Wit & Hunter 2018). This has to do with both the partial realization of the EU project's ambitions and the gradual shift of HEIs in Europe to the use of English as the primary medium of

instruction instead of respective national or local languages. And of course also with the threats to the European model in the form of Brexit and the rise in several European countries of right-wing populist-nationalistic political movements vocally questioning the benefits of internationalization and globalization. Even though internationalization, to a large degree, still equals inter-European internationalization, the scene is also changing with European HEIs attracting increasing numbers of students coming from outside the Union, and with European graduates increasingly considering the possibilities offered by labor markets outside their own countries, within or outside Europe.

The above-mentioned spread of English as an educational *lingua franca* is an important part of the process of internationalization of HEI in Europe. This spread of English has seemingly made the traditional process of getting to know new countries and cultures through the lenses of their respective individual languages redundant. The standardization of higher education has perhaps also helped to create an image of the 'international' as an unrealistically homogeneous reality. The standardization of higher education in Europe has materialized as the outcome of the Bologna process. However, it can also be found well outside the EU (Hahn & Teichler 2015). Subsequently, this has set the scene for international understanding, as well as creating new arenas for international misunderstanding.

In this educational context, it is not surprising that the notion of intercultural or global competence (i.e., intercultural understanding and the ability to communicate, work and function effectively and ethically in environments characterized by cultural and social diversity), has become more relevant for European HEIs, whereas a decade ago the calls were mainly coming from North America (e.g., Parkinson 2009). Going further back in time, to the mid-20th century, the explicit call for intercultural or global competence grew very much out of post-war America's need to understand, and make itself understood to, the non-English-speaking world. Today, the competence seems as much required for anyone functioning in a world where most everyone communicates in one or several forms of English.

So, there is an urgently felt need to equip our students with these competencies, and internationalization is supposedly the most effective way to gain them. However, despite the massive resources spent on this, the way these efforts are presently measured make it difficult for us to assess the intended learning outcomes and the quality of our learning activities, including those for international mobility.

The result of HEIs efforts are mainly analyzed in terms of structural indicators: how many in- and outgoing international students, how large part of masters' students studying abroad, etc. It is understandable if we consider that, currently, various HEI rankings have prepared their indicators for international universities based on exactly these numbers; the percentage of international students, the percentage of international faculty and, in at least one case, the

percentage of an institution's research papers that are published with at least one author from another country. While these numbers do say something about the HEI's internationalization, they do not ensure that our students' periods of international mobility result in outcomes that meet emerging labor market needs and equip future engineers with co-curricular skills. In spite of the importance of these measures, it is also obvious that these numbers in and by themselves have very little to say about the quality or actual impact of internationalization.

European graduates have problems conveying to potential employers what soft skills they have acquired thanks to international mobility. At the same time, Human Resource (HR) professionals appear to know little about what skills can be developed by students on international mobility. Indeed, without a comprehensive, scientifically tested and reliably assessable framework of global competence for engineers, and a tool kit to assess this competence, whatever measure a university will adopt to enhance and give value to global competence for engineering students, and graduates will rest on a very weak foundation and much make-believe.

Previous European projects

There are previous initiatives that have focused on the assessment of international mobility of students, some examples are: Mapping Internationalisation (MINT), Indicators for Mapping and Profiling Internationalisation (IMPI), Erasmus Mobility Quality Tools (EMQT), Certificate for Quality of Internationalisation (CeQuInt), Reforming Dual Degree Programmes for Employability and Enhanced Academic Cooperation (REDEEM), Memo©, Mapping University Mobility of Staff and Students (MAUNIMO), International Medical School 2020. The main effort among them has been to assess the quality and effects of internationalization actions and mobility. All of them have dealt with the impact of international experiences but not always linked with competencies and not for engineering.

Since some time ago there is a big concern among HEIs to know what is happening in the international context. Analysis of competencies needed in the international context have been done, and methodologies to measure competencies in higher education have been published. Nevertheless, there is no reference of measurement of these competencies that are strengthened in the international context providing a toolkit or comprehensive framework.

The TA VIE project (Tools for Enhancing and Assessing the Value of International Experience for Engineers), presented in this paper, was designed to face this challenge. The project's main goal, to develop a relevant framework of global competence for engineers, and a tool kit to assess this, will thus meet a sorely felt need, and it promises to bring considerable benefits to many stakeholders. If the TA VIE project delivers what is promises, it will be possible to measure the effects of different internationalization efforts, to develop innovative and effective teaching and training strategies for students in higher education, and to make better use of the many existing opportunities for embedded mobility and cooperation. The project will also allow stakeholders to develop strategies and forms for promoting employability that valorizes the

competencies of engineering graduates with international experience, something that will benefit both graduates and their employers, and in the end the rest of society.

Internationalization at the national and institutional level

Considering the enormous effort made by universities to progress in internationalization and the ever-stronger trend to measure the success of the universities' actions, it is evident that there is a need to measure the impact of internationalization on students, faculties, and institutions. Due to the lack of homogeneity among internationalization strategies of different universities, ascertaining its quality and measuring its impact becomes a complex challenge. The accreditation, ranking, certification, auditing and benchmarking must become priority objectives in the international HEI agenda. There is a real need to measure internationalization in terms of impact at different levels, not least the impact of international mobility on students (Vande Berg, Paige & Lou 2012).

Previous research has been done in order to analyze different exchange programs and their impact on students' competencies. One example of this was done in the context of ABET (Accreditation of University Programs of STEM Disciplines) competencies through a questionnaire distributed under the title of "Engineering competencies before and after an international experience". The survey, done for students having their mobility during 2016/17 and yet to be reported on, consisted of a series of questions asking respondents to rate their level on 18 competencies before and after the international mobility. Those competencies included 11 ABET competencies, three competencies that were encouraged in the researcher's HEI and four additional competencies that were examined through a literature review. This survey considered both the *soft skills* and *hard skills* that the labor market requires of engineers.

In the survey participated more than 300 students from the Erasmus (with EU countries) program and around 140 individuals from the Smile (with Latin America countries) and they were asked about how strong they perceive their competencies were before and after the international experience. Results were analyzed considering the differences (between after and before the experience) and show that in both cases students perceive that the competencies with higher improvements are the interpersonal ones (teamwork, communication, English, third language, tolerance, adaptability and confidence). For all these competencies the improvements were perceived bigger than 20%.

Technical competencies are those considered "engineering hard skills" (apply, experiment, design, solve and engineering tools). Complementary competencies are those that complement the hard skills, influence the way solutions are adopted and consider external factors (ethical responsibility, understand the impacts, life-long learning, contemporary issues, organize and creativity).

	Erasmus program		***Smile program***	
Competence Category	*Average absolute variation*	*Average relative variation*	*Average absolute variation*	*Average relative variation*
Technical	0.41	12%	0.43	13%
Complementary	0.49	15%	0.60	17%
Interpersonal	0.83	24%	0.83	24%

Table 1: Absolute variation per competence category and per program.

When analyzing differences between the host universities, it was discovered that Spanish students perceived bigger improvement when studying in Scandinavian universities for technical and interpersonal competencies than in other countries. The country with the highest results for "teamwork" was the United Kingdom. In Italian universities, they highlighted the use of "engineering tools". However, we must remember that these results are based on *self-reported perceptions* of improvements, a very common method, but not a highly reliable method.

This previous analysis, however, makes us think about the need to face the challenge of analyzing different teaching and learning methodologies at the different cultural context to improve international strategies. We should consider our students' competencies using international experience as a powerful tool. Results from the TA VIE project will hopefully shed more light on this issue.

Considering these reflections and analysis, we can only confirm that a new mindset is needed: from numbers to competencies. Higher Education Institutions have been working on increasing internationalization during the last years knowing that it improves our students' ability to face future challenges.

This internationalization has different phases. Deardorff et al. (2018) propose 6 phases. Phase 1: *Study abroad programs* with a transformative effect. Phase 2: *International student recruitment:* the bigger number of international students in the institution, the richer and more diverse atmosphere is. Phase 3: *Coordination and Collaboration* creating a centralized office. Phase 4:

Building Community launching activities to strengthen links like an international day or organizing receptions at the beginning and end of the academic year. Phase 5: *Curriculum development* including new courses with international, global or intercultural content, interdisciplinary programs with international or global content. Increasing Internationalization at home. Phase 6: *Marketing*. We need to tell others what we do. Many internationalization schemes would fall within this model, but the devil is most likely in the details. For example, most international universities work with Phase 4, but fail to effectively integrate domestic and international students, often having separate activities for the two groups even when striving to support integration.

From the UK, Spencer-Oatey & Dauber (2015) propose another development model with stages to reach on the way towards the truly internationalized university. They affirm that considering internationalization in terms of structural factors like the number/proportion of international students is not enough. HEIs' need to consider also the last stage that they call "Competency internationalization", which includes an ability to implement an agenda for both social and academic integration, fostering the development also of global competence among staff and students.

The situation, intent, and strategy most fitting the situation will naturally vary. What is clear, however, is that international mobility is often already achieved, but building a sense of international community or developing the curricula with courses that integrate international aspects and support our students' understanding of globalization or intercultural content, is often lacking. This means that to achieve internationalization at home we have some work to do together. We need to change mindset not considering internationalization for students as focused solely on mobility, and we should put much more stress on the acquisition of competencies needed in an increasingly interconnected complex world.

If we want internationalization to be a reality at home, we need to prepare for it. Internationalization expertise, advocacy, leadership and management, and personal effectiveness are needed. How can we strengthen our own competencies to achieve this challenge?

The EAIE Barometer (EAIE 2018) identifies preparing students for a global world as the most important reason for a university to internationalize. But this internationalization process does not affect only to students but the staff at all levels, from leaders to teachers and administrators – we must all prepare for it.

If we really want to transform HEIs as needed, increasing internationalization and introducing global competencies in the CV, it has implications from a leadership point of view. Transformation processes are internal and usually slow. The bigger the university, the more difficult the process may be, and the better managers must be prepared to take a lead. Critical

thinking (creating new meaning and conclusions from experience), comparative thinking (moving familiar views and perspectives to unfamiliar ones) and creative thinking are needed (Deardorff et al. 2018). The intention and rationale of internationalization must be clearly communicated. Faculty engagement is required and the creation of internal conditions to support internationalization in a sustainable fashion is needed. To face a new era, old leaderships model must be reconsidered, and a distributed leadership model should most likely be implemented.

TA VIE: The project presented

In this context new alliances are needed. Partners should analyze their predominant capabilities, explore complementarity and look for the capacity building. Strengthening relationships makes HEIs stronger and better. The experience of designing and running the TA VIE project will in itself help the partners reinforce their cooperation and extend existing networks to new partners.

The TA VIE project has been designed considering many target groups to collect different points of views and is innovative in as much as results will speed up and improve the way we conceive internationalization of engineering education, improve student training, enhance employability and, ultimately, help build a better world. The impact will be considered at different levels:

At the local level:

- Promotes student mobility
- Promotes active learning and practices of global competence
- Prepares students better for international experience
- Facilitates the design of embedded mobility curricula
- Facilitates and accelerate HEIs work towards comprehensive internationalization
- Assesses the quality of international experience and training
- Assesses the competencies of graduates/job seekers/employees
- Increases recognition and validation of competencies acquired through international experience and/or informal education
- Increases value of global competence for employment
- Helps companies/organizations attract talents with global competence

At the regional/ national levels:

- Awareness raising among students, HEIs, companies and organizations of the importance of global competence
- Increases value of global competence for employment
- Strengthens cooperation between students, graduate, and partners on the labor market
- Increases capacity of professionals to work at the EU/international level

At the European and/or international level:

- Increases value of global competence for employment

- Creates a Community of Inquiry among peers at HEIs
- Increases the international visibility of HEIs
- Increases cooperation between European HEIs so as to more efficiently work towards EU GOAL or other International dissemination of tools for competence assessment and quality assurance of international experiences

On completion of the project, it is anticipated it will have addressed one extremely key issue and the challenge faced by Europe: “increase capacity and professionalism to work at EU/international level: improved management competencies and internationalization strategies; reinforced cooperation with partners from other countries”.

The general objective of the project is to develop internationalization strategies and tools for enhancing and assessing global competence for engineering students and alumni, promoting embedded mobility schemes and enforce their quality, and strengthen employability through cooperation across national and organizational borders.

The project is aimed at engineering students and graduates, as well as employers (corporations, industry, organizations, government bodies) and HEIs, especially staff involved in training global competence and working with international mobility. To achieve the general objective, several specific objectives have been defined, with expected activities and outcomes related:

Specific Objectives

1. *To identify the global competence (knowledge, skills and attitudes) needed by engineers*. The result will be a detailed Framework detailing and identifying Global competence needed by engineering graduates to work and communicate effectively in organizations and companies characterized by cultural and social diversity. With the help of this framework, we will be able to design learning activities and strategies in connection to international experience that will better help students meet the needs of the labor market. To help validate this Framework for Global Competence of Engineers, interviews with managers and HR personnel who recruit engineers for international posts or international teamwork will be carried out, as well as focus group interviews with managers of relevant companies.

2. *To develop a robust toolkit with which institutions of higher education, companies and organizations can assess individual global competence, and so also measure the effect and effectiveness of training and international mobility.* The result will be a toolkit for assessing global competence based on theory and the framework of global competence for engineers mentioned above (Objective 1) is developed. This toolkit, which to be reliable must move beyond assessment through self-reporting, will help HEIs as well as companies and organizations assess the competencies of engineering students and graduates, and it will also help HEIs with quality assurance of training and practices in connection with international learning

experiences. Meetings with relevant private (companies) and public (universities) stakeholders, focus group with HEI managers and use of the tool with students from the partner universities will be done to develop and validate the toolkit.

3. *Develop innovative and effective teaching and training strategies for students in higher education, focusing on curriculum design and making better use of the many already existing opportunities for embedded mobility and collaboration.* The output will be a guidebook to enhancing global competence building at HEIs. This guidebook will contain general strategies for HEIs, as well as specific suggestions for staff and students, drawing on theory and current best practices, in line with the competencies identified above (Objective 1) and utilizing the toolkit for assessment and quality assurance (Objective 2). The strategies will highlight the importance of comprehensive internationalization to make the most of the many already existing opportunities for international exchange and cooperation but will not exclude extra-curricular elective programs and efforts. This will serve as a roadmap for improving practices strengthening transversal competencies, thus increasing capacity and professionalism of students and practitioners to work at EU/international level. This is the challenge leaders will have to prepare to face during the upcoming years. To lead transformation processes, specific skills are needed. In this case, it is planned to execute interviews with managers of HEIs and organize focus groups with a sample of students to discover best practices of internationalization and understand expectations of students facing the labor market, comparing them with those who have not had an international experience.

4. *Develop strategies and ways of valorizing the competence of engineers with global competence, to promote employability.* A guidebook will be written to outline how to improve the employability of engineering graduates with international experience through international forums, job fairs, and job networking sessions. The guidebook will build on case studies and best practices and will increase the international visibility of HEIs, strengthen cooperation between students, graduate and partners on the labor market, as well as help companies/organizations attract talents. Some activities aimed to this objective have to do with the dissemination of results through job networking sessions and use of the lessons learned during the project to design new strategies to boost the internationalization from the partner's universities.

TA VIE Today

Currently, partners are working together on *Intellectual Output 1*. The first step has been to decide together the Global Competence definition. After analyzing those proposed in the literature review partners decided to use, for the purpose of the project, OECD definition. Global competence is the capacity to examine local, global and intercultural issues, to understand and appreciate the perspectives and worldviews of others, to engage in open, appropriate and effective interactions with people from different cultures, and to act for collective well-being and sustainable development (OECD, 2018).

The second step is to prepare interviews in companies *to identify the global competence (knowledge, skills, and attitudes) needed by engineers*. Companies have been selected considering different sectors of activity and different sizes and 25 interviews will be held (5 at each partner country). Interviews have been designed considering an innovative approach to get interviewees involved. Information about the company will be collected and about profiles required from engineers. The expertise of the interviewee will be also considered. They will be invited to participate in a *game* where players will have to consider different competencies and to think if they are linked with some of the Global Competence dimensions.

The interviewer will proceed by giving the interviewee a stack of cards/slips of paper, with the competencies, attitudes and personal traits (the list has been prepared carefully considering previous research and literature review eg., Spencer-Oatey & Stadler, 2009; Deardorff 2009) and also some blank ones that can be filled in, should the interviewee come up with something that had not been included in the list. It is very important to give the opportunity to fill them in with other competencies that they may think are relevant for engineers today working in a global context.

As stated in the OECD model, each competence presupposes some knowledge, skills, attitude, and values, for this reason, it has been considered important to include not only competencies. We distinguished between competencies, related attitudes, and related personal traits.

The interviewee is then asked to choose the relevant ones and place them one and one on the figure (see Figure 1), according to what dimension seems most relevant and ordered so that the more important the competence seems, the closer towards the center it should be placed (as if the figure was a dart board). In case one competence is important for more than one dimension, the candidate can place it across two dimensions. They will be encouraged to speak freely about how they understand the competence, in what context it is important, why, how the relation between them is, etc.

Finally, they will be invited to reconfirm the competencies seen as most important and asked what competencies are most needed (not necessary the same ones as the most important ones!). They will be asked as well what training the company provides to enhance these competencies, and also what competencies the interviewee thinks could most likely be strengthened by students doing training in global competence and/or doing exchange studies, internships or fieldwork abroad during their time at the university.

During the interview they can express what they wished our universities should be better at training our graduates in, out of the competencies/attitudes/traits discussed.

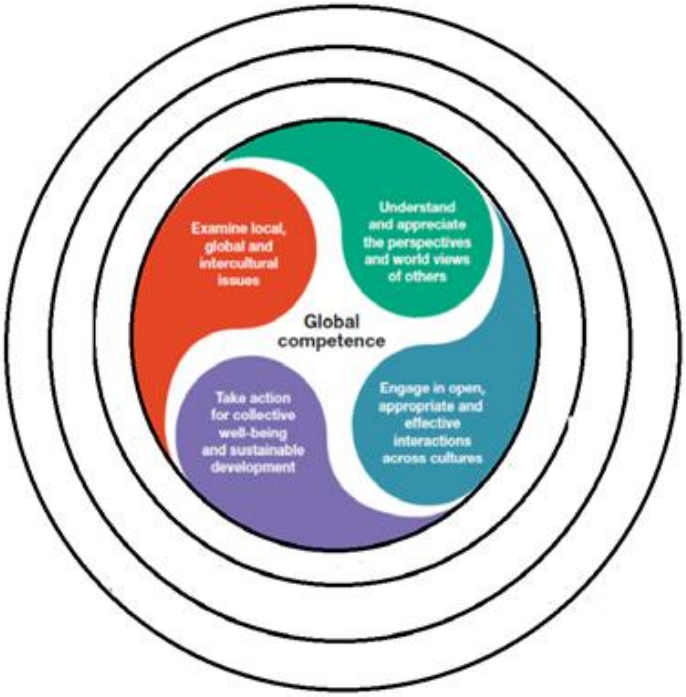

Figure 1: The four dimensions of Global Competence to be used during interviews (modified from OECD, 2018)

Some competencies to be considered during the interview are: communication; communication in a foreign language; holistic system thinking (the ability to understand the professional field, role and duties as a part of a complex multi-dimensional system); negotiation; conflict management; cooperation; problem solving; encourage and motivate others; team work and decision making.

Regarding attitudes and personal traits, some examples are: openness; flexibility; adaptability; curiosity; assertiveness; self-awareness; empathy; international orientation and sociability (the ability to establish and maintain good interpersonal relationships and networks); acceptance of differences; coping; resilience, initiatives; oriented to face challenges; creativity; grit/perseverance.

Certificate of Global Competence: An example of educational initiatives

Pending the outcome of the first two objectives of the project, work has already started on more systematic ways of delivering global competence training to our students and testing different ways of assessing. Two examples of this come from one of the partner universities (KTH Royal Institute of Technology, briefly described below in the paper). Here two tracks are worked on in parallel. The first is long-term oriented, working strategically and systematically through internal committees and faculty special interest groups to put stress on the international aspects of engineering education and trying to find ways of including global competence education in a way aligned with Hudzik's notion of comprehensive internationalization (Hudzik 2015). This

way of working integrated in an ever-present manner is in line with the CDIO model for engineering education, which the university has been committed for many years, being one of that organization's funding universities. To support this project, a course for faculty in teaching and learning in higher education has been developed in an effort not only to help educate the teachers but also as a means of turning them into agents of change, working from the classroom level up.

However, a university is a big multilayered organization and changes are prone to be slow and marked by resistance and challenges of various sorts. To speed up the process, learn along the way, and - most importantly - offer the students this sought-after competence training here and now instead of in an imagined future, a university-wide extra-curricular Certificate of Global Competence was introduced in 2017.

Building on theory and international examples of best practice, the certificate was designed to be as substantial as possible but still able to fit within the different study-programs' limited room for elective course credits. It consists of three compulsory elements: two courses with one international experience in between, to be done in consecutive order:

- Intercultural Competence, 4.5 ECTS (equaling 3 weeks of full-time study)
- International exchange studies or equivalent, 8-12 weeks or longer
- Global Competence, 3 ECTS (equaling 2 weeks of full-time study)

For the international experience, the time limits were set to 12 weeks or longer for exchange studies, or 8 weeks or longer for minor field studies, degree projects, or internships abroad. For international students, the time spent in the host country is considered. The qualitative difference between having an international experience abroad and being involved in an 'international experience' at home can be debated; the inclusion was intended to encourage more students to spend part of their university time abroad.

For students on short-term exchange, those who do not plan to study abroad, or those who already have studied abroad but still want to improve their global competence, it is possible to only take the course Intercultural Competence, even though it won't count towards obtaining the certificate. In the future, short-term students will, in fact, be more actively encouraged to apply to this course in order to help them get more out of their visit to the host university. At the same time, this will contribute to the university's efforts to achieve 'internationalization at home'.

Since not all students will go through the full program, it is not designed purely as a before-during-after international experience education. This means that knowledge, skills and attitudes are introduced in ways that make them relevant already from the start. Self-reflection, target-setting, and documentation are central to both courses, but the temporal focus differs. In the first

course, much focus is put on how the students can develop their competencies while still at the university, while the second course focuses more on employability and lifelong learning. The certificate does not feature mandatory language training, but the importance of language skills is highlighted in the first course, and language studies are encouraged.

Both courses are offered in a blended format with stress on online activities to support the building of Communities of inquiry (Vaughan, Cleveland-Innes & Garrison 2013), systematically working to ensure:

- an open and inclusive learning environment;
- coaching as opposed to formal educational tools to encourage student-centered learning and enhance motivation;
- hands-on tasks and learning by doing to allow new knowledge to be tested in real life already from the start;
- flexibility and the inclusion of students as course co-designers based on their continuous evaluation of the course components;
- constructive feedback and support, from the teacher as well as from peers in smaller groups formed at the first meeting.

The courses use multi-dimensional continuous assessment, through which the students build individual portfolios as evidence of learning from, e.g., observations, self-reflections, PBL alone and in groups, personal challenges to expand comfort zones, situational judgement tests, and the drafting of personal action plans for their future development.

Project partners

The project consortium consists of five universities from Spain, France, Hungary, Sweden, and Italy, i.e., from the South, West, East and North of Europe. All five have worked together, throughout five years, through double degree agreements under the umbrella of the T.I.M.E. Association (Top Industrial Managers for Europe).

Universidad Politécnica de Madrid (UPM) is the coordinator of the project. UPM is the oldest and largest Spanish technical university, with almost 3,000 faculty members, around 35,000 undergraduate students and 6.500 postgraduates in 18 Schools of study. UPM's schools cover most of the engineering disciplines, as well as Architecture, Computer Science and Geodesy & Cartography, and recently also Fashion and Sports.

Ecole Centrale Nantes (ECN), founded in 1919, is among the top higher education and research institutions in France in Science & Engineering, training top-level scientists in engineering track (5 years), MSc Degrees and PhDs. Two thousand students/year in engineering track (5 years), MSc Degrees and PhDs. International development is at the heart of ECN strategic policy: 100%

of its engineering students complete at least a 6-month study abroad period and 32% of the campus population is international.

The Budapest University of Technology and Economics (BME) is a prestigious public higher education institution in Hungary. Established in 1782 it is often considered the world's oldest institute of technology. Its main mission is to educate professionals for the industry in the disciplines of technology, informatics, natural sciences, economics, business, and management. The university's mission, inseparable from the education, is to cultivate the sciences, to make scientific research, which encompasses fundamental and applied research, technological product, and service development, and exploitation of results making up the innovation chain.

KTH Royal Institute of Technology, located in Stockholm, has since its founding in 1827 grown to become one of Europe's leading technical and engineering universities, as well as a key center of intellectual talent and innovation. KTH has a strong commitment for internationalization which together with sustainability and quality forms the overall strategy for the KTH management.

UniTrento is a dynamic, middle-size university (with about 16.000 students, 600 academic staff, 700 administrative staff), located in the Northeast of Italy. Founded in 1962, it has constantly pursued the improvement of the quality of research and teaching and the strengthening of its international dimension, networking with qualified universities and research centers from all over the world, making its campuses international and encouraging the presence in Trento of foreign visiting professors, researchers and students from all over the world.

Added to these five main partners are a number of associated partners, selected to complement the universities with their experience working in international context and recruiting engineers; with their multidisciplinary nature; their capability to mobilize the target groups in several countries (they will reinforce the potential impact of the project and also create better conditions for its future sustainability); their diversity (public and private); their geographical distribution and their capacity to help disseminate and popularize results. A multiplicity of organizations will bring different perspectives, working methodologies and expertise to the consortium. These associated partners are:

- The T.I.M.E. (http://www.time-association.org/) association. TIME stands for "Top Industrial Managers for Europe" and is an association of leading engineering schools, faculties and technical universities from all over the world.
- The French Embassy in Madrid. Innovative experience with building French-German, French-Italian and French-Spanish universities. Able to provide political support and to steer the higher education and scientific cooperation in line with EU policies and programs. The embassy is also able to provide financial support.

- Siemens. A global powerhouse is focusing on the areas of electrification, automation, and digitalization.
- Accenture, a major management consulting and professional services company providing services in strategy, consulting, digital, technology and operations to a large number of clients worldwide.
- Aena SME, S.A., a state-owned company that manages general interest airports and heliports in Spain.
- THS, Tekniska Högskolans Studentkår. THS is one of Sweden's oldest student unions and has 112 years of experience in working for students' rights and high-quality education at KTH. The main partner for university-student collaboration.
- Synergizer is a private consultancy firm located in Gothenburg, run by Alena Ipanova, that is working on intercultural training and strategic communication for companies, nonprofit organizations and government bodies in several countries in Europe and Asia.
- Confindustria Trento is the Employers' Association of the Province of Trento. Founded in 1945, it currently represents a system of 800 member-companies with a total of 35.000 employees.

Challenges to come

The TA VIE project is still in an early phase. However, it seems obvious from that the project will have two major intertwined challenges to deal with. One is a challenge facing any project taking on the task of defining and designing means to assess global competence for engineers in a way that is meaningful, reliable and relevant to stakeholders at different institutions. The other is more intimately related to the specific context of this particular project, its partners and the socio-political context of Europe. The very real difficulty of the first task seems obvious when looking at the abundance of competing definitions of core concepts and the lack of precision with which these are usually given. Futhermore, there are valid doubts about the unbiased nature of any "global" concept referred to in the literature and whether they can be reliably measured (see, e.g., Sälzer & Roczen 2018).

The other challenge is a consequence of the partners' different positions, being located at different corners of the European continent as they are. While having much in common as leading technical universities in their respective countries, and already working well in a number of areas (not least when it comes to our double degree and exchange programs), it is yet to be seen how equally real differences in, e.g., local and national policies, education system structures and cultures, regional labor markets, values, as well as interpersonal differences, will play out within the scope of the project. If global competency for engineers is indeed also the ability to "work effectively with people who define problems differently" as Downey et al. (2006) put it, the project must find ways of making the collaboration and its objectives meaningful answers to potentially very differently defined problems. This must be done from the beginning, at the local,

national and EU levels, but should not stop there. In line with the basic rationale of the whole endeavor it should expand through collaboration with partner universities in other parts of the world, gaining strength from the very complexity and diversity of our globalized world.

Thus, even if the TA VIE project is successful, this should not be construed as a once and for all-finished task, but one that will warrant constant revisions and augmentations as the framework is applied to more surroundings. In the endeavor to expand the project beyond European countries, the TIME network, as well as the links of the participating partners, will be crucial. Through them, we will have ways of validating, assessing and complementing the information obtained in the European context with that from other parts of the world. The information obtained outside the European setting of our project will help us explore further cross-cultural differences in the understanding and valuing of global competence, checking for cultural bias and potential sources of misunderstanding. By doing this, we hope to enhance our toolkits and contribute towards an increased awareness of not only our cultural differences, but also of our more fundamental similarities and commonalities, both as professional engineers and as human beings.

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