

A large, detailed illustration of a tree with a thick trunk and dense green foliage, positioned on the left side of the cover, extending from the bottom to the middle of the page.

Tuning

Latin America

Meta-profiles and profiles

A new approach
to qualifications in
Latin America

Pablo Beneitone, Julia González
& Robert Wagenaar (Editors)

Meta-profiles and profiles

A new approach to qualifications
in Latin America

Tuning Latin America Project

Meta-profiles and profiles

A new approach to qualifications in Latin America

**Pablo Beneitone, Julia González
and Robert Wagenaar (Editors)**

Authors:

María José Arroyo Paniagua, Pablo Beneitone,
Darío Campos Rodríguez, José Lino Contreras Véliz,
César Esquetini Cáceres, Armando Fernández Guillermet,
Julia González, Alba Maritza Guerrero Spínola, Christel Hanne,
Jovita Antonieta Miranda Barrios, Ana María Montaña López,
Luz Angélica Muñoz González, Loussia Musse Felix,
Gustavo Pedraza Aboytes, Diego Efrén Rodríguez Cárdenas,
Iván Soto Espinoza, Samuel Ricardo Vélez González and Robert Wagenaar

2014
University of Deusto
Bilbao

This publication has been put together with the financial assistance of the European Union. The authors of this document are solely responsible for its content and it should in some way be considered to reflect the stance of the European Union.

Although all the material has been developed as part of the Tuning Latin America project, it is owned by its formal participants, and other higher educational establishments shall be free to check and make use of it subsequent to publication, provided that the source is acknowledged.

© Tuning Project

No part of this publication, including its cover design, may be reproduced, stored or passed on in any form or by any electronic, chemical, mechanical or optical means, or by recording or photocopy, without the editor's permission.

Cover design: © LIT Images

Translator: Philip Cooper

© Deusto University Press
Apartado 1 - 48080 Bilbao
e-mail: publicaciones@deusto.es

National book catalogue No.: BI - 931 - 2014

Printed in Spain

Index

Tuning: past, present and future: An introduction	9
Chapter 1: The meta-profiles for the different areas and their role in developing qualification profiles	15
Chapter 2: Meta-profile for Administration	31
Chapter 3: Meta-profile for Agronomy	43
Chapter 4: Meta-profile for Architecture	53
Chapter 5: Meta-profile for Law	63
Chapter 6: Meta-profile for Education	77
Chapter 7: Meta-profile for Nursing	85
Chapter 8: Meta-profile for Physics	93
Chapter 9: Meta-profile for Geology	103
Chapter 10: Meta-profile for History	113
Chapter 11: Meta-profile for Computer Science	119
Chapter 12: Meta-profile for Civil Engineering	127
Chapter 13: Meta-profile for Mathematics	139
Chapter 14: Meta-profile for Medicine	149
Chapter 15: Meta-profile for Psychology	155
Chapter 16: Meta-profile for Chemistry	163
Chapter 17: Some conclusions	175
List of contacts	181

Tuning: past, present and future: An introduction

Major changes have taken place worldwide in higher education over the last 10 years, although this has been a period of intense reflection particularly for Latin America, insofar as the strengthening of existing bonds between nations has been promoted and the region has started to be considered as being increasingly close. These last 10 years also represent the transition time between Tuning starting out as an initiative that arose as a response to European needs and going on to become a worldwide proposal. Tuning Latin America marks the start of the Tuning internationalisation process. The concern with thinking how to progress towards a shared area for universities while respecting traditions and diversity ceased to be an exclusive concern for Europeans and has become a global need.

It is important to provide the reader of this work with some definitions of Tuning. Firstly, we can say that Tuning is **a network of learning communities**. Tuning may be understood as being a network of interconnected academic and student communities that reflects on issues, engages in debate, designs instruments and compares results. They are experts that have been brought together around a discipline within a spirit of mutual trust. They work in international and intercultural groups and are totally respectful of independence on an institutional, national and regional level, exchanging knowledge and experiences. They develop a common language to problems in higher education to be understood and take part in designing a set of tools that are useful for their work, and which have been devised and produced by other academics. They are able to take part in a platform for reflection

and action about higher education - a platform made up of hundreds of communities from different countries. They are responsible for developing reference points for disciplines that represent a system for designing top quality qualifications which are shared by many. They are open to the possibility of creating networks with many regions of the world within their own field and feel that they are responsible for this task.

Tuning is built on each person that forms part of that community and shares ideas, initiatives and doubts. It is global because it has pursued an approach based on worldwide standards while at the same time remaining both local and regional, respecting the specific features and demands of each context. The recent publication: *Communities of Learning: Networks and the Shaping of Intellectual Identity in Europe, 1100-1500* (Crossley Encanto, 2011) takes all the new ideas into consideration which are developed within a community context, whether of an academic, social or religious nature or simply as a network of friends. The challenge facing Tuning communities is to gain an impact on the development of higher education in its regions. Secondly, Tuning is a **methodology** with well-designed steps and a dynamic outlook that enables different contexts to be adapted. The methodology has a clear aim: to build qualifications which are compatible, comparable, are relevant to society and with top levels of both quality and excellence, while preserving the valuable diversity deriving from the traditions of each country involved. These requirements demand a collaborative methodology based on consensus which is developed by experts from different fields who are representatives of their disciplines, and who have the ability to understand local, national and regional situations.

This methodology has been developed around **three core themes**: the first is the **qualification profile**, the second is the **syllabus** and the third refers to the **trajectories of those who learn**.

The qualification profile plays, within Tuning methodology, a central role. The present publication intends to offer a synthesis of all work developed by Tuning in what regards this specific theme.

The second core theme of the methodology is linked to **syllabuses**, and this is where two very important Tuning components come into play: on the one hand, students' work volume, which has been reflected in an agreement to establish the Latin American Reference Credit

(CLAR)¹, and all studies are based on this and, on the other, the intense reflection process into how to learn, teach and assess competences. Both aspects have been covered in Tuning Latin America.

Lastly, an important area is opened up for future reflection about the **trajectories of those who learn** – a system that proposes focusing on the student leads one to consider how to position oneself from that standpoint so as to be able to interpret and improve the reality in which we find ourselves.

Finally, Tuning is a **project** and as such came into existence with a set of objectives and results and within a particular context. It arose from the needs of the Europe of 1999, and as a result of the challenge laid down by the 1999 Bologna Declaration. Since 2003, Tuning has become a project that goes beyond European borders, in so doing embarking on intense work in Latin America. Two very specific problems faced by the university as a global entity were pinpointed: on the one hand, the need to modernise, reformulate and make syllabuses more flexible in the light of new trends, society's requirements and changing results in a vertiginous world and, on the other, which is linked closely to the first problem, the importance of transcending limits imposed by staff in terms of learning, by providing education that would enable what has been learnt to be recognised beyond institutional local, national and regional borders. The Tuning Latin America project thus emerged which, in its first phase (2004-2007), sought to engage in a debate whose goal was to identify and exchange information and improve collaboration between higher educational establishments, with a view to developing the quality, effectiveness and transparency of qualifications and syllabuses.

This new phase of **Tuning Latin America (2011-2013)** started life on already-fertile terrain – the fruits of the previous phase and in view of the current demand on the part of Latin American universities and governments to facilitate the continuation of the process that had already been embarked on. The aim of the new Tuning phase in the region was to help build a Higher Education Area in Latin America. This challenge takes the form of four very specific central working themes: a deeper understanding of agreements involving **designing meta-profiles and profiles in the 15 subject areas** included in the project

¹ CLAR (Latin American Credit Reference). University of Deusto, Bilbao 2013.

(Administration, Agronomy, Architecture, Law, Education, Nursing, Physics, Geology, History, Information Technology, Civil Engineering, Mathematics, Medicine, Psychology and Chemistry); contributing to **reflections on future scenarios for new professions**; promoting the joint construction of **methodological strategies in order to develop and assess the development of competences**; and designing a **system of academic reference credits (CLAR - Latin American Reference Credit)** to facilitate recognition of studies in Latin America as a region that can be articulated with systems from other regions.

The Tuning door to the world was Latin America, although this internationalisation of the process wouldn't have gone far if it hadn't been for a group of prestigious academics (230 representatives of Latin American universities), who not only believed in the project, but also used their time and creativity to make it possible from north to south and west to east across the extensive, diverse continent that is Latin America. This was a group of experts in different subject areas that would go on to study in depth and gain weight in terms of their scope and educational force, and in their commitment to a joint task that history had placed in their hands. Their ideas, experiences and determination paved the way and enabled the results which are embodied in this publication to be achieved.

Yet the Tuning Latin America project was also designed, coordinated and administered by Latin Americans from the region itself, via the committed work carried out by Maida Marty Maleta, Margarethe Macke and Paulina Sierra. This also established a type of *modus operandi*, conduct, appropriation of the idea and of deep respect for how this was going to take shape in the region. When other regions decided to join Tuning, there would henceforth be a local team that would be responsible for considering what to emphasize - specific features, the new elements that would need to be created to meet needs which, even though many of them might have common characteristics within a globalised world, involve dimensions specific to the region, are worthy of major respect and are, in many cases, of major scope and importance.

There is another pillar on this path which should be mentioned: the coordinators of the subject areas (César Esquetini Cáceres-Coordinator of the Area of Administration; Jovita Antonieta Miranda Barrios-Coordinator of the Area of Agronomy; Samuel Ricardo Vélez González-Coordinator of the Area of Architecture; Loussia Musse

Felix-Coordinator of the Area of Law; Ana María Montaña López-Coordinator of the Area of Education; Luz Angélica Muñoz González-Coordinator of the Area of Nursing; Armando Fernández Guillermet-Coordinator of the Area of Physics; Iván Soto-Coordinator of the Area of Geology; Darío Campos Rodríguez-Coordinator of the Area of History; José Lino Contreras Véliz-Coordinator of the Area of Information Technology; Alba Maritza Guerrero Spínola-Coordinator of the Area of Civil Engineering; María José Arroyo Paniagua-Coordinator of the Area of Mathematics; Christel Hanne-Coordinator of the Area of Medicine; Diego Efrén Rodríguez Cárdenas-Coordinator of the Area of Psychology; and Gustavo Pedraza Aboytes-Coordinator of the Area of Chemistry). These academics, chosen according to the subject groups to which they belonged, were the driving forces behind the building of bridges and strengthening of links between the project's Management Committee of which they formed a part and their subject groups which they always held in high regard, respected and felt proud to represent. Likewise, they enabled there to be valuable articulation between the different areas, showing great ability to admire and listen to the specific elements attached to each discipline in order to incorporate, take on board, learn and develop each contribution – the bridges between the dream and the reality. Because they had to carve new paths in many cases to make the ideas possible, design new approaches in the actual language of the area and the considerations proposed, and to ensure that the group would think about them from the standpoint of the specific nature of each discipline. Following group construction, the process always requires a solid framework based on generosity and rigour. In this respect, the coordinators were able to ensure that the project would achieve specific successful results.

Apart from the contribution made by the 15 subject areas, Tuning Latin America has also been accompanied by a further two transversal groups: the Social Innovation group (coordinated by Aurelio Villa) and the 18 National Tuning Centres. The former created new dimensions that enabled debates to be enriched and an area for future reflection on subject areas to be opened up. Without doubt, this new area of work will give rise to innovative perspectives to enable those involved to continue thinking about top quality higher education that is connected to the social needs of any given context.

The second transversal group about which one should recognise the major role played comprises the National Tuning Centres – an area of

representatives from the highest authorities of university policies from each of the 18 countries in the region. These centres accompanied the project right from the outset, supported and opened up the reality of their national contexts to the needs or possibilities developed by Tuning, understood them, engaged in dialogue with others, disseminated them and constituted reference points when seeking genuine anchors and possible goals. The National Centres have been a contribution from Latin America to the Tuning project, insofar as they have contextualised debates by assuming and adapting the results to local times and needs.

We find ourselves coming to the end of a phase of intense work. The results envisaged over the course of the project have succeeded all expectations. The fruits of this effort and commitment take the form of the reflections on the 15 subject areas included in the project. This process comes to an end in view of the challenge faced in continuing to make our educational structures more dynamic, encouraging mobility and meeting points within Latin America, while at the same time building the bridges required with other regions on the planet. This is the challenge facing Tuning in Latin America.

October 2013

Pablo Beneitone, Julia González and Robert Wagenaar

1

The meta-profiles for the different areas and their role in developing qualification profiles

Julia González and Pablo Beneitone

The development of qualification profiles is one of the most relevant issues in the area of higher education and, by definition, a key element in the Tuning project. Profiles have been established as being a specialist and critical area in recent years within the framework for development of competence-based qualifications. In an environment in which many actors help to define graduate qualifications and profiles, such actors – universities, employers, students, parents and politicians for responsible higher education, among others – consider qualification profiles to be the result of an education process in which interests converge. Several questions can therefore be asked: does joint work carried out by all the actors mentioned in a well-articulated profile mean it is able to change individuals and transform society? What types of profile is demanded by the different societies? What type of citizen is required by societies to take up the challenge of development? These aspects require effort by all the actors involved in order for channels to be defined through which the profiles required by societies are articulated, so as to be able to deal with the many problems of different contexts.

The concept of meta-profile within the framework of the different subject areas emerged in the Tuning project as an element that lends itself to reflection and provides maturity to professional socially serious education processes. It constitutes one of the four elements that are

deemed by Tuning to be keys to developing degree profiles for the specific competences associated with a higher educational establishment. It is therefore necessary to describe this concept of a meta-profile and explain **what it is, how it is put together and what it contributes to the design of the degree profile for a specific qualification.** To this end, we need to start by defining the concept of degree profile for a qualification and analyse its four constituent elements by focusing attention in particular on one of them – the meta-profile.

1. The concept of degree qualification profile

Reflection about the definition of the graduate qualification profile has made significant advances in recent years. It appears with a tentative definition within the Framework for Qualifications in the European Higher Education Area. Within this context, it is defined as: *“the field of learning of a qualification”* (A Framework for Qualifications of The European Higher Education Area 2005, page 30). This text mentions the Tuning project as the compulsory reference point for designing graduate qualification profiles. Indeed, in readapting the definition provided in *“A Tuning guide to formulating degree programme profiles”* (Lokhoff et al., 2010), it could be stated that graduate qualification profiles describe the specific features of a qualification in terms of learning outcomes and competences.

Within this context, it can be considered that *“A degree profile... clearly illustrates what students should be expected to do and be able to do once they earn their degrees – at any level. This degree profile therefore proposes specific learning outcomes that benchmark the associate, bachelor’s and master’s degrees ... regardless of their field of specialisation.”* (Lumina Foundation, 2011, page 1).

In pursuit of an agreed understanding of the qualification profile, a long reflective process was pursued within the framework of the Tuning Latin America project, the result of which is this publication. Similar debate in Africa and Russia subsequently took place in the context of Tuning projects. The debate and reflection resulted in the establishment of four core themes, by means of which qualification profiles can be understood and designed:

- Core theme 1: The region’s social and economic needs.

- Core theme 2: The meta-profile for the subject area,
- Core theme 3: Future trends in the profession and society.
- Core theme 4: The specific mission of the university that offers the qualification.

These core themes in turn help to place the qualification profile within certain parameters linked to the relevance and collective understanding of that qualification, the recognition of a qualification in a given country by another and the opportunities for the development of joint qualifications between countries.

2. Core theme 1: The region's social and economic needs

The concept of relevance is central to the design of a qualification profile. Without doubt, the analysis of relations between the university and society lies at the heart of the meaning of higher education. However, any analysis of these university-society relations needs to be carried out with a certain amount of care. Tünnermann and Souza (2003) warn that when we refer to the relevance of higher education, there is a tendency to reduce the concept to economic or business dimensions associated with the sector. These authors are of the opinion that higher education should face up to such demands, although their relevance transcends concepts of economics and concerns about employability. Similarly, they consider that the university-society binomial should be examined from a more broad-ranging standpoint by considering the challenges facing society as a whole. Thus, the key aim will be to develop capacity and the mechanisms required to translate objectives and aspirations of society into the tasks and procedures that higher education should tackle and fulfil in both qualitative and quantitative terms.

Tuning has always worked with the conviction that there are two core themes that form the basis for the *raison d'être* of all qualifications: employability and citizenship. Thus, dialogue between universities and society need to provide a clear response to these two challenges. To this end, qualification profiles should rigorously take into consideration how to ensure that individuals who obtain a qualification may be aware of and fit their knowledge into the framework of social needs required

by their milieu, who have the capacities required for employment in the community in which they will have to exercise their professions, and who know how to help develop democratic, fair and inclusive societies. The need for individual progress is implicit among these objectives, as the individual and their growth form the basis of any social development.

The great variety of interests, demands and expectations of different social groups on higher education mean that achieving a balance between professional education and citizenship is no easy task. To explain these demands and suitably face up to the challenge, Tuning has developed a specific methodology in order to design qualifications that take these many expectations into consideration. It requires better coordination between universities, social agents and the world of work, particularly taking into account the specific needs and challenges being faced by society, including respect for cultures, service for the most vulnerable and protection of the environment, among other issues. With regard to employability, it is important to state that this methodology also attempts to influence the identification of a suitable balance between the competences, abilities and skills that are going to be required in order to help improve the societies and environments in which the qualifications in question are being offered.

Alongside these broad social demands are the academic and labour-related imperatives that need to be taken into account, i.e. the needs of the knowledge society. For instance, the OECD stresses the role of tertiary education in encouraging research, innovation and development, and suggests developing education policies that clearly take the region's expectations and social and economic objectives into consideration (OECD, 2008).

Tuning seeks to fully identify and accommodate the needs of society alongside those of individuals within a specific area so as to strike a balance. In this respect, Tuning strives to incorporate all these expectations and reflect on what higher educational establishments view as being key demands and, hence, how to engage in consultation with relevant experts from industry, academia and civil society. The aim of the Tuning methodology is to:

- Understand, discuss and enrich the definitions of generic and specific competences.

- Reflect critically on a region's needs and strengths, and the roles of subject and professional areas.
- Be aware of views on the education in higher education in other parts of the world.
- Offer a framework in order to develop qualification profiles.
- Be aware of gaps existing in the different areas.
- Reflect on the characteristics of citizens who can best contribute to a culture of democracy, sustainability and development of rights in a region.
- Consult with other groups so as to be able to discuss and shed light on the path to be pursued.

The methodology pursued by Tuning takes into consideration the fact that to collectively perform the task of defining the most relevant competences for a region, a list is prepared by each subject area of generic competences which are deemed important. This process is carried out via reflection and discussions both within and among groups regarding their own understanding of what is relevant for the region. This task comes to an end when the group reaches consensus about the selection of the most appropriate competences for the region and about which there needs to be consultation. This discussion regarding relevant competences is developed within a context of intercultural wealth, encompassing different countries and approaches.

The second collective task is similar to the first and focuses on specific competences. In this case, debate and reflection about common and diverse core aspects of qualifications are again developed within each subject area. Given the permeable nature of generic competences which, for example, can end up becoming specific to a certain degree programme, it is important to gauge the final coherence of the list to be consulted.

This search for relevance has been recently can be seen as the search for the optimum ways to *provide students with: "preparation for employment, life as an active citizen in democratic societies, personal development, development and maintenance, by means of research,*

teaching and learning on a broad-ranging and advanced basis for the knowledge society” (Recommendation made by the Committee of Ministers of Member States regarding social responsibility in higher education and research 2007, in Samardžić-Marković, 2013, page 7).

The next task refers to the consultation process. This process requires (1) understanding of the reasons for it and the knowledge of its value and limits in practice; (2) selection of the means of consultation deemed the most suitable; (3) identification, discussion and agreement about the most relevant groups to be consulted (other academics, employers, students, graduates, professional bodies, governmental institutions and civic associations, etc.).

Once consultation has been carried out, the final phase of this search for social relevance focuses on an analysis of results. This task is performed by the group and special care and attention is paid to those contributions that emerge from the different perceptions. These are what can enlighten dimensions and understanding of the specific reality of the different situations, the most pressing needs, the most recognised strengths, the opportunities or risks perceived and how they should be planned in terms of educational measures, taking into account the needs and contributions both of specialists and common citizens.

This core theme that takes into consideration relevance in designing qualification profiles was developed by most of the subject areas in Phase 1 of the Latin American Tuning project (2004-2007). New subject areas were included in the second phase after 2011– Agronomy, Computer Science and Psychology. Both identification of generic and specific competences and mass consultation (over 50,000 interviews) with diverse actors from society were carried out by the 15 subject areas attached to the project. The results of both steps linked to this core theme form part of the publication *Reflections and Perspectives on Higher Education in Latin America. Final Report, Tuning Latin America Project 2004 -2007* (Beneitone et al., 2007).

3. Core theme 2: The meta-profile for the subject area

There was a clear reference to the subject area in the first definition of the qualification profile: “the specific field of learning for a qualification” and this is, of course, one of the most significant

elements in designing qualification profiles. The construction of reference points in the form of competences and learning outcomes for each of the subject areas and the development of mutual understanding about these lies at the heart of the Tuning tradition. Thus, learning communities from different parts of the world have pinpointed the essential elements in terms of competences and learning outcomes that lend identity to a qualification and enable it to be recognised.

The need to construct qualifications with the ability to obtain **recognition** in a common area of higher education has been one of the Tuning aspirations since the outset. Debates about the key elements of each subject area constitute one of the most unique processes involved in this methodology. The search for collective understanding of the specific area is a distinguishing part of it, as the aim is to understand the essential, the diverse and the optional in each given field.

For this reason and taking each of the subject areas of which the different qualifications form a part as a basis, each subject group pursues a collective reflection process. The groups define the specific nature of the area concerned based on their understanding of the area, by discussing the competences they deem central and how these may affect and make society advance. This reflection gradually marks instances of exchange about how to determine what is really essential in the area, which competences can be considered key at all or some levels, and which ones – albeit not being deemed key in themselves – are considered particularly necessary or required by the region, among other issues. The intercultural debate ends with a final decision regarding competences that are seen to define the learning that a given group of students needs to achieve. Thus, consensus is reached about the lists of competences designed and discussed by experts from the region. These lists provide the participants with an approximation of the results obtained from their own area in addition to hands-on intervention in the process.

The importance of having lists of competences for each area proved to be a decisive contribution from Tuning. These were debated in the different regions and compared, contrasted, studied, and served as a reference point for reflection on an institutional, professional and regional level. They were also viewed from a global standpoint by comparing what was chosen by different countries and regions and

contrasting them in terms of how they affected each context. This overview started from below – in other words, it was a bottom-up globalisation process. However, questions emerged. The lists of competences did not have any hierarchical structuring, and did not reflect any type of distinguishing assessment. Did they all have the same meaning? Above all, how much weight did they carry when designing qualifications, where were the reasonable limits and how were they related to each other? Questions such as these pointed to a need for a higher level structure that could capture the interrelationship of the competences, and indicate their centrality in relation to a specific area of study and so on. **Meta-profiles** emerged as an answer.

These have been developed over the last two years in the Tuning methodology. Tuning experts have conducted a new analysis of the competences that had already been identified. This included discussion about their categorization and criteria for grouping; their internal structure and links between the various elements; and relative weight, and the differences in importance. This led to the design of meta-profiles. The subject areas attached to Tuning are perfectly prepared for the purpose of performing this task on a regional level because they are made up of academics who are experts in their disciplines and who are in turn also familiar with an international learning process that ensures they are capable of distinguishing between and sifting through the finer details. In this respect, they might be considered as genuine Communities of Practice (Eckert, 2006) who are ready to offer this new perspective for understanding and international debate.

Furthermore, Tuning Communities are continually open to parallel groups from other regions and other academics from diverse areas. These groups constitute genuine Learning Communities owing to the major emphasis they place on learning and listening (Eckert, 2006). They are groups that form the backbone of the Tuning process by not only identifying key aspects and possible levels at an optional level in areas, but also that by making headway in terms of structuring of results and creating forms of reflection such as theirs via methodologies that are close to the area, they are able to gain a joint understanding of the area and of how they see the relationship between the different components. They are referred to as meta-profiles so as to distinguish them from specific qualification profiles, owing to their essence for going beyond profiles for real qualifications and for containing diverse profiles that have a great deal in common on a nodal level of the area and the distinguishing features they boast, in view of the particular

characteristics common to a range of institutional and national environments.

Therefore, **meta-profiles** are representations of structures of the different combinations of competences that lend identity to the subject area. They are mental constructions that categorise, structure and organise components into recognisable components and illustrate their inter-relations.

Meta-profiles explain the relationship between generic and specific competences within a subject area. They constitute a more specific statement of agreements and limits in terms of the convergence that has been reached in order to recognise a certain qualification. They imply a reference for the subject area with regard to what is central, common and necessary, in order to be able to recognise a given qualification. For it to be recognised in another institution, a profile for a qualification should incorporate all the central components present in the meta-profile.

The question that should be asked is: **what do meta-profiles contribute to the formation of degree profiles?** Meta-profiles can be very useful tools for coming to an understanding about a subject area for a specific region. This provides a number of advantages: the first is the ability to create pooled knowledge and raise the level of debate about such matters as the significant elements in a subject area. Moreover, this collective understanding is important to be able to achieve a level of common understanding that is at the core of the reference points and the weight they carry in programmes. This representation offers the chance to reflect on and discuss the combination of elements in greater depth, and such reflection and debate usually leads to better understanding and quality.

The second contribution made by the meta-profiles is related to recognition, as they offer more elements than what is deemed central to each subject area with their limits and specific features. Generally speaking, recognition means the validation of an educational experience. According to Kohler (2003), it is a question of whether a qualification from one country is recognised or not in another country to the extent that an individual may enter their job market or gain access to other advanced studies in a second country. In this respect, the key point is the problem of whether a qualification gained in one country equates to an educational experience in another.

Tuning maintains that what is relevant for recognition purposes is having proved that the results desired have been achieved. This approach enables a wide variety of paths, strategies and processes to be pursued for the aims desired. Historians, for instance, can study past developments in different places. They can obtain results using a very large number of methods. Yet the results will be comparable in terms of graduates' ability to analyse the evolution of societies over time, the transparency of their methodologies and the rigour applied to research or the language in which they express themselves.

The conscious decision to focus on results leads directly to the relevance of meta-profiles for recognition purposes. The meta-profile for the area provides not only an understanding of the key elements and of their description but also their identification and explanation in a language that is both comprehensible and transparent. It offers the image, importance and weight of the different factors of which it is comprised. Meta-profiles provide the contours within which qualifications may be identified and recognised, because the crucial elements are well-structured.

The third advantage of developing meta-profiles is the value they might have in constructing programmes leading to joint qualifications. By taking meta-profiles into consideration, the key elements of a qualification can be identified and the responsibility for constructing it can be shared as a result of a common understanding of the whole area.

Lastly, meta-profiles offer a new, different new path to regionalisation (Knight, 2012) and, in short, to globalisation. In the case of Tuning, the meta-profiles are constructed on a regional level by those who wish to work together – not by seeking homogeneity, but rather, by highlighting diversity. Given that Tuning has developed this reflection in Latin America, Africa, Europe and the Central Asian Republics, there is now a level of comparison with other regions in the world and, ultimately, on a global level. However, this way of reaching a global level implies, like everything in Tuning, a bottom-up approach, i.e. from the regions on a global level although in this case, each region appropriates its process and is able to agree how to compare or share it with another region only if and when it wishes to do so – including on the level it chooses to do so. Thus, the Tuning methodology respects the genuine local elements which lie at the heart of the process. This makes a significant difference in terms of developing global indicators

by taking into consideration a bottom-up way of thinking rather than top-down, and also carves a new, improved path as a way of achieving them. The chance to contrast the meta-profiles for the areas among regions offers a far more specific and transparent path to globalisation, with the option of taking a future global meta-profile into consideration.

Latin America has made a special contribution to the Tuning brand, not least in the pioneer work done in developing meta-profiles. The results the fifteen subject area groups obtained from reflection explain what a meta-profile is and they give concrete examples, showing the extent to which it is linked to qualification profiles. These examples make up the core of this publication and are described in the following chapters.

4. Core theme 3: Future trends in the profession and society

Thinking about education means being involved in the present but also looking to the future. It means reflecting on social needs and anticipating political, economic and cultural changes. It means also taking into account and trying to foresee the challenges that future professionals will have to face, together with the impact that certain qualification profiles will have. It takes time to design, plan, develop and approve qualifications. Students need time to achieve results and mature in terms of their learning and then, once they have finished their degree, they will have to serve, be ready to act, innovate and help to transform future societies, in which they will come up against new challenges. Qualification profiles need to look as much to the future as to the present, which is why it is important to consider future trends – both within the specific subject area and in society in general. This constitutes a mark of quality in terms of design.

The Tuning project in Latin America incorporated an analysis of future trends in the design of qualification profiles. The reflections of appropriately chosen informants about the future were studied through the construction of scenarios. Initial analysis is promising, and will be studied at greater depth. The first step involved the search for a methodology to help envisage future scenarios. Analysis of core studies in education focused on the changing role of higher educational establishments and renewal trends in education policies or institutional reforms.

A methodology was therefore chosen that was based on in-depth interviews with a dual focus: on the one hand, questions were asked that led to the construction of future scenarios on a general level in society, their changes and the impact of these transformations on society, the area and the profession. This first part served as a basis for the second stage that specifically concerned the features of the area itself, their transformation in general terms and also any possible changes to the degree programmes themselves that might tend to disappear, re-emerge or be renewed. The final part sought to anticipate the possible impact on competences and the need to include new ones and/or reformulate existing ones, based on present coordinates and driving forces behind change.

Each subject area determined the definitive specific criteria for the informants with whom the study was going to be carried out. After reaching consensus about the people to be interviewed in the project and about the questions, contexts and other methodological requirements, the interviews were carried out in all 15 areas resulting in reports that provided a great wealth of material emerging from over 450 interviews conducted.

The results of the analyses were then incorporated in specific publications about each subject area, with this third element – the taking into consideration of future scenarios - clearly demonstrating the absolute need to include future considerations in the construction of qualification profiles.

Latin America was once again the precursor to experimentation in the case of this core theme. Both the work on developing meta-profiles and the future scenarios have represented an important contribution made by Tuning Latin America.

5. Core theme 4: The specific mission of the university that offers the qualification

The fourth element that needs to be taken into account when constructing profiles is related to the specific features of the university where the qualification is designed and programmes taught.

Nowadays most – if not all- Higher education institutions have statements of their mission, vision and values. Relatively unknown until

the latter part of the last century, institutions now proclaim their values as part of their need to be distinctive in what is a much more crowded market.

We are referring to the fact that individual universities and their contexts mean that we need to reflect on another of the themes that are currently deemed to be highly valid: the differentiation processes existing in the world of higher educational establishments. Thus, Van Vught (2008) considers literature to be very clear about the desirability of diversity as one of the factors associated with the performance of higher education systems.

The arguments in favour of diversity are summarised in seven points that range from ensuring that diversity grows; the need to provide access and opportunities to certain individuals from different milieu and who require very well-prepared education contexts; as a means for encouraging social mobility in many different forms and via many different points of entry; providing exchange and departure points offered by the system to correct any mistakes in terms of choice and provide opportunities for success. However, diversity can constitute a means of responding more suitably to diverse employment requirements in an area, or a means for achieving greater effectiveness because of the concentration and dedication given to specific tasks. Among those mentioned, the two latter ones are related to the types of qualification profile that we wish to develop.

Different conceptualisations of institutional type illustrating diversity have been posited, e.g. the U-Map model (Van Vught et al. 2010) or development within a ranking system that is also based on Multirank (Van Vught and Ziegele, 2012).

Similarly, if we continue with conceptualisation and, bearing in mind the variety of institutions, one would expect the profile of a university with a regional outlook to be different from that of a university with a more international outlook. In this respect, a university with a regional vocation would design its degree profiles by looking to a greater extent at the area to see whether it is more internationally inclined, whereby one would expect greater proximity in terms of response to international contexts. One would also expect a university that seeks specialisation through research to be geared far more, for instance, towards more research-oriented profiles, while another university that strives more to ensure good teaching would perhaps do so via

more applied profiles. If its mission is identified more with social commitment, then one would expect a university to tend more to incorporate some element linked to this in its profiles.

Identification and even working strategy towards a desired profile in a higher educational establishment can be considered a task inherent in the search for quality. It also constitutes a way of building on a university's own strengths while at the same time helping it to pursue and reinforce its own mission.

6. Some final considerations about the study of meta-profiles

Tuning Latin America proved to be the laboratory in which the meta-profiles were first designed. Within this context, they were conceptualised and given shape and meaning through the efforts of the subject area groups, offering the chance to take a further step forward in the Tuning methodology. The concept of the meta profile steadily gained strength and highlighted the importance of this structuring of competences as an enabler of understanding among universities when engaging in dialogue about recognition. The meta-profile is presented as a new way of organizing reflection about some common features of qualifications, going beyond the lists of competences agreed towards a structure that lends them both shape and meaning. It makes the profile more transparent and enables one to identify whether the necessary and constituent elements of a subject area are present in the qualification profile. The meta-profile has the advantage of using the same language as the profile, albeit with greater scope in terms of agreement and less in terms of requirements. This enables clear, accurate contrasting to be made in order to assess the possibility of a qualification being recognised in different universities.

The results of the work done by the 15 subject areas are provided in the following chapters. Each area seeks an appropriate means for arriving at the final meta-profile. An example of this is the wide range of procedures that are explained in the different chapters to explain how agreement was reached. The sheer variety of these procedures reflects the heterogenous nature of the different national and institutional perspectives on qualification profiles seen through a specific subject area. In addition to explaining the process involved in designing the meta-profile, each subject area also describes its constituent elements. Characterisation of each component of the meta-profile enables the

importance placed on identity of the subject area to be understood – not only for identification purposes but also for future recognition. Lastly, each subject area agreed upon a meta-profile and, by providing a clear description of it and having explained how it was reached, then went on to contrast that meta-profile with qualification profiles existing in the institutions and/or countries to whom representatives of the group belonged. This task of reviewing the meta-profile and noting the extent to which it is related to real profiles enabled some aspects to be adjusted and the agreements reached to be validated, thus showing in what ways the meta-profile that had been designed would appear to fit into profiles for existing qualifications.

This is the context in which the effort made and innovation pursued by the 15 subject areas of Tuning Latin America is highlighted. It is an ongoing task, because one never stops learning and incorporating new elements or classification systems. However, each subject area has designed a classification system that has been deemed or valid for its own area, according to its own competences and based on a common pattern in terms of approach. The sample is a striking one and has already helped the areas to be studied in depth and enabled them to interact.

Bibliography

- BENEITONE, P., ESQUETINI, C., GONZÁLEZ, J., MARTY MALETA, M., SIUFI, G. & Wagenaar, R. (2007). *Reflections and persoectives of Higher Education in Latin America*. Final Report, Tuning Latin America Project 2004-2007. Spain, University of Deusto Publications.
- BOLOGNA WORKING GROUP ON QUALIFICATIONS FRAMEWORKS (2005). *A Framework for Qualifications of the European Higher Education Area*. Copenhagen: Ministry of Science, Technology and Innovation. Retrieved from: http://www.bologna-bergen2005.no/Docs/00-Main_doc/050218_QF_EHEA.pdf
- ECKERT, P. (2006 [Online Edition]). «Communities of Practice». In K. BROWN (Ed.), *Encyclopedia of language and linguistics* (pp. 683-685). Amsterdam: Elsevier Ltd. Retrieved from: <http://www.sciencedirect.com/science/article/pii/B0080448542012761>
- KNIGHT, J. (2012). «A conceptual framework for the regionalization of higher education in Asia: application to Asia». In J. N. HAWKINS,

- K. H. MOK & D. E. NEUBAUER (Eds.), *Higher education regionalization in Asia Pacific: Implications for governance, citizenship and university transformation* (pp. 17-36). London/New York: Palgrave Macmillan.
- KOHLER, J. (2003). «Quality assurance, accreditation, and recognition of qualifications as regulatory mechanisms in the European Higher Education Area», *Higher Education in Europe*, 28(3), 317-330.
- LOKHOFF, J., WEGEWIJS, B., DURKIN, K., WAGENAAR, R., GONZÁLEZ, J., ISAACS, A. K., DONÀ DE LA ROSE, L. & GOBBI, M. (2010). *A Tuning guide to formulating degree programme profiles*. Bilbao, Groningen & The Hague: University of Deusto Publications.
- LUMINA FOUNDATION (2011). *The degree qualification profile*. Retrieved from: http://www.luminafoundation.org/publications/The_Degree_Qualifications_Profile.pdf
- OECD (2008). *Tertiary Education for the Knowledge Society*. Paris: OECD Publishing.
- SAMARDŽIĆ-MARKOVIĆ, S. (2013). «A word from the Council of Europe's Director General for Democracy». In S. BERGAN, I. HARKAVY & H. VAN'T LAND (Eds.), *Reimagining democratic societies: A new era of personal and social responsibility* (pp. 7-8). Strasbourg: Council of Europe Publishing.
- TÜNNERMANN, C. & SOUZA, M. (2003). *Challenges of the university in the knowledge society, five years after the World Conference on Higher Education*. UNESCO Forum Occasional Papers Series. Paris: UNESCO.
- VAN VUGHT, F. A. (2008). «Mission diversity and reputation in higher education». *Higher Education Policy*, 21(1), 151-174.
- VAN VUGHT, F. A. & ZIEGELE, F. (Eds.) (2012). *Multidimensional ranking: The design and development of U-Multirank*. Dordrecht/Heidelberg/London/New York: Springer.
- VAN VUGHT, F. A., KAISER, F., FILE, J. M., GAETHGENS, C., PETER, R. & WESTERHEIJDEN, D. F. (2010). *U-Map: The European classification of higher education institutions*. Enschede: CHEPS. Retrieved from: http://www.u-map.org/U-MAP_report.pdf

2

Meta-profile for Administration

César Esquetini Cáceres et al.¹

1. Background

One of the concerns put forward by the Administration group prior to preparing the meta-profile for the area was the need to review the 47 competences (20 generic and 27 specific ones) defined in Phase 1 of the Tuning Latin America project (2004-2007), for two major reasons: the time that had elapsed since the initial definitions were made was more than 5 years, and owing to the wealth of experience gained over this period with the practical application of these competences.

Later, from the first analysis carried out, the conclusion was drawn that the number of competences was too high. This made the whole assessment process and objective verification of progress achieved in each competence in each student difficult on the one hand and, on the other, there was the complexity faced by teaching staff, students, employers and the general public in understanding graduate profiles. This in turn meant that it was essential to find a combination of a minimum number of core capacities needed by an administration graduate that would be able to represent the identity of the disciplinary area.

¹ Mabel Becerra Urquidí, Bernardina Cisternas Arapio, Beatriz Guinovart Firpo, Guilherme Marback Neto, Calixto Mendoza Roca, Gustavo Pereda Lecuna, Marcio Sierra Varela, Sergey Udolkin Dakova, Ricardo Uribe Marín, Bárbara Valle Torres and Adán Vaquerano Amaya.

The process pursued is described below from an analysis of the 47 initial competences to a definition of thirteen macro competences by the subject area group that describe the meta-profile of the graduate in the administrative area, in addition to the validations made in Latin American countries and the reflections arrived at.

It should be pointed out that the process that was carried out was of an upward spiral type. As one advanced, one had to go back to review the previous work and thus always monitor the consistency of the changes made.

2. Identifying macro competences

Firstly, an analysis of the competences of generic competences was carried out, i.e. when answering the question as to whether these competences define the entire profile of a university graduate at the present time, the response was that 27 competences were valid and that it was necessary to include an additional competence, which should be a valid competence for all areas. This was above all extremely important for administration - "the capacity for entrepreneurship and innovation" - with a broad scope not only for embarking on new business ventures but also individual, social and governmental projects, with the innovation component for generating aggregate value.

With this set of 28 competences an exercise was then carried out to reduce the number without losing any substantial capacity on the part of the administration graduate. Efforts thus focused on finding more generic, globalising competences (macro competences). Eleven competences were then arrived at from the first phase of this process and in a second phase, five competences were obtained following an exhaustive procedure.

Table 2.1
Generic and specific competences defined in Phase 1
of the Tuning Latin America Project (2004-2007)

	Generic Competences		Specific Competences
1	Capacity for abstraction, analysis and synthesis	1	Develop a strategic, tactical and operative approach
2	Ability to apply knowledge in practice	2	Identify and administer risks faced by organisations
3	Ability to organise and plan time	3	Identify and optimise business processes in organisations
4	Knowledge about the area of study and profession	4	Administer an integral logistics system
5	Social responsibility and citizenship	5	Develop, implement and manage administrative control systems
6	Capacity for oral and written communication	6	Identify functional inter-relations in the organisation
7	Ability to communicate in a second language	7	Assess the legal framework applied to business management
8	Skills in the use of information and communications technologies	8	Prepare, administer and assess business projects in different types of organisation
9	Research capacity	9	Interpret accounting information and financial information for managerial decision-making purposes
10	Capacity to learn and keep up-to-date permanently	10	Use information about costs for planning, control and decision-making
11	Skills for seeking out, processing and analyzing information from different sources	11	Take decision regarding investment, funding and management of the company's resources
12	Capacity for criticism and self-criticism	12	Exercise leadership in order to achieve the organisation's goals
13	Capacity to act in new situations	13	Administer and develop human talent in the organisation

	Generic Competences		Specific Competences
14	Creative capacity	14	Identify ethical and cultural aspects that may have a reciprocal impact on the organisation and the milieu
15	Capacity to identify, consider and deal with problems	15	Improve and innovate administrative processes
16	Capacity for decision-making	16	Detect opportunities for embarking on new business ventures and/or develop new products
17	Capacity for teamwork	17	Use information and communications technologies in management
18	Inter-personal skills	18	Administer the company's technological infrastructure
19	Capacity to motivate and drive people towards common goals	19	Formulate and optimize information systems for management
20	Commitment to preserving the environment	20	Formulate marketing plans
21	Commitment to their socio-cultural environment		
22	Regard and respect for diversity and multiculturalism		
23	Ability to work within international contexts		
24	Ability to work independently		
25	Capacity to formulate and administer projects		
26	Ethical commitment		
27	Commitment to quality		

A similar process was carried out with the twenty specific competences. The relevance and importance of these competences were then analysed and the conclusion was drawn that a new specific competence still needed to be included: "administering human, physical, financial

and other resources in the organisation.” The word *other* implies technology, information and knowledge, etc.

In this phase of the process, an analysis was carried out not only of these 21 competences but also to associate them with the five new generic ones, because no distinction can normally be made between generic and specific competences in the meta-profile. A new grouping, redefinition, elimination and debugging process was then undertaken from which thirteen macro competences were obtained that define the meta-profile of an administrator in Latin America.

3. Defining categories

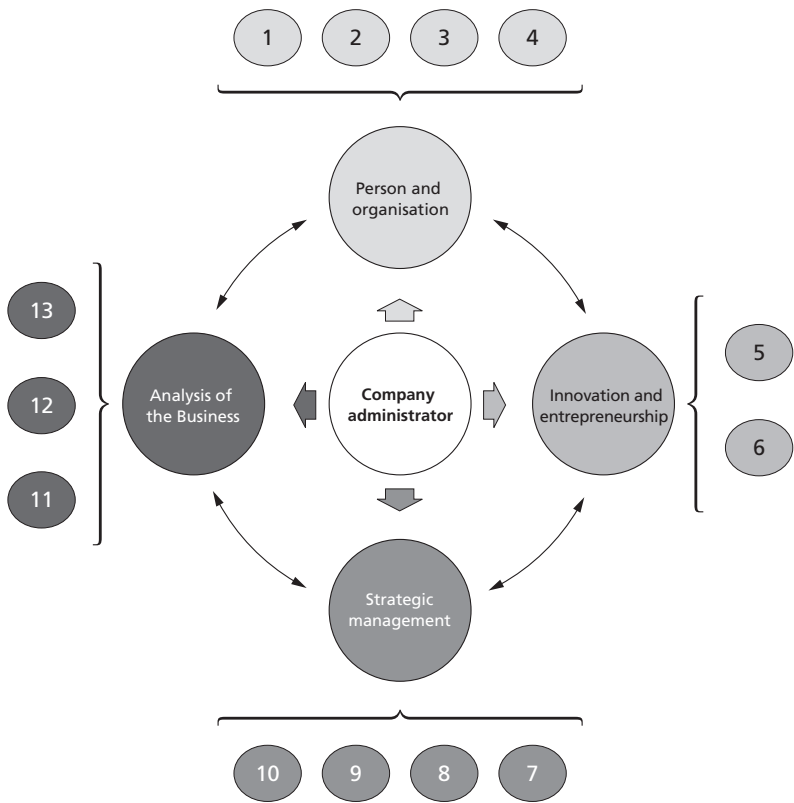


Figure 2.1
Administration categories
and their relationship with the thirteen macro competences

Table 2.2
Final categories and the 13 macro competences²

Category	Definition	The 13 Macro Competences
Person and organisation	This encompasses the concept of indivisibility of the person and the organisation, in the sense that human talent is important for the development of the organisation, as the organisation is for the professional advancement of the person. This means establishing a commitment of mutual benefit.	Is ethically and socially responsible.
		Exercises leadership in order to achieve the organisation's goals.
		Is capable of learning how to learn.
		Communicates effectively and works in teams.
Innovation and entrepreneurship	This category emphasizes the use of innovation and the practice of entrepreneurship as driving forces behind developmental processes and business transformation that focuses on a view of business that is committed to value creation and improvement of the milieu.	Detects opportunities for embarking on business ventures.
		Effectively and efficiently formulates, assesses and administers business projects in different types of organisation.
Strategic management	The basic purpose of this category focuses on developing administrative processes that are aligned to the organisational mission and outlook, channelling efforts and resources into achieving strategic objectives.	Develops a strategic, tactical and operative approach in different scenarios.
		Optimises the administrative and business process.
		Identifies and manages business risks in organisations.
		Defines and uses information systems required for management.
Analysis of the business	This considers the application of methodologies and tools to optimise processes and operations that make decision-making possible, in order to ensure that the organisation remains in business and grows within a competitive, uncertain and changing environment.	Analyses accounting, financial and marketing information for decision-making purposes.
		Assesses the impact of commercial, labour and tax regulations on the management of organisations.
		Optimises the human, physical, financial and other resources of the organisation.

² The names and definitions are those obtained following validation and feedback processes.

Four categories that cover all basic fields in the area of administration were defined in order to corroborate the completeness of the thirteen macro competences identified. The thirteen macro competences were grouped together into these categories.

Once the thirteen new competences had been defined and validated within the Administration group, the next step was to validate them outside the group to check whether these macro competences effectively make up the core of the graduate profiles of degree programmes in Administration.

4. Contrasting the meta-profile in different countries from the region

To fulfil this objective, it was agreed that each member of the group should validate the results obtained in their own countries. The alternative validation proposals put forward were: with degree programmes in Administration from their own university, with degree programmes in the area of Administration from other leading universities in the country, with profiles defined by official bodies, and with profiles established by the relevant guilds.

The basic tool for the study consisted of a matrix, the rows of which showed the categories and the macro competences for each of them, and the columns of which featured the institutions analysed. This matrix had to be completed by rating the level of relevance of each macro competence for each of the institutions, as well as including comments provided by each macro competence (horizontal analysis), and a vertical analysis, i.e. general comments provided by institutions.

As stated in the previous paragraph, it was requested that the level of global relevance of the thirteen macro competences be rated with the profiles analysed in each country in addition to carrying out a qualitative analysis that gathered together comments about macro competences. A scale of 1 to 4 with the following meaning was established for such purpose as follows: *not relevant*, *not very relevant*, *relevant* and *totally relevant*.

The techniques used to gather information were as follows: interview, workshops and, above all, access to documents via institutional websites.

Table 2.3
Relevance of macro competences according to country³

Categories	Macro Competences	Bolivia	Chile	Colombia	Ecuador	El Salvador	Honduras	Mexico	Peru	Uruguay	Venezuela	Average Country
Personal and organisational development	Ethical commitment and social responsibility.	4	4	4	3.86	3	4	4	3.75	4	2.83	3.74
	Exercise leadership in order to achieve the organisation's goals.	4	4	3	3.71	4	3	4	3.75	4	2.83	3.63
	Ability to learn how to learn.	3	4	3.5	4	4	3	4	3.5	4	1.67	3.47
	Capacity for communication and teamwork.	4	4	3.5	4	4	4	4	4	4	1	3.65
Innovation and entrepreneurship	Detect opportunities for embarking on business ventures/Capacity for entrepreneurship and innovation.	4	4	4	3.57	4	3	4	3.75	3.5	1.83	3.565
	Formulate, administer and assess business projects in different types of organisation.	3	3	3	3.71	3	2	4	3.25	4	2.42	3.14

³ The names of categories and macro competences are those which are used to gather information in countries and were then changed according to feedback.

Categories	Macro Competences	Bolivia	Chile	Colombia	Ecuador	El Salvador	Honduras	Mexico	Peru	Uruguay	Venezuela	Average Country
Strategic management	Develop a strategic, tactical and operative approach in different scenarios.	4	4	4	3.86	4	4	4	4	4	3.42	3.93
	Improve and innovate the administrative and business process.	3	3	2.5	3.57	4	3	4	3.75	3	2.75	3.26
	Identify and manage business risks in organisations.	3	3	3	3.21	3	3	3	3.25	3	1.17	2.86
	Formulate and use information systems for management.	3	3	2.5	3.57	2	3	3	3.5	3	2.33	2.89
	Interpret accounting and financial information for decision-making purposes.	4	3	2.5	3.43	4	3	4	3.25	3	2.92	3.31
Analysis of the business	Administer human, physical, financial and other resources in the organisation.	4	4	3.5	4	4	3	4	3.25	3	3.25	3.6
	Assess the impact of the legal framework in the management of organisations.	2	2	1.5	3.21	2	3	4	2.75	3	3	2.65
Average	Average	3.46	3.46	3.12	3.67	3.46	3.15	3.85	3.52	3.5	2.42	3.36

The sources of the information were persons in charge of degree programmes, graduate profiles and, where necessary, the information about programmes with their content.

The study was carried out in ten Latin American countries: Bolivia, Chile, Colombia, Ecuador, El Salvador, Honduras, Mexico, Peru, Uruguay and Venezuela. The profiles of 138 universities were analysed in these countries – one profile designed by a guild and two profiles designed by state institutions.

An analysis on three levels was carried out from the data gathered via the matrix shown in Table 2.3, in addition to the qualitative data gathered via comments and observations:

a) ***Level of relevance of the thirteen macro competences in the different countries***

The averages were calculated from the quantitative ratings provided in terms of the level of relevance. The general average for the thirteen competences was 3.36 out of 4 which, according to the rating scale, means from *relevant* to *totally relevant*.

b) ***Level of relevance of the categories***

As the macro competences were grouped together in categories, their level of relevance was analysed according to category, and the result was that all averages from the four categories were between 3 and 4. This means that they would also be from *relevant* to *totally relevant* according to the scale used.

c) ***Inclusion of observations made***

In addition to the quantitative validation processes stated, observations were gathered for each of the macro competences and each institution. The observations made by the academics interviewed did not mean any increase or decrease in the number of macro competences, but rather, that they were geared more towards adjusting the definitions within their scope and level of accuracy. Each of the comments was examined using this information and at plenary

meeting held by the Group, and those considered suitable were then included accordingly.

Once the definitive number and content of macro competences had been obtained, the final adjustments to the definitions of the categories were made.

5. By way of conclusion

In view of the rating given to the macro competences, the inclusion of the observations made by academic peers, and the consistency processes carried out by the Administration Group, it can be stated that the thirteen macro competences put forward *do* constitute the core of the meta-profile for the area of Administration and are a valuable basis for subsequent studies.

It should be pointed out that this is not an exhaustive study in each of the ten countries, or of the region in general. Rather, it has involved an initial construction made by the Administration group of the Tuning-Latin America project which was validated by academic peers.

3

Meta-profile for Agronomy

Jovita Antonieta Miranda Barrios et al.¹

1. Features of the Area of Agronomy

The area of Agronomy commenced participation in the Tuning Latin America with 11 universities from an equal number of Latin American countries, namely: Argentina, Brazil, Colombia, Costa Rica, Cuba, Guatemala, Honduras, Mexico, Peru, Paraguay and Uruguay.

It is one of the three new areas that made up the Tuning Latin America Project in 2011, having taken part in meetings held in Colombia and Guatemala in 2011 and Chile and Brussels in 2012.

Each participant from the area of Agronomy expressed interest in and a commitment to improving and analysing the tasks performed by their university, faculty and degree programme, taking into account the importance placed on the education of professionals who are responsible for aspects such as food safety, sustainability of renewable natural resources and the environment. The following table summarises the common and diverse aspects identified in the Agronomy group attached to the Tuning Latin America project:

¹ Liliana Gallez, Ricardo Sabbatini, Marcelo Cabral Jahnel, Bernardo Villegas Estrada, Arnoldo Gadea Rivas, Edith Águila Alcántara, Ahmed Chacón Iznaga, Marta Isabel Zelaya Rodríguez, Orlando López Baez, Lorenzo Meza López, Salomón Helfgott Lerner and Gustavo Marisquirena.

Table 3.1
Common and diverse aspects of the area of Agronomy

Common aspects	Diverse aspects
1. State-run university. 2. Educating Agricultural Engineers. 3. Curricular flexibility. 4. 16 weeks per semester. 5. Foreign language requirement. 6. The syllabus includes both theoretical and practical discipline-specific and professionalising education in Basic Science and Human Science. 7. Entry to the teaching profession by public entry exam.	1. Assessment scales 2. The way of expressing the workload in each course: credits, <i>unidades valorativas</i> (UV), hours. 3. Education profile. 4. System for admittance to degree programmes. 5. Not all of them require pre-professional practical training, extramural studies or social service within the syllabus. 6. Enrolment payment and grants system, among others.

2. Process developed for the design of the meta-profile

The team from the area of Agronomy took an active part during the years 2011 and 2012 in order to formulate the Latin American meta-profile for the agricultural engineer, establishing agreements at meetings arranged by the coordinators of the Tuning Latin America Project. It is important to take into account the fact that knowledge regarding the agriculture and fishing group is, has been, and will be strategic for local, national and regional development in the education of the Latin American agricultural engineer. This is due to the contribution the area makes to the production of foodstuffs and job creation, without overlooking the fact that natural resources such as soil and water found in agriculture and their suitable handling and productivity depend to a large extent on water reserves for the future production of such foodstuffs and human consumption, and also for the conservation of forests and biodiversity².

However, although agriculture and fishing activity is carried out in all countries on the Latin American continent, students need to develop

² Seixas y Ardilla, "La Agricultura de América Latina y el Caribe, sus desafíos y oportunidades desde la óptica del cambio tecnológico", IICA.

competences that will enable them to distinguish between different aspects related to factors of production such as land, production and work, and technology.³

Within the framework of the Tuning Latin America project, the Agronomy group analysed the competences agreed upon at the ARCU-SUR⁴ by way of an initial component for the meta-profile proposal. It was agreed that the proposal for the Latin American agricultural engineer degree programme should be defined as *"...educating a professional who has managed to incorporate ethical principles in the tasks they perform from a humanistic standpoint and with a sense of responsibility and social commitment, and with the attitudes, knowledge, abilities and skills required to develop competences"*. Information was also provided about the profile of each degree programme and subsequently, for analytical purposes, the competences referring to the objectives set out by the degree programmes were proposed as being as follows:

- Knowing and scientifically understanding the factors of agricultural and fishing production and combining them with technical, socio-economic and environmental considerations.
- Interpreting, disseminating and applying scientific and technological knowledge.
- Leading and/or interpreting research and experiments and disseminating their results.
- Creating, projecting, analysing and assessing systems, processes and products with entrepreneurial capacity.

³ http://telpin.com.ar/interneteducativa/periódicoTEduca/actividadeseconomicas/la_agricultura_en_américa, 25/03/2013.

⁴ The Regional Accreditation System for University Degree Programmes for MERCOSUR (ARCU-SUR) is an accreditation system for ensuring quality training on a university level that is geared towards obtaining permanent improvement in terms of training people, in accordance with quality standards required for promotion of the economic, social, political and cultural development of the MERCOSUR zone.

- Planning, implementing, coordinating, supervising and assessing projects and services.
- Identifying problems and putting forward solutions in their area of competence.
- Developing, assessing and using new technologies.
- Managing, operating and maintaining systems and processes via a sustainable approach.
- Knowing about and acting on markets on which agro-industrial chains operate.
- Understanding and working in business and community organisation and management.
- Knowing and advising about policies in their sphere of professional activity.

Following this analysis, the Proposal for Specific Competences for the subject Area of Agronomy was then drafted. These competences were defined at the Colombia meeting in 2011 and constituted the component for consultation purposes that led to the identification of the most important competences that enabled the meta-profile for the agricultural engineer to be defined as follows:

- **SC1** Knowing and scientifically understanding the basic principles of agricultural and fishing production.
- **SC2** Interpreting, disseminating and transferring scientific and technological knowledge to agricultural production.
- **SC3** Ability to design, lead analyse and interpret research and experimentation projects in agriculture and fishing.
- **SC4** Entrepreneurial ability to create, project, analyse and assess systems, processes and products in the area of agriculture and fishing.

- **SC5** Planning, implementing, coordinating, supervising and assessing projects and services in the rural sector.
- **SC6** Ability to identify insects, plagues, pathogens and disease related to crops, flora and fauna.
- **SC7** Ability to set up, operate and administer agricultural businesses and processes via a sustainable rural approach.
- **SC8** Ability to know about and act on markets on which agro-industrial chains operate.
- **SC9** Understanding and working in business and community organisation and management within the rural sector.
- **SC10** Ability to deal with, preserve and restore physical, chemical and biological properties of farmland.
- **SC11** Ability to know about, advise on and apply policies and regulations governing agriculture and fishing.
- **SC12** Ensuring the sustainable use of water set aside for agricultural use.
- **SC13** Ability to select and administer agricultural machinery, implements and equipment for agricultural use.
- **SC14** Designing, implementing and assessing strategies for sustainable rural development.
- **SC15** Ability to formulate, assess, manage and put into practice productive projects.
- **SC16** Ability to administer and assess risk and hydraulic drainage systems.
- **SC17** Ability to provide technical advice and skills and transfer technology to producers and business from the rural sector.
- **SC18** Ability to develop projects involving the genetic improvement of crops and propagation methods in order to maximise production.

- **SC19** Apply sustainable products and technologies in order to deal with and improve agro systems.
- **SC20** Ability to develop and apply strategies in order to deal with the post-harvesting of agricultural products.

The results obtained from contrasting and analysing the graduate profiles of the universities involved in the project, and also from the analysis of results obtained from consultation with employers, teaching staff, students and graduates from agronomy degree programmes, enabled a meta-profile to be defined for the agricultural engineer.

Analysis of the features of each of the degree programmes enabled evidence to be provided that educating the agricultural engineer in Latin America covers the development of capacities in the student and a command of the tools required to do so which, in addition to developing their professional intellectual capacity (learning how to know and do), also includes ethical and social issues. These capacities are developed in such a way that the student steadily acquires them as part of the university processes. The Agronomy group classified the competences in 3 dimensions with a view to structuring the competences into a future meta-profile. The following table shows the distribution of generic and specific competences in the 3 agreed dimensions:

Competences attached to the meta-profile grouped together in dimensions		
Academic Dimension	Professional Dimension	Social Dimension
GC1 Capacity for abstraction, analysis and synthesis.	GC4 Knowledge about the area of study and profession.	GC15 Ability to identify, consider and deal with problems.
SC6 Ability to identify insects, plagues, pathogens and disease related to crops, flora and fauna.	GC23 Ability to work independently.	GC7 Ability to work in a second language.
SC10 Ability to deal with, preserve and restore physical, chemical and biological properties of farmland.	GC2 Ability to apply knowledge in practice.	SC3 Ability to design, lead analyse and interpret research and experimentation projects in agriculture and fishing.

Competences attached to the meta-profile grouped together in dimensions		
Academic Dimension	Professional Dimension	Social Dimension
SC15 Ability to formulate, assess, manage and put into practice productive projects.	SC1 Knowing and scientifically understanding the basic principles of agricultural and fishing production.	SC4 Entrepreneurial ability to create, project, analyse and assess systems, processes and products in the area of agriculture and fishing.
	SC2 Interpreting, disseminating and transferring scientific and technological knowledge to agricultural production.	SC5 Planning, implementing, coordinating, supervising and assessing projects and services in the rural sector.
		SC7 Ability to set up, operate and administer agricultural businesses and processes via a sustainable rural approach.
SC1 Knowing and scientifically understanding the basic principles of agricultural and fishing production.		

3. Meta-profile for the Agricultural Engineer

The field of work in which graduates from the area of Agronomy work is the agricultural production sector, together with that of natural resources and the environment and the academic sector, and to this end it is important for the graduate to demonstrate capacities in knowledge, abilities and skills as well as attitudes and values in exercising their profession.

Knowledge of the context of each participant universities evidenced the reality of the situation regarding each formative process. However, common aspects were discovered within such diversity that enabled a meta-profile to be considered for the agricultural engineer.

Taking into consideration the fact that communication is one of the most relevant competences in the professional sphere of activity, degree programmes need to improve the "Ability to communicate in a

second language”, as the Agricultural Engineer interacts in very diverse areas in terms of discipline-specific ethnic groups, cultures, countries and languages – both local and international.

The debate, analysis and reflection that were carried out enabled a group of competences to be identified that characterise the agricultural engineer in cognitive, procedural and affective dimensions. As a result of this analysis, reflection and sharing of knowledge, experience and different contexts, the Latin American Meta-profile for the Agricultural Engineer was formulated within the framework of the Tuning Latin America project.

Latin American meta-profile for the Agricultural Engineer

The Agricultural Engineer who graduates from a Latin American university will be a professional capable of:

1. Understanding, dealing with and transforming production in agricultural and fishing systems in order to contribute towards social wellbeing and sustainable development.
2. Embarking on, managing and assessing agricultural and fishing and natural systems attached to humanistic and environmental ethics, focusing on their benefit to society.
3. Acting flexibly and critically under different conditions of agricultural and fishing systems, and in the conservation and use of natural resources.
4. Becoming involved in processes aimed at defining public policies that contribute towards the development of agriculture and fishing.
5. Contributing towards the generation and passing on of knowledge in the field of agrarian science.
6. Working with groups from different cultures, on different socio-economic levels and in national and international environments.

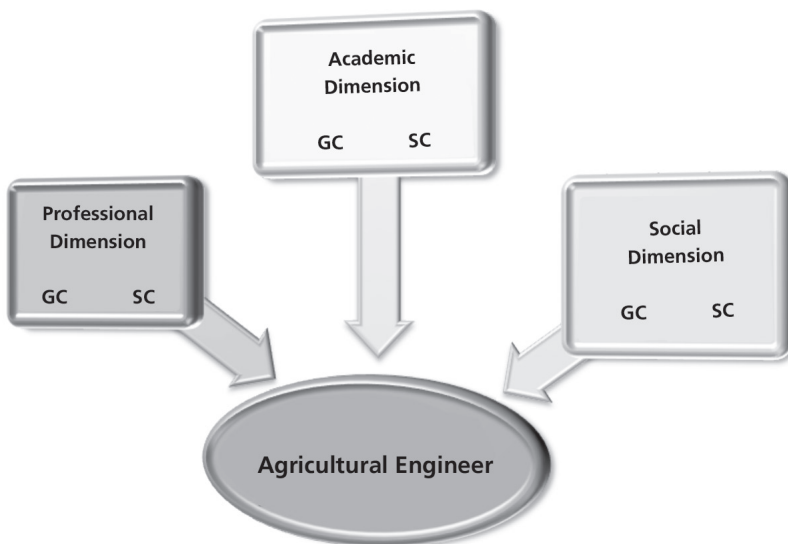


Figure 3.1
Outline of the meta-profile for the Agricultural Engineer

Dimensions of the meta-profile for the Latin American agricultural engineer:

Professional Dimension

Set of competences related to the exercising of the profession.

Academic Dimension

Competences related to the field of knowledge.

Social Dimension

Competences linked to social and community development.

GC Generic Competence

SC Specific Competence

4

Meta-profile for Architecture

*Samuel Ricardo Vélez González et al.*¹

27 generic competences for professional architects from the region and 25 specific competences were defined in 2006 within the framework of the Tuning Latin America project. This proposal steadily gained momentum over the next six years within each of the participant institutions from 18 Latin American countries. The members of the Architecture group were called on in 2011 – in a new phase of the project – to reflect on a meta-profile as established in the document *"Higher Education in Latin America: reflections and perspectives on Architecture"*².

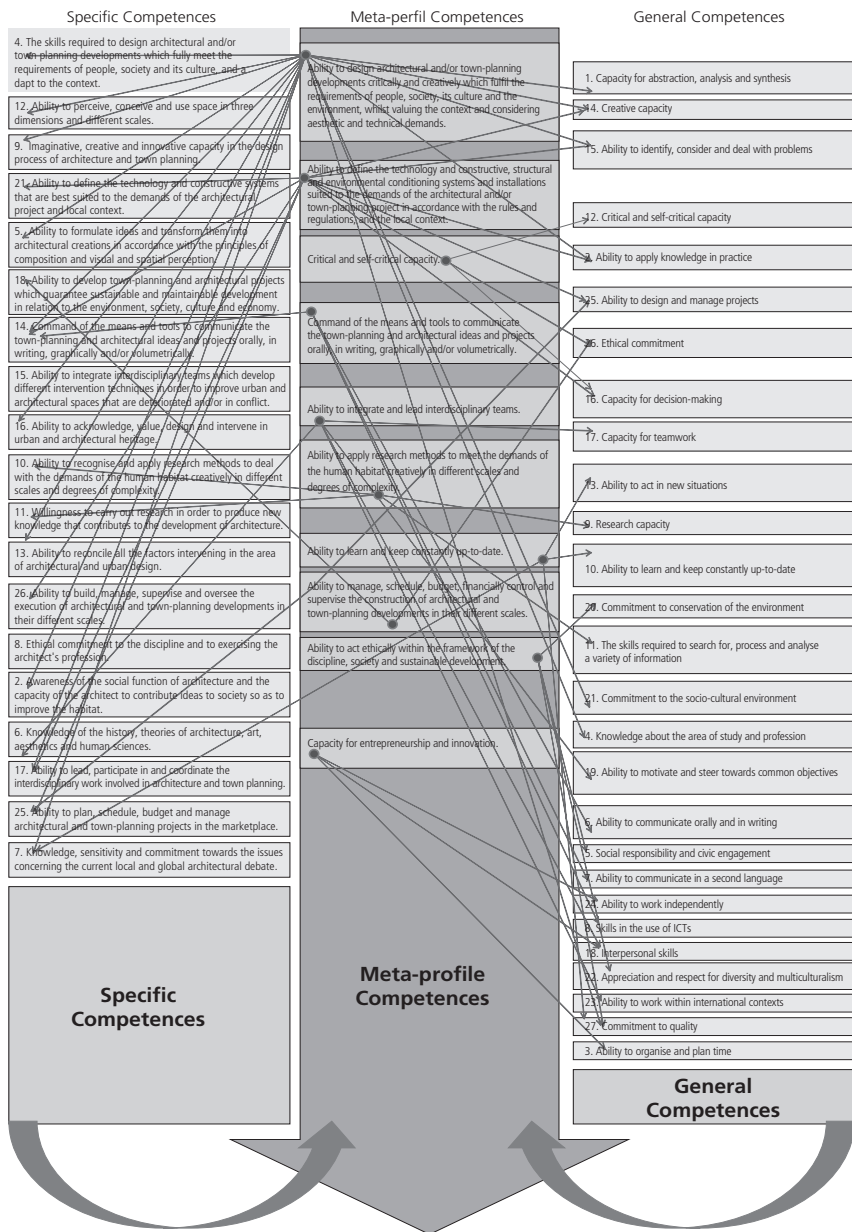
The first step was to get across an understanding of the scope of the term proposed: the meta-profile arose from the reconciliation of the different professional qualification profiles defined by each degree programme in participant institutions. According to this, the purpose of the project was to try and establish a meta-profile for the Latin American architect - not a real profile in terms of uniqueness, but rather, a profile of reference and convergence in the form of a theoretical *construct*.

¹ Mario José Merino-Inés Juana Presman, René Monje Morant, Valter Caldana, Flavio Valassina, Olman Enrique Hernández, Lourdes Ortega, Oswaldo Cordero, Alberto Antonio Ortiz, Constantin Spiridonidis, Carlos Enrique Valladares, María Eugenia Molina-Ricardo Ortega, Juvenal Baracco and Cristina Bausero.

² Vélez González, Samuel Ricardo (ed.) (2013). *Higher Education in Latin America: reflections and perspectives on Architecture*. University of Deusto Publications, Bilbao.

To reach this synthesis, it was necessary to agree on the following methodology:

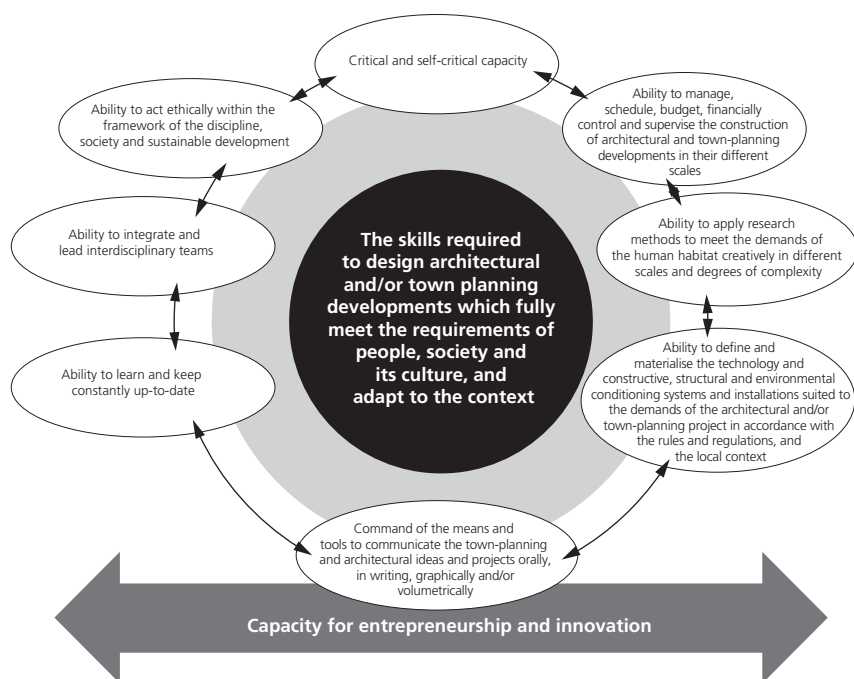
- Weighting of each of the competences, both generic and specific, by each group member, according to the degree of «importance» it has for the profile of an architect in each country. The average of this weighting produced a ranking of the most relevant competences in the education of architects in Latin America.
- As a following step, the list of all the generic and specific competences considered in the initial phases of the Tuning Latin America Project (2004-2007) was then reviewed with the aim of analysing the possibility of including one or several of these in the competences classified as being important. In this respect, it was taken into account that the generic competences defined as being most important in the education of architects lose their generic nature and become specific as part of the meta-profile definition, insomuch as they display the specific careers of an architect, as is the case with the *Ability to communicate or connect* which, for the architect, refers to technical skill rather than dealing with actual codes of design and architectural expression. Thus, it was possible to establish ten (10) meta-competences which articulate, within their definitions, both the specific and generic competences initially formulated.
- In a third phase, the group compared and contrasted the meta-competences (ten in total) thus established for the meta-profile, with those put forward by the International Union of Architects (UIA), for the careers of professional architects throughout the world, considering that the context of an architect's activity can cross the borders of every country towards a globalised world, whether that be in reality or virtually – within the framework of professional practice using new technologies in projects that are becoming increasingly interdisciplinary and multicultural and enrich the outlook for world architecture.
- To supplement the previous step, the meta-profile was compared and contrasted with the competences defined for architects in the United States by the National Architectural Accrediting Board (NAAB). This step in the methodology enabled the disciplinary scope relating to specific learning objectives for the architect to be validated.



Graph 4.1
Meta-profile competences

- Definition of the meta-profile for the Architect in Latin America was agreed by using the meta-competences established, taking into account the careers, knowledge and skills an architect should evidence within the context of the region.
- The meta-competences associated with the meta-profile for the Latin American architect as defined using this methodology were as follows:
 1. Ability to design architectural and/or town-planning developments critically and creatively which fulfil the requirements of people, society, its culture and the environment, whilst valuing the context and considering aesthetic and technical demands.
 2. Ability to define and adapt the technology and constructive, structural and environmental conditioning systems and installations to the demands of the architectural and/or town-planning project in accordance with the rules and regulations, and the local context.
 3. Capacity for criticism and self-criticism in order to transform ideas into spaces, forms and buildings.
 4. Ability to use the means and tools to communicate the town-planning and architectural ideas and projects orally, in writing, graphically and/or volumetrically in different scales.
 5. Ability to integrate and lead interdisciplinary teams.
 6. Ability to apply design research methods to meet the demands of the human habitat creatively in different scales and degrees of complexity.
 7. Ability to learn and keep constantly up-to-date.
 8. Ability to manage, schedule, budget, financially control and supervise the construction of architectural and town-planning developments in their different scales.
 9. Ability to act ethically within the framework of the discipline, society and sustainable development.
 10. Capacity for entrepreneurship and innovation in Architecture.

The first conclusion reached by group consensus was the definition of the meta-competences - which supported both the architects' education process and the programme structure - ensuring that there is a basic meta-competence that identifies the architect and distinguishes them from other professionals, insofar as they are associated with a creative capacity that needs to be evidenced in the architectural projection process. This is defined as: **"The ability to plan architectural and/or town-planning developments creatively and critically which fully meet the requirements of human beings, the environment, society and its culture, whilst valuing the context and considering the aesthetic and technical demands"**. On a peripheral level, the nine complementary competences that have been defined lend support to consolidation and education in students – and evidenced in professionals – of the core meta-competence referred to above, i.e. the basic meta-competence enables all other competences that support the meta-profile to be comprehensively evidenced.



Graph 4.2
Meta-profile for the Latin American architect

Taking the formation of the basic meta-competence in all architects from the region – and the world - as a premise, there are also satellite or peripheral competences that enable specific routes in programmes to be defined, the different emphasis on discipline-specific performance of careers to be guided, and both academic and professional specialisation routes to be established.

When determining the careers associated with the basic meta-competence that the architect needs to evidence, all kinds of knowledge and expertise need to be engaged, such as discipline-specific, theoretical, technical, graphic, investigative, regulatory and legislative knowledge via their ability to plan architectural and/or town-planning projects as a response to a problem facing man within a social context. The understanding and application of such knowledge in the tasks performed by the architect will enable professional aspects that complement design capacity to be highlighted. The capacities (understood as evidence of knowledge or expertise, abilities or skills, and attitudes) intrinsic to the formulated meta-competence, with which it is possible to assess the education and performance of the architect and fully link discipline-specific knowledge to professional practice, are:

- The ability to define and materialise the technology and constructive, structural and environmental conditioning systems and installations suited to the demands of the architectural and/or town-planning project in accordance with rules and regulations and the local context.
- Command of the means and tools to communicate the town-planning and architectural ideas and projects orally, in writing, graphically and/or volumetrically in different scales.
- Ability to apply design research methods to meet the demands of the human habitat creatively in different scales and degrees of complexity.
- Ability to manage, schedule, budget, financially control and supervise the construction of architectural and town-planning developments in different scales.

Similarly, architects must develop the skills enabling them to make self-critical decisions in their relationship with the context, work in

interdisciplinary groups, keep up-to-date, and make their profession their enterprise, within a framework of ethics and sustainability. These skills directly relate to the following generic competences (phase 1 of the Tuning Latin America project), which become specific when referring to an architect's career:

- Critical and self-critical capacity.
- Ability to integrate and lead interdisciplinary teams.
- Ability to learn and keep constantly up-to-date.
- Capacity for entrepreneurship and innovation.
- Ability to act ethically within the framework of the discipline, society and sustainable development.

On the basis of the above reflection, which is supported by the proposed methodology, the group of academics in the area of Architecture agrees the following meta-profile for the Latin American architect:

«An architect is a professional committed to the development of society, who is qualified to design architectural and urban spaces for human use and is fully trained ethically, humanistically, theoretically, technically and environmentally in the discipline of architecture and town planning, with knowledge of history and culture».

In order to clarify the understanding and scope of the Latin American architect's *meta-profile*, the formative dimensions and/or career were determined, as associated with the agreed meta-competences:

The dimension of architectural creativity

1³-Ability to design architectural and/or town-planning developments critically⁴ and creatively which fully meet the requirements of people, society, its culture and the environment, whilst valuing the context and considering aesthetic and technical demands.

6-Ability to apply methods of design research to deal with the demands of the human habitat creatively, in different scales and degrees of complexity.

The dimension of architectural thought

3-Capacity for criticism and self-criticism in order to transform ideas into spaces, forms and buildings.

9-Ability to act ethically within the framework of the discipline, society and sustainability.

The dimension of materialising architectural ideas

2-Ability to define and tailor the constructive technological systems to the demands of the architectural and/or town-planning project in accordance with the regulations and local context.

The dimension of architectural communication

4-Ability to use the means and tools to communicate and support both town-planning and architectural ideas and projects orally, in writing, graphically and/or volumetrically.

³ The numbering of the competences associated with the dimensions corresponds to the order in which they were previously set out when formulating the meta-profile and the meta-competences associated with it.

⁴ The scope of critical capacity refers to: recognising the reality in which they intervene and being capable of intervening in it, being responsible for the scope of their decisions.

The multidisciplinary dimension of architecture

5-Ability to integrate and lead interdisciplinary teams.

The dimension of architectural experimentation

10-Capacity for entrepreneurship and innovation in architecture.

The dimension of professional action in the field of architecture

1-Ability to design architectural and/or town planning developments critically and creatively which fully meet the requirements of people, society, its culture and the environment, whilst valuing the context and considering aesthetic and technical demands.

7-Ability to learn and keep constantly up-to-date.

8-Ability to manage, schedule, budget, lead, financially control and supervise the construction of architectural and town-planning developments in their different scales.

The meta-profile formulated above, along with the meta-competences that lend support to the education and future careers of architects, were compared by each member of the working party in their respective institutions and countries, validating the scope of the proposal in terms of coherence and relevance both for the professional practice of architects and for the Latin American context. Similarly, the possibility that the meta-profile needs to group together architects into a common qualification was highlighted, the core purpose of which is education, project workshop and architectural design whilst at the same time respecting the specific features of each region in emphasizing architects' education and university independence when formulating the academic proposal using their own methodologies, models and pedagogic and formative structures.

5

Meta-profile for Law

Loussia P. Musse Felix et al.¹

1. Construction, objectives and perspectives

Education in Law or legal education has a long tradition in Latin America. In many countries on the continent it was the first area of higher education offered by educational establishments to intellectually prepare their elites. In the 20th century, the expansion of these institutions meant that Law degree programmes had the largest number of vacancies, to a large extent because little investment was required in teaching staff or infrastructure, taking into account the prevailing pedagogic model in degree level education. Despite the apparent differences in terms of the teaching and learning processes adopted in the different countries, it is important to take similarities into account, such as the fact that a significant percentage of enrolments in higher education in both the state-run and private systems are Law students.

In the second decade of the 21st century, this area has gained much appeal. We know that among students who aspire to join one of the many legal professions there is a large number who are unclear about their future professional plans.

¹ Carlos Eduardo Barbé Delacroix, Graciela Barranco Goyena, Rodrigo Coloma Correa, Guillermo Manuel Delmas Aguiar, Eduardo Víctor Lapenta, Juan Morales Ordóñez, Ademar Pereira, Julio Alfredo Rivas Hernández, Eva Romano Urbina and José Salvador Ventura del Toro.

In Latin America, higher education is accessed directly via a specific degree programme, and therefore first-year students – who are mainly in their late teens – face the need to take decisions and choose the degree programme they will be pursuing without having enough experience to ensure that the process involving such access to higher education takes place without hassle or distressing questioning as to how sure they are about their choice of programme. Thus, in being indecisive about their vocation and inclinations, many opt for the BA in Law, which is seen as being an open port of entry to a range of careers.

Another aspect to be taken into account is that the theoretical and practical education received by the vast majority of Law graduates in Latin American countries during the five years of their higher education will never be used in the profession or professions they will subsequently pursue after graduation. Paradoxically, those that opt for professions linked to a Law degree will also come to realise the fact that even after they have completed their undergraduate degree, this will in most cases not have provided them with the basic preparation in theoretical or practical terms for the professional changes in Law they now face.

The meta-profile for the legal professional for Latin America was designed within the context of limited relevance of available legal education models on the Latin American continent to the real demands of careers in the area.

An attempt is thus made to provide a future view of the meta-competences of a graduate who will become integrated within the context of their professional requirements, and contribute towards the advancement of legal relations between individuals, institutions, and political, economic, social and cultural systems. By way of a complement to this, they also need to act from a citizen's standpoint on a continent that continues to evidence very poor results, in which Law – from its historic phase - has reclaimed its rightful place by seeking to guarantee basic rights and, even more so, the protection of human rights of all participants in political society.

On a continent that has witnessed all types of barbarism against individuals and ethnic groups since the very outset of its autonomous political organisation according to Western moulds, giving shape to the Latin American state which still suffers from considerable shortcomings

in terms of access to justice and enjoyment of full citizenship, the role of legal education cannot be underestimated. When all is said and done, legal professionals are responsible both judicially and extrajudicially upholding civil and political guarantees, as well as social rights. Legal education has greater relevance insofar as it constitutes a way of in particular reinforcing the effective democratisation of Latin America that can be delayed no longer.

2. Scenarios and methodology for designing the meta-profile

2.1. Phase II of the Tuning Project in the area of Law (2011-2013)

In Phase II of the Tuning Latin America project, the first task assigned to the Law group was to design the meta-profile for the area. In May 2011, this concept was still a vague one, as were its purpose and components. As a consequence, representatives of the 15 subject areas who met in Bogotá adopted a range of methodologies in order to obtain the result that had been hoped for. A close correlation between methodological practices that prevail in these areas and the form adopted by groups of representatives in designing their meta-profile can be noted. In the case of Law, the starting point turned out to be an assessment of the work carried out during Phase I of the project, in which 24 specific competences had been established for the area of Law. By consensus it was decided to review and fine-tune these previously-established competences (in February 2006), as they were considered too broad and limited the possibilities existing for them to be effectively adopted.

The agenda regarding the meta-profile was therefore worked out by reviewing the specific competences attached to the area of Law and by providing a synthesis of the generic competences for Latin America.

Focusing attention on generic competences takes on great relevance in legal education, as they create a favourable environment for relevant education in systemic, instrumental and interpersonal terms, also including those graduates who do not pursue their careers strictly within the legal profession. The area of Law recognises the growing need to work alongside other areas of knowledge in solving legal problems. Reflecting on generic competences also constitutes a way of epistemologically and methodologically engaging in dialogue with other fields of knowledge.

A summary was then put together based on the original generic competences that had been defined by the Tuning Project in 2005. Of the 27 original, previously-established competences, a consolidated group of 15 generic competences was provided. Viewed from the area of Law, these competences should be acquired by all students enrolled in higher education in any area of knowledge. Thus, evidence was shown that specific competences attached to Law forge a firm link with the generic competences.

2.2. *Prominent generic competences*

1. Ability to identify, consider and deal with problems by applying knowledge.
2. Ability to organise and plan.
3. Social responsibility and citizenship.
4. Ability to pass on discipline-specific knowledge within different contexts.
5. The skills required to search for, process and analyse information from different sources.
6. Ability to learn and keep constantly up-to-date.
7. Critical and self-critical capacity.
8. Ability to act creatively in new situations.
9. Ability to take justified decisions.
10. Capacity for teamwork, motivating and steering towards common objectives.
11. Interpersonal skills.
12. Commitment to conservation of the environment.
13. Appreciation and respect for diversity and multiculturalism.
14. Ethical commitment.
15. Commitment to quality.

2.3. *Specific competences in Law*

1. Identify, interpret and apply the principles and regulations governing the national and international legal system in specific cases.
2. Axiologically assess possible courses of action in accordance with the legal system.
3. Be committed to human rights and the democratic rule of law.
4. Ability to work in disciplinary or interdisciplinary teams, thus enriching an understanding of the law and solving complex cases.
5. Ability to reason, argue and take decisions from a legal standpoint.
6. Nurture a culture of dialogue and the use of alternative means in solving disputes.
7. Have a command of the language(s) required to pursue their professional practice within a globalised and multicultural context.
8. Apply the methodology common to research within the legal sphere of activity.
9. Ability to critically analyse legally relevant situations and help set up institutions and legal solutions in both general and specific cases.
10. Ability to draft texts and express oneself orally in fluent, technical language, using precise and clear legal terms.
11. Ability to act in a valid and effective way in different administrative and legal situations.
12. Ability to decide whether the actual circumstances are sufficiently clear so as to be able to take a decision founded in Law.
13. Act ethically in exercising their professional duties.

These competences broaden outlooks regarding degree level education, as they potentially offer greater resistance in terms of the different

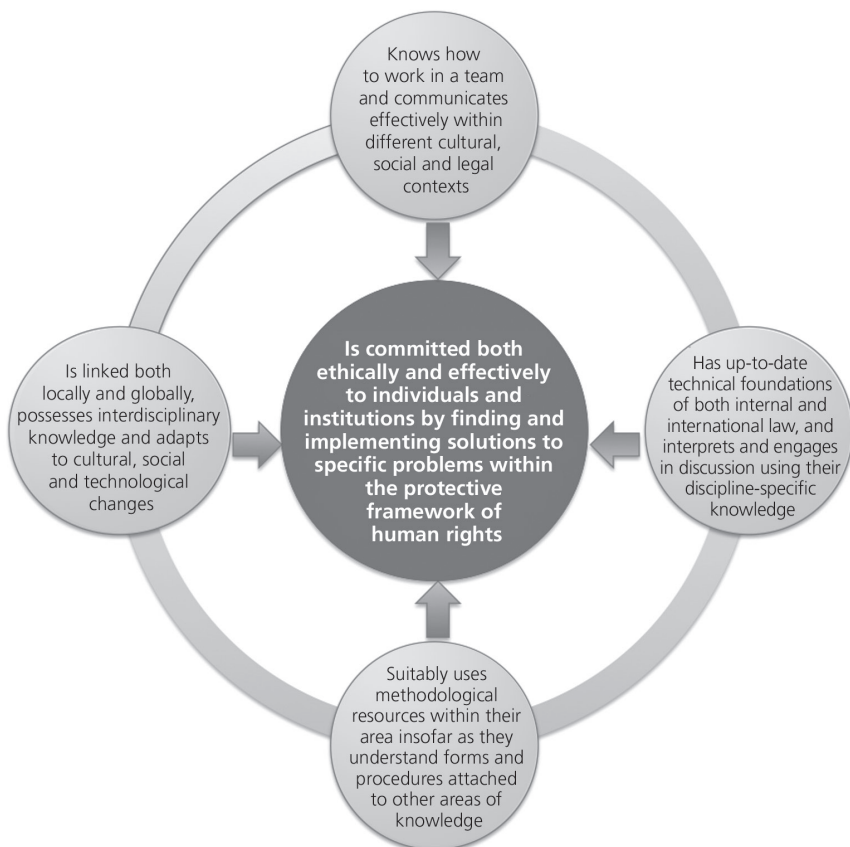


Figure 5.1

theoretical, political and even ideological approaches that remain in Law education. They also show fine potential in terms of their adoption by the different national education systems, by teaching staff involved in many different cultural and legal contexts, and also by national education authorities who are responsible for governmental directives regarding higher education degree programmes. For the purpose of providing a brief analysis, we should draw attention to No. 6, namely: “Nurture a culture of dialogue and the use of alternative means in solving disputes”. This is obviously a systemic-type competence, as its domain entails others of a cognitive, interpersonal and procedural nature. So-called consensual processes such as mediation, conciliation

and negotiation have gained prominence in finding legitimate legal solutions, although they disregard legal channels. The legal professional has been trained to contend with the above, and a reinforcement of consensual processes requires other competences via the objective of using the legal system to nurture the active and responsible participation of the parties in dispute in the search for a feasible solution in the specific case that initially put them on opposing sides.

3. Meta-profile: definition

Legal professionals are committed to defending and promoting the interests of individuals within a multicultural, local and global context.

On a cognitive level, they are characterised by possessing basic knowledge about both National and International Law, and also knowledge deriving from other areas, which enables them to act relevantly, critically and creatively in the legal system.

On a procedural level, they need to know how to represent, defend and deal with lawsuits and disputes efficiently by establishing links between what the legal system stipulates and the specific case being dealt with. Therefore, they interpret regulatory texts using a methodology based on knowledge of the community, and they also axiologically assess possible courses of action, take suitable decisions and convey them in a persuasive manner. They are able to engage in dialogue, negotiate and work as part of a team in order to seek out the best possible solutions to the problems in which they are involved, in addition to adapting to cultural, social and technological changes.

In terms of values, they are committed to human rights and the consolidation of a democratic rule of law, acting in accordance with ethical principles and assuming social responsibility for this.

3.1. *Presentation of the key aspects of the meta-profile designed in the area of Law: description of the key components*

The aim is to seek a suitable balance in the meta-profile between the nature of professional services demanded by citizens and a series of variables that depend on the quality of functions performed by lawyers, judges, prosecutors, members of public ministries and many

other legal professions. The legal professional is placed within a context of interests that are defended by individuals, invoking what is acknowledged as being the law currently in force. On the other hand, the knowledge, skills and values expected of individuals who practice in legal professions are also taken into consideration– in short, to determine which competences need to be recognised in those who have decided to focus their careers on the field of law.

A suitable understanding of the meta-profile requires a reflection on the current and future role in terms of what should be expected from legal professionals. In this respect, phenomena such as tension between globalisation and multiculturalism compel one to focus attention on what takes place both at a local and international level.

Bearing in mind the proliferation of forms of specialist regulation in different areas of social life and the speed with which regulations change, knowledge required of legal professionals should not go beyond basic or fundamental aspects. Professionals will according to this be able to keep their knowledge constantly up-to-date and even engage in dialogue with other disciplines, thus enriching their perspective and establishing suitable links in areas they need to know about.

There is recognition of the fact that it is impossible to be in possession of encyclopaedic knowledge although, nonetheless, an analysis of a systemic or specialist nature is not disregarded. It is especially important at present and in the near future that we take into account the exponential increase in access to the information as a result of the Internet and the growing demands for transparency from citizens and bodies that defend rights, as well as international human rights organisations.

Despite the fact that it has been a key variable in establishing differences between good and bad professionals, the importance of strengthening procedural skills and virtues was rarely made explicit in the education process as being essential for professional success or failure. Assuming the inappropriateness of this omission, the professional meta-profile being sought reflects an emphasis on the ability to perform the tasks which are normally required of legal professionals. Likewise, the ability to administer disputes, negotiations and lend meaning to regulatory texts is recognised as being essential for the satisfactory performance of professional tasks. This is what ultimately determines to what extent they become integrated in the

professional community and in turn results in recognition by peers that is related to the ability to establish links between different situations in daily life and what is stipulated in regulatory texts. On this point, the different expectations attached to the competence development models come to the fore, in which specialist knowledge takes on importance only to the extent that responses are able to be given to problems of a practical nature.

An evaluative perspective of the tasks being performed most likely pervades in these expectations. Law is explained by a commitment to human rights both at a national and international level and the democratic rule of law. The tools available to lawyers assume adherence to models of society that are satisfactory in terms of the current state of human development. Professional legal practice is acknowledged as going hand in hand with social responsibility.²

It can be stated that, broadly speaking, the meta-profile takes into consideration a balance between the different types of competence. As would be expected in an area of applied social science, there is no prevalence of competences that are related merely to the cognitive level. The procedural elements attached to competences are relevant, however, highlighting the need detected by many critics of the legal education system in Latin America for the graduate to be trained to suitably perform their functions. Within this context, an important point is the acceptance of interpersonal competences, which breaks away from a very deep-seated paradigm that the jurist's work is a solitary, isolated activity that is carried out in contexts that favour individual performance.

3.2. Contrasting the meta-profile in different countries: coinciding elements and perspectives

The task of comparing the meta-profile was confined to the institutions represented in the area, and owing to the large size of the latter, contrasting at a national level would be impossible within the time set aside and with the resources available – even for sampling purposes. The results obtained are therefore merely illustrative.

² This analysis is based predominantly on the contribution made by Rodrigo Coloma, the Chilean representative in the Tuning Latin American project.

The following continental geographic configuration is provided in drawing up the map of profiles, with the participation of 11 institutions: South America (Argentina, Brazil, Chile, Ecuador, Paraguay and Uruguay) and Central and North America (El Salvador, Mexico and Nicaragua).

The comparison was carried out by each institutional representative, thus transforming it into a self-assessment. The data provided was also analysed from a strictly qualitative standpoint by the area coordinator. An attempt was also made to ensure that design of the meta-profile is on a medium-term basis (around 5 years) to enable institutions to evolve within the desired parameters.

It is important to point out that participation by representatives from the area of Law attached to the Tuning Latin America project has had a direct impact on their institutions of origin.

Five competences were defined as a methodology for assessing the degree of correspondence of the meta-profile, and these competences were contrasted within a current pedagogic scenario in the participant institutions. The indicators used for contrasting were the five competences contained within the meta-profile as shown in Figure 5.2.

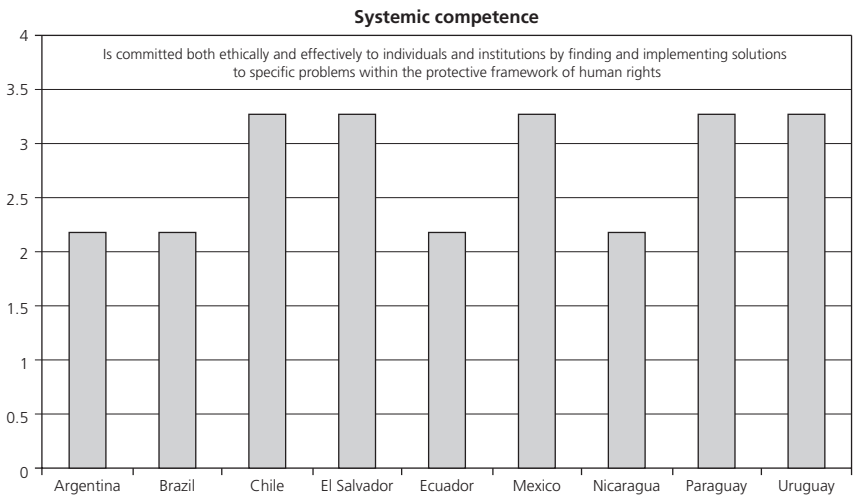


Figure 5.2
Contrasting of a systemic competence

Adopting the premise that the comparison carried out in this stage was by way of examples, and that the limits imposed on space in this chapter do not allow a specific analysis according to country or of all the meta-competences, we decided to conduct an analysis from the perspective of area coordination, in so doing choosing a meta-competence that structures the rest. Hence, the systemic competence shown in the following comparative graph was chosen.

Based on the above, we find the following degrees of development explained in the table for each class as shown below:

Classes	Degree of development
1	Undeveloped
2	Partially developed
3	Developed at a suitable level
4	Highly developed

The specific results reveal a tendency to be confirmed that those educational establishments that provide a BA education in Law and participants from the Tuning Latin America project would experience at least partial development of core competences attached to the meta-profile. Attention should be paid to the fact that Argentina and Brazil have two participant institutions each, and the qualitative analysis carried out sought the *average*, thus acknowledging the methodological shortcomings of this approach.

The graph represents a single institution in the case of the other countries. The different institutions shared common ground regarding the subjects they offer, practice in human rights clinics and the development of cognitive and instrumental competences to back up their assessment that there is a specific commitment on the part of the graduates under the terms proposed. Yet none of the institutions is able to effectively point to major progress in the competence. It can also be stated that the competences related to values and interpersonal skills are still a long way off the institutional context in legal education across the entire continent.

4. Some conclusions

The meta-profile established seeks to lend support to projects involving change, innovation and relevance in higher education for the area of Law. These changes are essential to ensure that lawyers contribute effectively and positively to the social transformations that are currently underway on the continent, in expressing a common yet also plausible idea, revealing a pedagogic, political and social reference point in Law education that is necessary in order to train new Latin American lawyers.

The attempt at contrasting the meta-profile with what effectively takes place in each of the participant institutions revealed how much progress still needs to be made.

The meta-profile for the legal professional in Latin America is therefore a legitimate horizon that can be made out in the aspirations of all those who seek socially relevant legal education. It can also provide the comprehensive development of an ethical person who is capable of responding suitably to the challenges faced in a field that is increasingly encroaching on more interdisciplinary borders in seeking its ultimate goal – to obtain justice.

In terms of values, the meta-profile covers the growing dissemination of the notion of human rights as integral parts of legal systems, whether at a national or international level. Legal activity as pursued by different professionals in the area is acknowledged as also being necessary for the purpose of consolidating democracy on the continent and, consequently, in defending the democratic rule of law. In the same sense, activity carried out by legal professionals is also acknowledged as needing to go hand in hand with social responsibility.

The meta-profile provided a historically contextualised dimension. The group of lecturers who proposed it did so based on their professional experiences, their academic values, their ethical convictions and – why not say it? – their political experiences and beliefs. This is because any educational process inherently constitutes a proposal for social transformation – there was no attempt to put forward or impose a single model or paradigm for pursuing legal education on the continent.

Along opposing lines, the group's intention, which also put forward an undeniable diversity in terms of theoretical insertion, age, gender,

levels of qualification and ways of acting in academic spheres of activity and legal professions, has been to present a range of options for education on the continent. However, that great pillar is founded to a large extent on what the ultimate purpose can or should be of the whole developmental process, i.e. a meta-profile. In the case of the Law graduate, they cannot yearn for pseudo-neutrality in terms of purpose. Regarding Latin American jurists, it could never be said that they are neutral in terms of the relations they maintain at the core of their professional duty. And in this field, being able to clearly point out intentions, methods and results expected as a result of the limited or lack of neutrality in the activities they pursue as lawyers, judges, counsels, those with legislative power, legal consultants and any other types of activity carried out by legal professionals, ought to be at the centre of discourse and declarations.

The meta-profile proposed by the group of 11 lecturers – all from Latin America – provides clear evidence of a profound belief in what constitutes the guidelines for the Tuning Latin America ALFA Project – the conviction that a better future is possible via integrated processes involving the construction of social, historical, political and culturally-based competences.

6

Meta-profile for Education

Ana María Montaña López et al.¹

The area of Education putting forward this proposal for the Education meta-profile has grouped together university degree programmes in teacher education. Indeed, the employment and professional field in which most graduates pursue careers is in the school system. Nonetheless, opportunities are also included for professionals who go on to pursue formal and informal careers in adult and community education. The methodological process according to which the meta-profile for the area of Education was built in stages is described below.

Given this context, it is possible that the first question posed is: why an Education meta-profile for Latin America? Put simply, because of the need to make advances towards a shared area for universities, by reflecting and planning joint action and respecting institutional autonomy, backed up by a jointly constructed methodology that is highly participative. Thus, we are referring to a *profile* when we describe our degree programmes on an individual basis in our countries, unlike the *meta-profile*, which has symbolic as well as operational connotations when we refer to and think of a Latin American area of convergence.

¹ Mónica Castilla, Mónica Matilla, María Rosa Depetris, Mabel Ortega, Yvette Talamás, Horacio Walker, Leda Badilla, Fernando Abad, Ana María Glower, Francisco Miranda, René Noé, Alejandro Genet, María Josefina Ovelar, Magdalena Gamarra and Domingo Huerta.

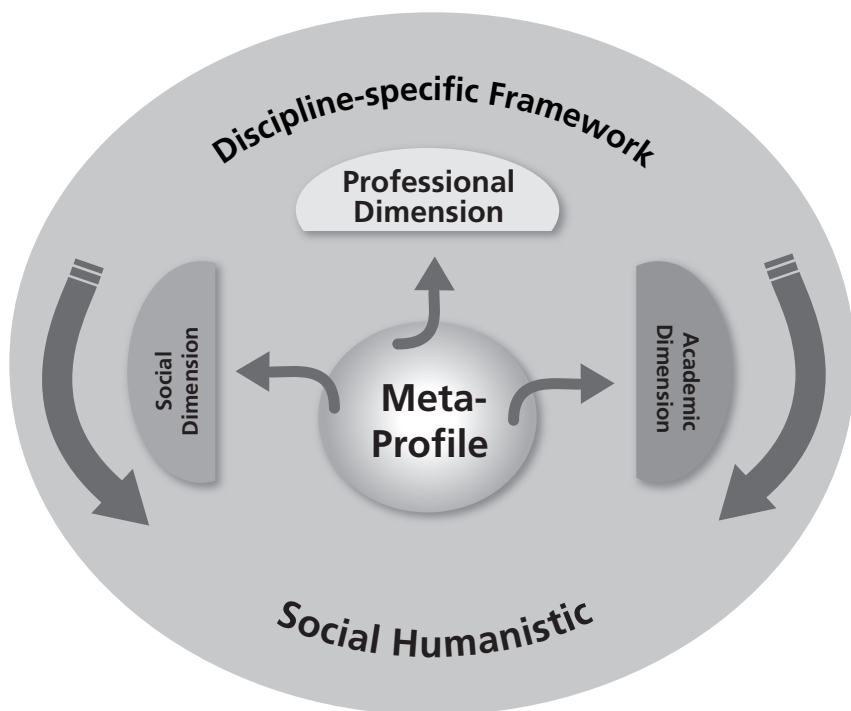


Figure 6.1

1. First stage

The Generic Competences (GC) for Latin America were first defined for Latin America in among the four groups that made up the Tuning Latin America project in its initial phase (2004-2007) – administration, education, mathematics and history. Each group also defined Specific Competences (SC). This was achieved by means of an intense process of consensus building among the group participants in which it was debated what graduates from teacher education programmes in Latin America should know, do and value. Each university submitted the initial list of generic and specific competences to scrutiny by employers, academics, graduates and students in their final semesters. A final list was thereby obtained which was endorsed according to these interest groups from all the participant countries.

Generic Competences (GC)	Specific Competences (SC) Education
1. Capacity for abstraction, analysis and synthesis. 2. Ability to apply knowledge in practice. 3. Ability to organise and plan time. 4. Knowledge about the area of study and profession. 5. Social responsibility and citizenship. 6. Capacity for oral and written communication. 7. Ability to communicate in a second language. 8. Skills in the use of ICTs. 9. Research capacity. 10. Ability to learn and keep constantly up-to-date. 11. Skills required for search for, process and analyse information from different sources. 12. Critical and self-critical capacity. 13. Ability to act in new situations. 14. Creative capacity. 15. Ability to identify, consider and deal with problems. 16. Capacity for decision-making. 17. Capacity for teamwork. 18. Interpersonal skills. 19. Ability to motivate and steer towards common goals. 20. Commitment to conservation of the environment. 21. Commitment to their socio-cultural milieu. 22. Appreciation and respect for diversity and multiculturalism. 23. Ability to work within international contexts. 24. Ability to work independently. 25. Ability to formulate and administer projects. 26. Ethical commitment.	1. Command of the theory and curricular methodology in order to guide educational action (design, putting into practice and assessment). 2. Command of the skills needed for the disciplines in their specialist area of knowledge. 3. Designs and operationalises teaching and learning strategies according to context. 4. Plans and develops educational action of an interdisciplinary nature. 5. Knows and applies the theories on which general and specific didactics are based to educational action. 6. Identifies and administers support for dealing with specific educational needs within specific contexts. 7. Designs and implements different assessment strategies and learning processes based on specific criteria. 8. Designs, manages, implements and assesses education programmes and projects. 9. Selects, produces and uses teaching materials that are relevant to the context. 10. Creates and assesses favourable and challenging learning environments. 11. Develops logical, critical and creative thought in educators. 12. Achieves learning outcomes in different skills and at different levels. 13. Designs and implements educational action which integrates people with special needs. 14. Selects, uses and assesses ICTs as a teaching and learning resource. 15. Educates in values, citizenship and democracy.

Generic Competences (GC)	Specific Competences (SC) Education
27. Commitment to quality	16. Conducts research into Education and applies the results to the systematic transformation of educational practices. 17. Generates innovations in different areas of the education system. 18. Knows educational theory and makes use of it critically within different contexts. 19. Reflects on their practice in order to improve their educational performance. 20. Guides and facilitates change processes in the community via educational action. 21. Critically analyses education policies. 22. Generates and implements educational strategies that respond to socio-cultural diversity. 23. Permanently and responsibly assumes and administers their personal and professional development. 24. Knows the historic processes involved in education in their country and in Latin America. 25. Knows and uses the different theories of other sciences that form the basis for education: linguistics, philosophy, sociology, psychology, anthropology, politics and history. 26. Interacts socially and educationally with different actors in society in order to encourage community development processes. 27. Produces educational materials in accordance with different contexts in order to foster teaching and learning processes.

BENEITONE, ESQUETINI, GONZALEZ, MARTY, SIUFI and WAGENAAR (eds.) (2007). *Tuning Latin America: reflections and perspectives on Higher Education in Latin America*. <http://tuning.unideusto.org/tuningal/>

Starting with these competences, the Education group then embarked on a reflection process regarding the features of the key factor in the Education meta-profile for Latin America and the present and future performance contexts.

Competences were selected and subsequently grouped together in three dimensions, with greater emphasis being placed on the professional dimension over the social and academic dimensions.

Professional Dimension	Academic Dimension	Social Dimension
GC1 Capacity for abstraction, analysis and synthesis	SC18 Knows educational theory and makes use of it critically within different contexts.	GC22 Appreciation and respect for diversity and multiculturalism.
GC7 Ability to communicate in a second language.	SC2 Command of the skills needed for the disciplines in their specialist area of knowledge.	GC26 Interacts socially and educationally with different actors in society in order to encourage community development processes.
GC16 Capacity for decision-making.	SC16 Conducts research into Education and applies the results to the systematic transformation of educational practices.	GC5 Social responsibility and citizenship.
GC6 Capacity for oral and written communication.	SC5 Knows and applies the theories on which general and specific didactics are based to educational action.	GC18 Interpersonal skills.
SC7 Designs and implements different assessment strategies and learning processes based on specific criteria.	SC1 Command of the theory and curricular methodology in order to guide educational action (design, putting into practice and assessment)	GC17 Capacity for teamwork.
SC19 Reflects on their practice in order to improve their educational performance.	SC 45% GC 55%	
SC12 Achieves learning outcomes in different skills and at different levels.		
SC9 Selects, produces and uses teaching materials that are relevant to the context.		
SC13 Designs and implements educational action which integrates people with special needs.		
GC15 Ability to identify, consider and deal with problems.		
GC8 Skills in the use of ICTs.		
SC3 Designs and operationalises teaching and learning strategies according to context.		

2. Second stage

The core of the meta-profile for Education was defined as: *To train professionals in academic, professional and social dimensions for professional performance in different contexts and managerial roles, public and private services, universities, education research centres and other emerging occupations.*

A new, approved review of the generic and specific competences was conducted so as to prioritise the most significant ones. Afterwards, they were grouped into three dimensions: professional, academic and social.

Characterisation of the dimensions identified in the meta-profile

Professional Dimension: This includes competences related to the characteristics largely identified with professional practice, which open up new possibilities of access to the job market within different contexts.

Academic Dimension: This includes competences associated with the creation, management and application of knowledge, using a critical approach that enables problems relating to their field of discipline-specific action to be solved.

Social Dimension: This includes competences linked to social and community development and addresses the needs of educational inclusion, diversity and inter-culturality, with focus on education and civic engagement, and respect for human rights and development.

3. Third stage

The proposed meta-profile - in other words, the group of competences which had been prioritised and classified into dimensions - was validated by comparing it with a single degree programme from each of the participant universities. This was carried out by applying a methodology that had been previously agreed by the group so as to set standards of consistency in the process. The “notable coincidences and absences” in the competences contained in the meta-profile in the programmes analysed were identified and, lastly, some conclusions were reached with regard to fine-tuning the proposed meta-profile.

The meta-profile was compared at fourteen universities, of which four work with a competence-based approach. A high degree of coincidence can be observed with the meta-profile developed in these four cases. In the other cases, an analysis was conducted of the programme, syllabuses and content existing in the graduate profile of each establishment to identify the coincidences and absences in of the elements in the meta-profile. The analysis shown below includes both types of programme.

Table 6.1
Summary of meta-profile contrasting and curriculums

	Professional Dimension			Academic Dimension			Social Dimension		
	C	NC	NR	C	NC	NR	C	NC	NR
Generic competences	40%	42%	18%	48%	11%	41%	45%	13%	42%
Specific competences	33%	39%	28%	—	—	—	—	—	—

C= coincidence. NC = no coincidence. NR = no reference made.

With regard to the *professional dimension*, 40% of the meta-profile’s generic competences coincide with the competences or content of the programmes analysed, 42% do not coincide, and 18% of the meta-profile’s competences are not mentioned. 33% of the meta-profile’s specific competences coincide with the competences and/or content of the programmes analysed, 39% do not coincide and the remaining 28% are not mentioned.

In the *academic dimension*, 48% of the meta-profile’s specific competences coincide with the competences or content of the programmes examined, 11% do not, and 41% are not mentioned.

In the *social dimension*, 45% of the meta-profile’s generic competences coincide with the competences and content of the graduate profiles analysed, 13% of the competences do not, and 42% Are not mentioned.

Furthermore, it should be pointed out that the meta-profile reflects a relative weighting of competences associated with the professional dimension. This is predictable given the professional nature of teaching. Nevertheless, this raises some questions regarding the place of the academic and social dimensions in educating teachers and educators. There is agreement that the command of “know-how” is simply instrumental and is insufficient for the purpose of educating teachers/instructors/educators.

The competences identified in the meta-profile which are not found in the majority of the programmes examined need to be analysed, such as:

- SC19 Reflects on their educational practice in order to improve their educational performance.
- SC7 Designs and implements different learning assessment strategies on the basis of specific criteria.
- SC13 Designs and implements educational action that integrates people with special needs (disability).
- GC16 Capacity for decision-making.
- GC7 Ability to communicate in a second language.
- GC1 Capacity for abstraction, analysis and synthesis.
- GC8 Skills in the use of ICTs.

The four universities which have adopted a competence-based way of working, show between 70% and 90% coincidence between the meta-profile and their programmes, as they were designed according to the Tuning project competences.

By virtue of the work carried out, it can be concluded that the meta-profile developed is a valid tool for the purpose of reflecting on and generating processes involving curricular transformation and innovation. We therefore consider it to be a valid contribution and could be a useful benchmark in guiding such processes, especially for those establishments and universities which have yet to decide to go ahead with educational processes in accordance with a competence-based approach.

7

Meta-profile for Nursing

Luz Angélica Muñoz González et al.¹

Nursing is one of the eight disciplines included in Phase III of the Tuning Latin America Project. It was included because of its relevance to vocational education. The relevance of nursing in this project lies in its being considered as a discipline that brings together different levels within the framework of higher education (Puga et al., 2007).

Group work was developed in two stages. The first stage defined a profile for the nursing professional for Latin America that contained 27 specific competences. The fruits of this phase emerged from an analysis of the vocational education context for nursing in Latin America and from the need to provide a response to what has been established via the agreement reached by leading members of the Americas (goals and objectives for the millennium) (Maurás, 2005).

The aim of the second stage was to design the graduate meta-profile for Nursing based on aspects specific to the discipline and on comparison and analysis of graduate profiles of participant institutions and the specific competences defined in the first stage of the project.

This proposal emerged from intense dialogue and group work carried out among representatives from the participant countries who took the

¹ Ramón Arístides Álvarez, Silvia Cárcamo, Silvia Espinoza, Ana Guzmán Aguilar, Viviana Morales Poppe, María Elisa Moreno Fergusson, Ellen Marcia Pérez, Jesús Yubagni Rezabala Villao and Ruth Esther Seminario Rivas.

following aspects into account: 1) an analysis of institutional advances made with regard to inclusion of a competence-based approach in education programmes; 2) the factors favouring implementation of a programme with a competence-based approach in Latin America; 3) identification of key elements of the Nursing meta-profile; 4) the specific competences in accordance with the elements contained in the preliminary profile; 5) the contrasting of key elements of the meta-profile that coincide with profiles from the participant countries, and 6) an analysis of the demographic, epidemiological, cultural, political and economic behaviour facing Latin America in a globalised, interdependent and highly-technological world.

1. Construction and contrasting process of the meta-profile for Nursing in Latin America

The meta-profile is the set of capacities and competences that identify a graduate in Nursing who is ready to take on responsibilities and developing functions in the exercise of their future profession. It describes the education received by nurses in providing care to individuals, families and groups from the community in their different evolutionary stages.

The Tuning Project Nursing group carried out the proposed meta-profile comparison process by analysing all the graduate profiles referred to in the participant universities, and other leading establishments in the different Latin American countries.

Each country's representatives used different strategies to socialise and compare the meta-profile of educational establishments for nurses in their respective countries, the most notable of which involved:

1. Comparing the professional profiles published on the websites of the different programmes and associations in the Latin American countries participating in Tuning.
2. Consulting members of the federations and associations of professional nursing schools and faculties.
3. Consulting deans, directors, syllabus coordinators, teaching staff and students from the represented countries' nursing faculties and schools.

4. Consulting documents belonging to international organisations such as Mercosur, ALADEFE (Latin American Association of Nursing Faculties), ICN (International Council of Nurses) and Ministries of Health and Education, etc.
5. Consulting nurses linked to the health service network.

An analysis was conducted using the reports issued by the participant establishments in order to identify the key concepts and elements coinciding in graduate profiles at the Nursing faculties and schools in the countries represented in the second phase of the Tuning Latin America project. The key concepts identified were: person, care, quality of life, knowledge and fields of activity. These concepts are conceived from the dimension of the individual, family and community, which represent the care subjects shown in the following table:

Table 7.1
Comparison of the key concepts identified in graduate profiles for nursing

Concept	Dimensions		
Person	Individual	Family	Community
Care	Comprehensive	Based on scientific and disciplinary knowledge	Ethical, humanistic and holistic, based on evidence
Quality of life	Promoting human dignity	Risk detection	Rehabilitation and social reintegration, palliative care
Knowledge	Theories and nursing process	From other health sciences	From other disciplines
Fields of activity	Public and private health establishments at the 3 levels of care	Other social organisations	

Source: Tuning Latin America Project: Educational and Social Innovation, Second General Meeting Report, Nursing Group. Guatemala, 16th to 18th November 2011.

Having identified the meta-profile's key concepts and their elements, related generic competences were then identified, as were the specific

competences professional nurses need to develop in order to practise, with emphasis placed on those deemed most important or substantive.

Table 7.2
Convergence between generic and specific competences

Generic competences (GC)	Specific competences (SC)
GC2 Disciplinary exercise/ practice	SC1 Applying knowledge to a person's holistic care.
GC5 Social responsibility and citizenship	SC25 Ability to promote and take action that tends to stimulate social engagement and community development in their area of health competence.
GC7 Second language	SC3. Ability to document and convey full and detailed information on a person, family and community so as to provide continuity and safety in terms of care.
GC8 Use of ICTs	SC4. Ability to use information and communications technologies in order to make assertive decisions and manage healthcare resources. SC15 Knowledge and ability to apply technology and IT in order to research into nursing and health.
GC9 Research	SC7 Ability to design and manage research projects connected with nursing and healthcare.
GC17 Teamwork	SC6 Ability to interact in interdisciplinary and multi-sectorial teams with response capacity in order to meet priority, emerging and special health needs.
GC26 Ethical commitment	SC19 Ability to participate actively on ethics committees regarding nursing practice and bioethics.

2. Nursing meta-profile

Graduates in Nursing are professionals offering holistic care with a critical and thoughtful attitude towards individuals, families and groups in the community, at their different evolutionary stages. This care is based on knowledge of the discipline and other human, social and health sciences, observes ethical principles and cultural diversity, and the professional's ability to use a second language in the course of their work.

Care also includes resource management, education and research into the development and application of knowledge in practice.

Professional nurses perform their role with leadership and social responsibility in the interests of fairness and solidarity, within the context of quality of life and a safe environment.

They work in public and private health, business, political, administrative, educational and research establishments, interacting with interdisciplinary and multi-sectorial teams within a globalised environment requiring command of a second language and information and communications technologies. Equally, their work may be independent of their professional practice.

3. Identifying key elements of the Nursing meta-profile

As an outcome of the construction process of the meta-profile, the working party considered it important to include the following dimensions:

3.1. *Scientific and technical expertise*

Professional nurses receive education with solid scientific and technical knowledge that ensures they have the ability to provide quality care that is holistic and safe to each individual they care for at the different levels of care. Hence, they are provided with methodological tools enabling them to obtain the necessary evidence to manage the care process in line with the diversity of social and cultural contexts of individuals, families and communities.

3.2. *Creativity and innovation*

Professional nurses should regard keeping up-to-date and generating knowledge and ideas as a constant process that gives them autonomy in terms of the innovation of models and safe care as the basis for making clinical and administrative decisions. The above provides an essential convergence of quality practice based on critical and reflective analysis of systematic research and clinical evidence, which encourages a culture of change, modernisation and justified innovation.

3.3. *Competence and quality of care for individuals*

Professional nurses, as those in charge of care management, must take action aimed at seeking new resources and adding value to the processes training them to guarantee the quality of care in the health service systems that aim to meet society's needs. Quality has become an essential element of health services and assuring it involves social and ethical commitment from the nursing profession.

3.4. *Readiness to work autonomously in multi- and interdisciplinary groups*

Professional nurses possess the ability to carry out professional practice autonomously and as part of interdisciplinary teams, focusing their work on the provision of comprehensive services within a range of social contexts.

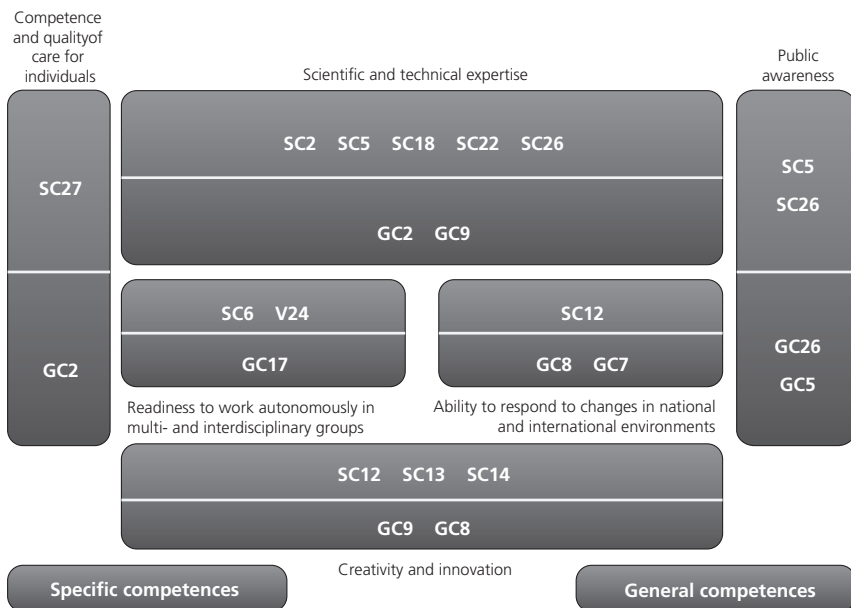
3.5. *Public awareness*

Professional nurses base their work on respect for the human rights of individuals, families and communities, especially the most vulnerable groups. Their social commitment and responsibility is based on detailed knowledge of the rights guaranteed by the respective law, ethical principles, values and knowledge stated in the nursing Code of Ethics. Consequently, they develop the ability to promote care strategies within the framework of the needs perceived by the public, providing incentives for public engagement.

Nursing is a profession based on human contact as a way of approaching individuals who need healthcare throughout their entire life cycle. Hence, the definition of the graduate meta-profile for Nursing represents the response to future challenges, where the harmonisation of programmes and consolidation of transferable credits are key issues.

Analysis of the information generated enabled the generic and specific competences to be identified and agreed upon, within which new competences emerged that complement those already existing.

There are coinciding elements in all the countries regarding professional education in Nursing. Thus, the proposed meta-profile is widely agreed upon and accepted by all those concerned.



Graph 7.1
Agreed meta-profile for the area of Nursing

Bibliography

- MAURÁS, M. (2005). *Discurso de la señora Marta Maurás*, Secretaria de la Comisión Económica para América Latina y el Caribe de las Naciones Unidas Presentación del documento interinstitucional sobre el cumplimiento de los objetivos de desarrollo del Milenio en la región. Mar del Plata, septiembre del 2005. Available from: http://www.eclac.cl/mujer/reuniones/mesa38/MDG_MM.pdf
- MUÑOZ, L.A. et al. (2013). *Educación superior en América Latina: Reflexiones y perspectivas en: Enfermería*.
- PUGA, A., MADIEDO, M. y BRITO, I. (2007). «Filosofía y ciencia de la enfermería vinculada al proceso formativo de sus recursos humanos». *Gaceta Médica Espirituana* 9 (2). Available from: www.aladefe.org/.../ensenanza_gestion_enfermeria.doc.

8

Meta-profile for Physics

Armando Fernández Guillermet et al.¹

1. Methodology

A working methodology based on the following premises and decisions was adopted in order to prepare the meta-profile for the Physics group:

1. The meta-profile was understood as being a graduate profile common to all Physics graduates in Latin America. In keeping with the work carried out in the 2004-2007 phase of the Tuning-LA Project (Beneitone et al., 2007), the group concentrated on education in traditional Physics, i.e. what is usually referred to as “a physicist”.
2. The 27 generic competences (GCs) corresponding to all university qualifications and the 22 specific competences (SCs) for the graduate in Physics were used as a starting point (Beneitone et al., 2007).

¹ Eduardo Martín Álvarez Massis, Carlos Antonio Calcáneo Roldán, Armando Euceda, Eloneid Felipe Nobre, Hendrik Ferdinande, Arquimides Haro Velasteguí, Alfonso Llancaqueo Henríquez, Osvaldo de Melo Pereira, Orlando Luis Pereyra Ravínez, Leonardo Iván Reyes Carranza, Wilfredo Tavera Llanos and Esperanza Torijano Cruz.

3. The categories of importance («A», «B», «C» and «D»), previously used by the Physics group when analysing the questionnaires on SCs, were also used (Beneitone et al., 2007).
4. The classification of SCs for Physics previously proposed by the group were used, involving three main categories and two subcategories as follows:
 - **Cognitive competences:** those characterising the graduate's disciplinary knowledge – “Knowing Physics”
 - **Methodological competences:** those characterising “Knowing how to do Physics”, both theoretically and experimentally. These, in turn, could be distributed into two subcategories:
 - i. **Instrumental competences:** those that can be identified as a set of abilities and skills in the use of procedures applicable to scientific activity.
 - ii. **Systemic competences:** those involving the interaction of cognitive elements and procedures, with high levels of complexity.
 - **Labour and social competences:** those integrating methodological SCs and GCs apparent in professional conduct, interaction with the contexts in which the intervention is being performed, and under the influence of personal and community values, characterised by “Knowing how to act as a physicist”.
5. The inter-relations between the GCs and SCs for Physics were studied and the coincidences between them identified.
6. A conceptual framework was developed for the meta-profile for physicists focusing on the ability to mobilise the generic competences and the competences specific to Physics previously identified as being most important in the conceptual, methodological and labour and social domains of professional performance within a given context, and when faced with a specific problem-situation. Fig. 8.1 outlines the conceptual relationships between GCs and SCs that form the basis of the meta-profile developed.

7. The curricula for degree programmes in Physics at a range of universities in Latin America were analysed in order to identify the generic competences and specific competences involved, and this result was compared with the competences chosen when formulating the meta-profile.

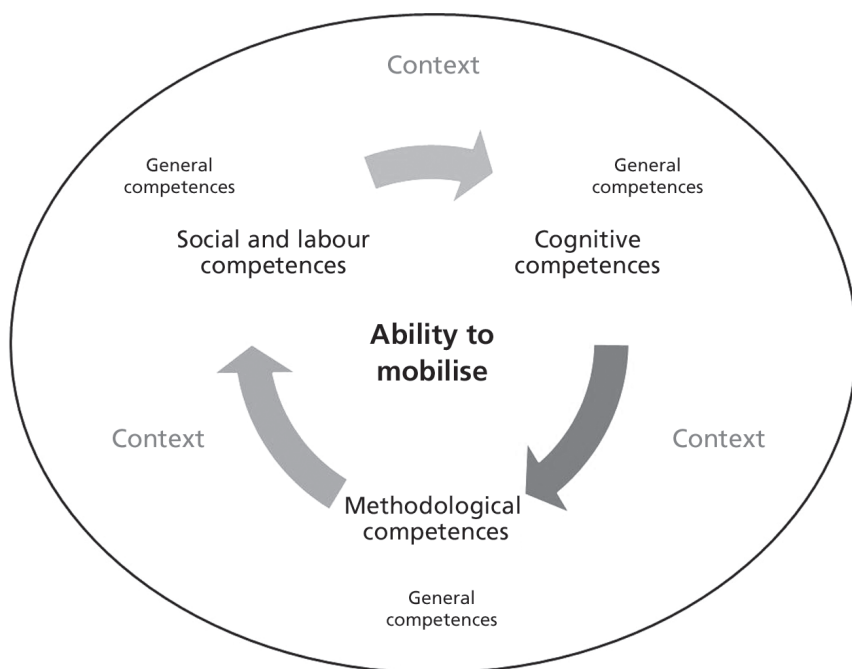


Figure 8.1
Basic conceptual principles of the meta-profile for the physicist
in Latin America

2. Study of the inter-relations between generic and specific competences

In order to study the inter-relations between specific and generic competences, a comparative matrix was developed involving the 27 GCs and 22 validated SCs, and the coincidences between them determined (Fig. 8.2).

(from greater to lesser) previously used by the Physics Group to classify SCs (Beneitone et al., 2007).

First of all, the use of a comparative matrix revealed that the generic competences which most coincided with the SCs are:

- [2] Ability to apply knowledge in practice.
- [4] Knowledge of the area of study and profession.
- [15] Ability to identify, consider and deal with problems.

These 3 GCs were considered as being among the most important in the surveys conducted within the framework of the Tuning-LA Project Phase I (Beneitone et al., 2007).

Secondly, the most important specific competences were identified (namely, those belonging to level «A») in each of the categories and subcategories used («C», «MS», «MI» and «LS») which most coincide with GCs. Identified SCs and related GCs are shown in Table 8.1.

Table 8.1
Coincidences between the most important GCs and SCs (level «A») for the Physics graduate in Latin America

Category	Most important specific competences (SCs)	Related generic competences (GCs)
Cognitive	Showing insight into the basic concepts and principles of both classical physics and modern physics [V06].	[2],[4]
Methodological	Considering, analysing and dealing with both theoretical and experimental physical problems by using analytical, experimental or numerical methods [V01].	[1],[15]
	Building simplified models describing a complex situation, identifying its essential elements and using the approaches required [V03].	[2],[4],[14]
	Applying theoretical knowledge of Physics when conducting and interpreting experiments [V05].	[2],[4]

Category	Most important specific competences (SCs)	Related generic competences (GCs)
Labour and social	Acting with professional responsibility and ethics, showing social awareness of solidarity, justice and respect for the environment [V15].	[5],[20],[21],[22],[26]
	Demonstrating the necessary working habits to develop the profession, such as teamwork, scientific rigour, self-learning and persistence [V16].	[10],[12],[17],[19],[22],[24]

3. Formulating the meta-profile for the physicist in Latin America

Taking into account the conceptual outline shown in Fig. 8.1 and the most important coincidences between GCs and SCs (Fig. 8.2 and Table 8.1), the following formulation of the graduate meta-profile in Physics in Latin America was developed:

Latin American physicists are professionals who combine insight into the basic concepts and principles of Physics and the ability to apply them practically to natural phenomena and technological processes.

They possess the abilities and skills to consider, analyse and deal with both theoretical and experimental problems by using analytical, experimental or numerical methods, and build models describing a complex situation, identifying its essential elements and using the approaches required.

In their social and work performance, they act with creativity, responsibility, professional ethics and scientific rigour, showing solidarity, respect towards the environment and the capacity for self-learning and teamwork in their discipline's and multidisciplinary environments.

Their conceptual and methodological education, in addition to the interpersonal skills acquired, enables them to operate in a variety of working contexts such as scientific research

and technological development, teaching, technical advice, scientific-technical services, and science outreach and communication. It will also enable them to participate in the search for solutions to problems of regional importance in areas of economic and social impact, such as health, energy, natural resources, education, climate and the environment.

4. Contrasting the meta-profile

In order to check the meta-profile, the Physics group adopted the following work methodology:

1. Each national representative reviewed the curriculums for one or more degree programme in Physics in their country so as to identify the explicit or implicit presence of the 22 SCs and 27 GCs that form the basis of the proposal.
2. The SCs identified in each country were tabulated and the coincidences between countries quantified, taking the number of these coincidences as a measurement of each specific competence's "representativeness".
3. The GCs relating to each country's SCs were tabulated and the coincidences found quantified, taking the number of these coincidences as a measurement of each generic competence's "representativeness".
4. Each specific and generic competence's «representativeness» was compared with its "degree of importance" according to the surveys conducted in the 2004-2007 phase of the Tuning Latin America project (2004-2007).

Fig. 8.3 compares the specific competences' «representativeness» (in descending order) with the degree of importance determined for each one in the Tuning-LA surveys. This figure shows that, overall, there is a reasonable correlation between the specific competences' degree of importance and the «representativeness» measurement established in this study. In particular, 4 of the 6 most important specific competences used to formulate the meta-profile (i.e. the cognitive competence [V06]

and methodological competences [V01], [V03] and [V05]) are in the top positions of “representativeness”. Fig. 8.3 also shows that there are some discrepancies between importance and “representativeness”. In particular, labour and social competence’s [V15] and [V16] “representativeness” fails to tally with their importance.

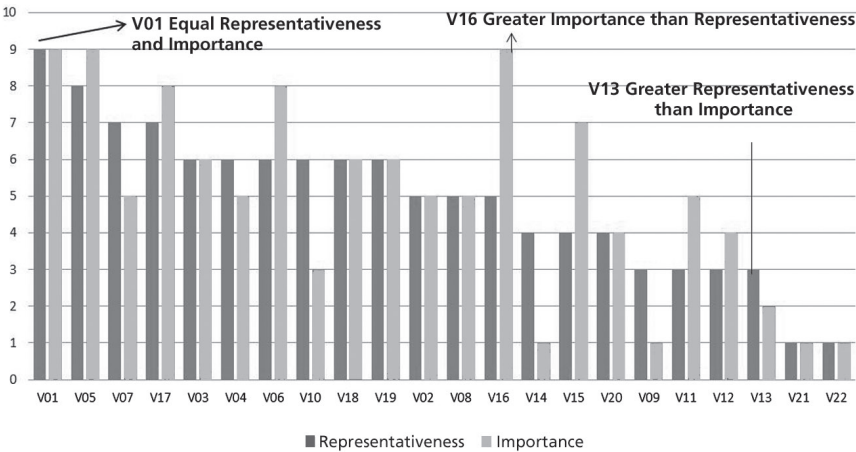


Figure 8.3
Comparison of the “representativeness” and degree of importance of the specific competences determined by the Tuning Latin America surveys in descending order of “representativeness”

Fig. 8.4 shows the Tuning-LA generic competences in descending order of “representativeness”. This figure suggests that there is also a reasonable correlation between the degree of importance (determined by the Tuning-LA surveys) and “representativeness” established in this study for the generic competences. In particular, competences [02], [04] and [15], which are among the most important in the Tuning-LA surveys (Beneitone et al., 2007), appear in the top positions of “representativeness” in the curriculums analysed. This result is consistent with the fact that these generic competences most correlate with the specific competences for Physics according to the comparative matrix (Fig. 8.1). Other generic competences ranking in the top positions of “representativeness”, in particular [01], [09], and [15] and [10], also rank at the top of the degree of importance lists stemming from the Tuning-LA surveys (Beneitone et al., 2007).

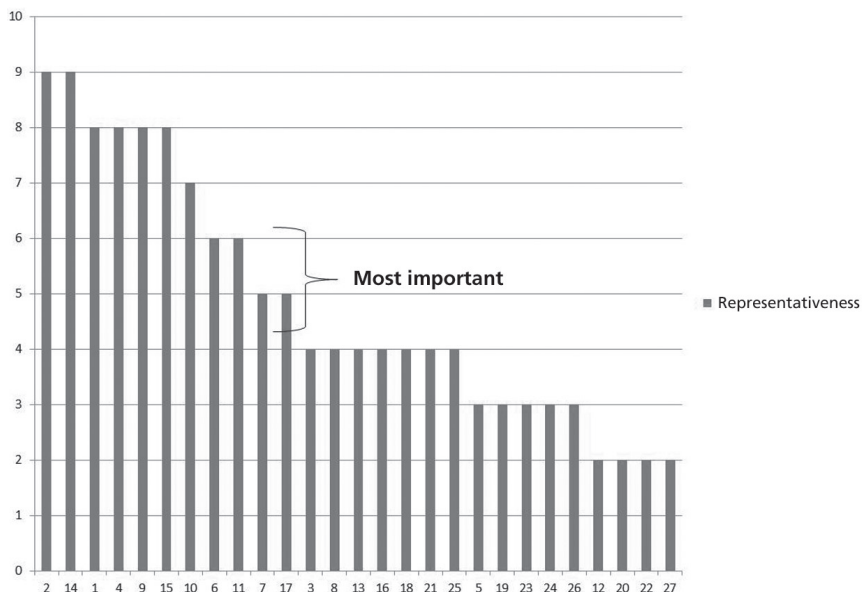


Figure 8.4
The Tuning Latin America GCs in descending order of “representativeness”

5. Conclusions

The purpose of this chapter is to describe the development of the professional meta-profile for Latin American physicists, this being understood as the graduate profile common to Physics graduates in Latin America. In accordance with the work carried out in the 2004-2007 phase of the Tuning-LA Project, the Physics group concentrated on the education of what is traditionally called “a physicist” (Beneitone et al., 2007).

This meta-profile is based on the SCs for Physics graduates that were considered most important in the surveys conducted within the framework of the Tuning-LA Project, and the GCs displaying the most coincidences with these SCs. The meta-profile put forward by the group was compared with the SCs and GCs explicitly or implicitly involved in the curriculums of different Physics degrees in Latin America. An analysis was therefore conducted according to the degree

programme and country and then coincidences were determined between countries, which were taken as a measurement of each competence's "representativeness" in the area analysed. Comparisons were also made of the degree of importance determined by the Tuning-LA surveys for the specific and generic competences involved and the respective measurements of their "representativeness". The information gathered is provided in the publication *Higher Education in Latin America: reflections and perspectives on Physics* (Fernández Guillermet, 2013).

The comparisons made show that there is a reasonable correlation between importance and "representativeness". It is also found that the SCs and GCs occupying the top positions of "representativeness" belong to those considered most important in the above-mentioned surveys.

It can therefore be concluded that the educational objectives of the curriculums for Physics degree programmes analysed in this work are compatible with the graduate profile (or meta-profile) put forward by the Physics group for Latin American physicists.

Bibliography

- BENEITONE, P., ESQUETINI, C., GONZÁLEZ, J., MARTY MALETA, M., SIUFI, G. & WAGENAAR, R. (Eds) (2007). *Higher Education in Latin America: reflections and perspectives in Physics*. Final report, Tuning Latin America Project 2004-2007. Spain, University of Deusto Publications, Bilbao.
- FERNÁNDEZ GUILLERMET, A. (Ed.) (2013) *Higher Education in Latin America: reflections and perspectives in Physics*, University of Deusto Publications, Bilbao.

9

Meta-profile for Geology

Ivan Soto Espinoza et al.¹

The working party for the area of Geology has constructed the meta-profile by taking into consideration the set of generic (GC) and specific (SC) competences agreed upon and validated by students, academics, employers and graduates of Geology degree programmes in Latin America. These competences were grouped together into domains by considering their complexity and levels of attainment required in order to form a harmonic structure. The meta-profile forms part of the analysis carried out by the working party for the area within the framework of the Tuning Project and published in the book "Higher Education in Latin America: reflections and perspectives on Geology²".

1. Meta-profile for the area of Geology

The meta-profile can be represented in the following way:

¹ Jorge Abud, Luis Bacellar, Elisabeth Espinoza, Ricardo Etcheverry, Jimmy Fernández, Edgar Gutiérrez, Edison Navarrete, Nilda Mendoza and Cándido Veloso.

² Soto Espinoza, Iván (ed.) (2013). Higher Education in Latin America: reflections and perspectives on Geology: University of Deusto Publications, Bilbao.

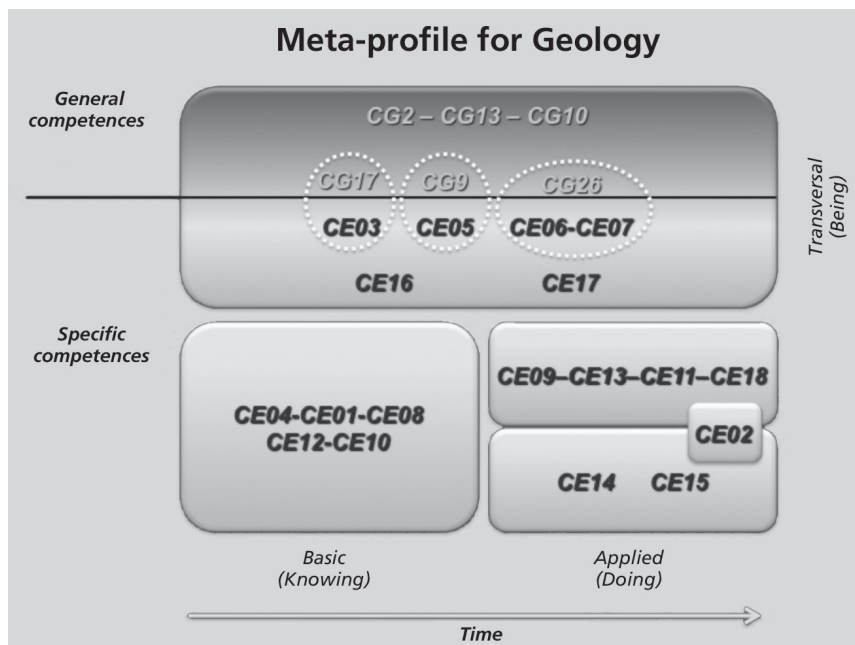


Figure 9.1

2. Description of the meta-profile

Generic competences

The meta-profile seeks to lend coherence to the development of these competences as part of a continuous educational process, as is the case with Geology degree programmes. 17 generic competences out of a total number of 27 were selected based on the experience gained in educating geologists and geological engineers, and these were concentrated into 6 groups:

- GC2 *Ability to apply knowledge in practice*: this competence includes elements from the following competence:
 - Knowledge about the area of study and profession.
- GC13 *Ability to act in new situations*.

- GC10 *Ability to learn and keep permanently up-to-date.*
- GC17 *Capacity for teamwork:* this competence includes elements from the following competences:
 - Capacity for decision-making.
 - Interpersonal skills.
 - Ability to motivate and steer towards common objectives.
- GC9 *Research capacity:* this competence includes elements from the following competences:
 - Capacity for abstraction, analysis and synthesis.
 - Skills required to search for, process and analyse information from different sources.
 - Ability to identify, consider and deal with problems.
 - Ability to formulate and administer projects.
- GC26 *Ethical commitment:* this competence includes elements from the following competences:
 - Commitment to conservation of the environment.
 - Commitment to their socio-cultural milieu.
 - Commitment to quality.

These six groups of generic competences are developed through the entire educational process to different degrees, and are associated with the development of “knowing how to be” as they are needed in order to achieve objectives, carry out different types of work, solve problems and deal with situations. Another quality attached to these competences is that they are of an integrating nature, combining skills and attitudes, enabling the specific competences to be best developed. As a result of the aforementioned, these competences are grouped together within the transversal domain.

Specific competences

18 specific competences which graduates need to have developed appropriately on completion of their studies were defined in the first phase of the Tuning Latin America project (2004-2007). These

competences can be grouped together into two domains – one basic and one of a more applied nature.

A. Basic competences

These competences are associated with “Knowing” and include initial knowledge and skills that geology students need to develop in the first years of their degree programme. They are:

- SC4. Ability to observe and understand the milieu.
- SC1. Applying classification systems for geological materials.
- SC8. Describing and analysing relations between elements that are present in rocks and in their internal and external structures in order to interpret the evolution and sequence of geological events.
- SC12. Perceiving and understanding the time-space dimensions of geological processes and their effects on the planet.
- SC10. Preparing and interpreting maps and geological sections.

B. Applied competences

These competences are associated with “Doing” and are developed in the final years of the degree programme, for which purpose it is necessary to first develop “Basic Competences”. This domain can be subdivided in two parts, each of which is linked to two areas of specialisation within Geology.

Economic geology

- SC9. Carrying out geological surveys in order to search for, exploit, conserve and manage water and energy resources.
- SC13. Planning, putting into practice, managing and financially overseeing projects and services that focus on the knowledge, exploitation and use of non-renewable natural resources.

- SC11. Assessing and rating geological resources and alterations caused in them.
- SC18. Locating perforations for research and exploitation, and carrying out geological control of them.
- SC2. Advising about the use of natural resources in formulating policies, standards, plans and programmes for developmental purposes.

Geological risks

- SC14. Setting out the requirements for territorial planning and the forecasting, preventing and mitigation of geological risks, and natural and anthropical disasters.
- SC15. Carrying out and assessing technological and/or geotechnical surveys of geological materials.
- SC2. Advising about the use of natural resources in formulating policies, standards, plans and programmes for developmental purposes.

There is also a set of specific competences which are not necessarily exclusive to the basic or applied domain and are present throughout the entire educational process, and which can also be included in the transversal domain. These are:

- SC3. Ability to interact interdisciplinary and multidisciplinary areas.
- SC16. Rigour in terms of selecting samples, data collection and its treatment and interpretation.
- SC5. Development of teaching and research methods in Geology aimed at improving professional performance and disseminating knowledge.
- SC6. Development of work that is well-balanced with care and conservation of the environmental and social milieu.

- SC7. Development of professional activity within a framework of responsibility, legality, safety and sustainability.
- SC17. Ability to collect, process and interpret data from a range of sources using qualitative and quantitative techniques, in order to construct geological models.

Three sub-groups can be observed when combining specific and generic competences into a single domain:

The first sub-group covers elements of teamwork and groups together the competence (SC3) *Ability to interact interdisciplinary and multidisciplinary areas* and the competence (GC17) *Capacity for teamwork*.

The second sub-group includes capacities associated with research development that need to be acquired by the graduate. These competences are (SC5) *Development of teaching and research methods in Geology aimed at improving professional performance and disseminating knowledge* and the competence (GC9) *Research capacity*.

The third sub-group shares the ethical attitude that needs to be adopted by a graduate in their professional performance. This sub-group comprises three competences: (SC6) *Development of work that is well-balanced with care and conservation of the environmental and social milieu*, (SC7) *Development of professional activity within a framework of responsibility, legality, safety and sustainability* and (GC26) *Ethical commitment*.

Taking this structure into consideration, the meta-profile for the Geologist can be described as follows:

“The Latin American geologist should BE a professional who is able to apply their knowledge in practice, act in all situations, learn and keep constantly up-to-date, work in teams and interact in interdisciplinary and multidisciplinary areas, develop teaching and research methods aimed at improving their professional performance and disseminating geological knowledge with a high degree of ethical

commitment, tending towards care and conservation of the environmental and social milieu, and carrying out their professional activity within a framework of responsibility, legality, safety and sustainability.

Furthermore and in view of the nature of their work, they need to be rigorous in selecting samples, taking, treating and interpreting data, and able to collect, process and interpret it via a range of sources using qualitative and quantitative techniques, in order to ultimately construct geological models.

The Latin American geologist needs to KNOW how to observe and understand their milieu, classify geological materials, prepare and interpret maps and geological sections, describe and analyse relations between elements that are present in rocks and in their internal and external structures in order to interpret the evolution and sequence of geological events, and perceive and understanding the time-space dimensions of geological processes and their effects on the planet.

The Latin American geologist needs to know how to CARRY OUT geological studies in order to search for, exploit, conserve and manage water and energy resources, locate perforations for research and exploitation, and carrying out geological control of them, plan, put into practice, manage and financially oversee projects and services that focus on the knowledge, exploitation and use of non-renewable natural resources, and assess and rate geological resources and alterations caused in them». Likewise they should know how to carry out and assess geological and/or geotechnical surveys of geological materials, set out the requirements for territorial planning and the forecasting, preventing and mitigation of geological risks, and natural and anthropical disasters, and advise about the use of natural resources in formulating policies, standards, plans and programmes for developmental purposes”.

3. Methodology applied

The geology group then drew up this meta-profile proposal, which takes into consideration the selection of 6 generic competences grouped together into six categories arranged in sequence in three domains defined according to their complexity and attainment of learning outcomes. The specific competences were grouped together into two domains – one basic and the other applied. The basic domain covers competences developed in the first two years of programmes while the applied competences were subdivided into two areas of specialisation: economic geology and geological risks. This meta-profile was subsequently disseminated and validated via a contrasting process.

4. Contrasting

The meta-profile proposal was disseminated via diverse media, putting together a working document involving a presentation with the aim of receiving and achieving consensus about different opinions with regard to their relevance. The following results were obtained:

- In Colombia it was submitted before the Professional Geologists' Association of Colombia, which brings together all Geology degree programmes in Colombia. The proposal was widely accepted.
- In Brazil it was translated into Portuguese and forwarded to experts in education and geology.
- In Venezuela it was presented at the 4th Graduate and Student Technical Conference at the Earth Science at the Universidad de Oriente.
- In Argentina, in the south of the country, the document was sent to Heads of Department and Academics from 7 universities (UBA, UNLP, La Pampa, del Sur (Bahía Blanca), Río Negro, Comahue and San Juan Bosco de Comodoro Rivadavia). In the centre-north of the country, the meta-profile was sent to 8 universities, presented at the Geology Students' Congress, the Management Committee of the San Juan Professional Geologists' Association and professionals from different enterprises.

- In Honduras it was presented to professionals from similar areas and to the Director of Earth Science Institute. However, there is no Geology syllabus on a pre-graduate level and it is hoped that the results obtained from the Tuning Project will be used as a reference point in order to create a competence-based programme. Generally speaking, interviewees are of the opinion that the meta-profile to be applied in Honduras will need to emphasize technical aspects which are specific to the discipline and place less emphasis on political and multidisciplinary skills.
- In Peru it was sent to universities that offer degree programmes in Geology and also presented at the meeting of the Peruvian National Tuning Centre.
- In Chile it was sent to 4 universities that offer degree programmes in Geology – both to their directors and academics. It was also analysed by the Methodological and Technological Innovation Centre at the Universidad Católica del Norte, with the conclusion being drawn that the meta-profile is to a large extent in line with the methodology involved in designing degree programmes, and this means a major advance in defining the graduate profile.

We can conclude by stating that the meta-profile for the Latin American geologist proposed by the Tuning Latin America project to a large extent in line with the geologist profiles described by participant universities in their syllabuses.

Meta-profile for History

Darío Campos Rodríguez et al.¹

The members of the area of History discussed whether a graduate profile had been considered at the different project meetings. To everyone's surprise, only some programmes had taken this into account, albeit not from the competence standpoint but in the form of future local careers. Of course, the subject was widely debated by members of the area so as to consider the graduate profile of a historian as a whole via specific competences with which all could be identified, irrespective of the specific features of each country and programme. This was how the task of identifying those competences that were selected as being the most important ones initially got underway, these being arrived at through surveys conducted on academics, graduates, employers and students during the first phase of the Tuning Project (Tuning Latin America 2007, 203-204).

As a result of this identification, the specific competences for the history graduate were placed into four categories: 1) knowledge and critical understanding, 2) communication and transfer, 3) awareness and understanding of the social function of the historian, 4) instrumental mastery. In this way, the respective specific competences were organically established in each category as follows:

¹ Marco Antonio Velázquez Albo, Francisco Javier Fernández Repetto, Darío Campos Rodríguez, Ricardo Danilo Dardón Flores, Guillermo Bravo Acevedo, Fernando Purcell Torretti, Eurídice González Navarrete, Sofía Isabel Luzuriaga Jaramillo and Vania Beatriz Merlotti Heredia.

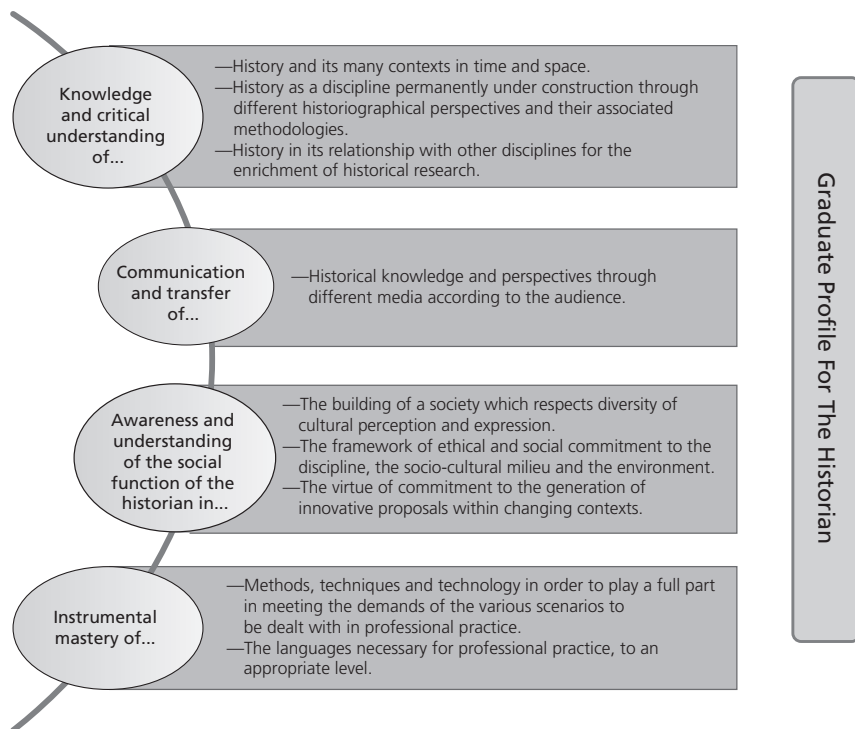


Figure 10.1
Fields or parameters and specific competences to define the profile of the graduate in History

Once agreement had been reached regarding the specific competences, the following formulation of the graduate profile for a historian was arrived at:

“The profile seeks to determine the education received by a specialist in history who has the knowledge and understanding which are crucial to the discipline in a range of temporal and spatial contexts. History is deemed to be a discipline which is permanently under construction, with various historiographical and methodological perspectives related to other disciplines among the social sciences and humanities. Furthermore, graduates must be able

to adequately communicate and transfer knowledge to a range of audiences, and must be aware of their social role in contributing to the shaping of citizens who respect values and cultural diversity. They must also be adept at appropriate methodologies and techniques in order to properly meet the demands of their profession”.

Once the areas, competences and text for a graduate historian had been formulated, different scenarios were then envisaged in order to choose the best by means of which the proposal could be reconciled with the academic community from each of the countries taking part in the project. The conclusion was drawn that this should be done via consultation involving two specific questions: one about the relevance of the profile and the other about the shortcomings of the text and its components. The questions were posed selectively to lecturers of degree programmes in History, directors who were also lecturers and former students. It was decided that the format and other elements involved in the consultation should be discussed through the Wiggo platform, by means of which two virtual meetings were held, and it was agreed that consultation would be made by email.

The questions about the meta-profile proposal were as follows:

1. How appropriate would the implementation of the profile be, given the educational needs of the social and national context within which your institution operates?
2. What areas are missing, underdeveloped, or not properly represented, given the educational needs of the social and national context within which your institution operates?

Once the above had been defined, the letter of contact was then drafted with the questions that were addressed to those consulted, establishing three steps: the first was the selection and sending of information, the second a qualitative analysis of the information, and the third a synthesis of the consultation.

Each country and university put forward their respective analysis and synthesis of the results which, in general terms, reaffirmed

the desirability of a graduate profile and received a high degree of approval. In some cases, this was expanded on and even reformulated, albeit based on what had been taken into consideration by members of the Tuning Latin America project. There was no formal rejection of the concept under proposal, although a number of comments were made and other competences were suggested for inclusion in the final draft of the profile. In some cases, areas were expanded on and more conclusions were included.

Among other comments, attention should be drawn to those that referred to the profile as “homogenous” because of its markedly discipline-specific nature, leading to the comment that the profile should lean more towards interdisciplinarity and relationship with all the sciences, and should also include heritage rescue, cultural management, world history, the conservation of memory, and the teaching and learning of history. Elsewhere, the comments stressed the development of communicative skills not only via the history text but also different types of oral presentation. They noted that greater emphasis should be placed on the development of the capacity for subsequent independent learning and for the creation of knowledge by means of research and meta-research. They also highlighted the ability of the graduate to identify problems and issues of current relevance for the discipline and their relationship with the present, and the fact that the historian should be a proactive subject in seeking solutions to present-day problems rather than a professional who is immersed and stuck in the past who fails to contribute anything to the society in which they live.

The members of the group reconsidered the comments made by interviewees and in turn revised the graduate profile so that it read as follows:

“The history graduate is a specialist in the knowledge and critical understanding of humanity’s past who understands history as a science which is permanently under construction, in dialogue with other sciences. They are familiar with the major historiographical trends and theories, and able to use methods and techniques to produce knowledge, communicate and transfer it in an independent and responsible way to a range of audiences. They understand and fulfil their professional

role, contributing to the construction of a society based on citizenship values and respectful of cultural diversity”.

The scope and parameters and their respective competences were not modified insofar as comments were aimed mainly at the text of the profile rather than at its components.

In summary, it can be concluded that the final text of the graduate profile for history throughout Latin America was a collective effort resulting from the wise and invaluable contributions of academics from various countries and degree programmes in History from the universities of Latin America. Also worthy of note was the participation of students and former students of degree programmes in the region. Lastly, thanks to this collective creation of the graduate profile, Latin American History programmes proceed more along paths of convergence than of difference.

Meta-profile for Computer Science

José Lino Contreras Véliz et al.¹

1. Introduction

The Tuning Latin America area of Computer Science is made up of academic representatives from fourteen Latin American countries - Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru and Uruguay -and is coordinated by Dr. José Lino Contreras V., from Chile (Tuning LA, 2011). One of its first and main tasks was to define the graduate profile for the area.

Obtaining a graduate profile for the area of Computer Science involves particular difficulties due to its recent origin; and the rapid evolution experienced by computer science and related technologies means that the expertise and techniques supporting it are constantly changing. Moreover, the use of computer science is constantly growing in practically all spheres of human activity, giving rise to a large number and a diversity of scenarios in which to practise the profession. Within the context of developing a meta profile for computer science the team channelled its efforts into identifying the fundamental qualities professionals in the subject area of computer science are expected to

¹ Jamil Salem Bar-Bar, Javier Alanoca Gutiérrez, Jorge Enrique Quevedo Reyes, Gabriela Garita, Roberto Sepúlveda Lima, Cecilia Milena Hinojosa Raza, Héctor José Duarte Pavón, Alma Patricia Chávez Cervantes, Augusto Enrique Estrada Quintero, Diana Bernal, María Elena García, José Antonio Pow Sang and Laura González.

have when they complete their degree programmes, irrespective of their area of specialisation or the context in which they will practise their profession.

2. Preparation of the meta-profile

Preparation of the meta-profile began by determining the specific competences associated with the discipline which students should have developed on completing their degrees. These, along with a set of generic competences, were also rated in the countries involved in the area by employers, graduates, academics and students in advanced courses by means of surveys on the level of *importance* and the *level of development students achieve* during their degrees. There were 28 competences in all. The respondents gave values 1, 2, 3 or 4 to each competence, 1 being the lowest for importance or achievement and 4 the highest. The following table shows the number of responses per type of interviewee:

Table 11.1
Number of surveys per type of interviewee

	Generic	Specific	Total
Academics	348	322	670
Employers	255	231	486
Students	960	827	1,787
Graduates	436	396	832
Total	1,999	1,776	3,775

The group conducted a quantitative analysis of the results in order to select the competences, complemented by a qualitative analysis based on agreed criteria regarding the interpretation of these competences. Competences were also selected that had low importance levels but were deemed necessary, given the social and economic trends in professional practice. 24 competences were selected that were grouped together into three categories or dimensions: *Professional Practice*,

Social Responsibility and Discipline-specific Aspects. Figure 11.1 shows a diagram with the components of the meta-profiles.

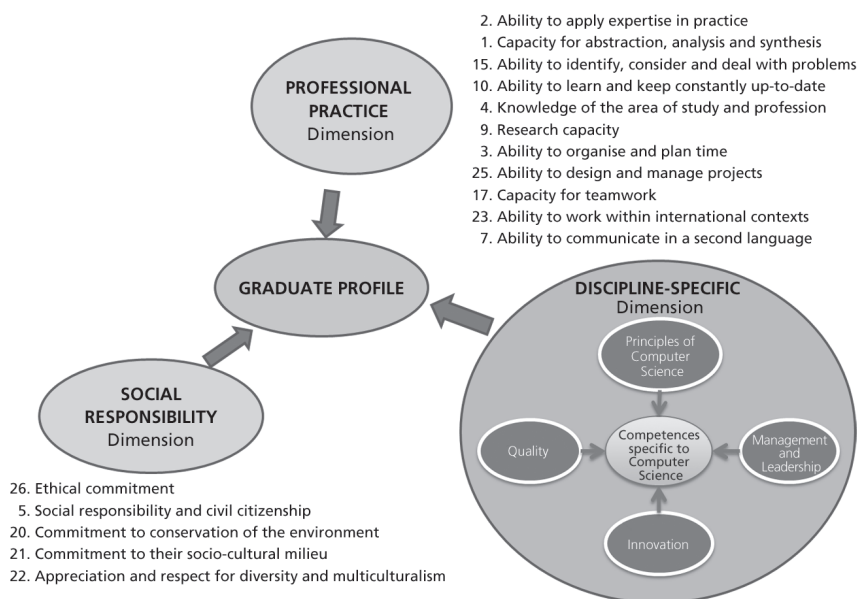


Figure 11.1
Components of the meta-profile for the area of Computer Science

The Professional Practice Dimension

The Professional Practice dimension includes competences that constitute the essential and defining principles of a computer expert's performance profile and covers the following competences:

- Ability to apply expertise in practice.
- Capacity for abstraction, analysis and synthesis.
- Ability to identify, consider and deal with problems.
- Ability to learn and keep constantly up-to-date.
- Knowledge of the area of study and profession.

- Research capacity.
- Ability to organise and plan time.
- Ability to design and manage projects.
- Capacity for teamwork.
- Ability to work within international contexts.
- Ability to communicate in a second language.

The Social Responsibility Dimension

The Social Responsibility dimension expresses the professional's expected relationship within the socio-cultural, ethical and environmental context of the field of action. The competences attached to this dimension are:

- Ethical commitment.
- Social responsibility and citizenship.
- Commitment to environmental conservation.
- Commitment to their socio-cultural milieu.
- Appreciation and respect for diversity and multiculturalism.

The Dimension of Discipline-specific Aspects

The dimension of Discipline-specific Aspects reflects elements that determine under what conditions professional practice is conducted, and were grouped into 4 areas: *Principles of Computer Science; Management and Leadership; Innovation; Quality.*

- **The Area of Principles of Computer Science**

Implementing knowledge of computer sciences, information technologies and organisations in order to develop IT solutions.

Implementing a systemic approach to analysing and dealing with problems.

- **The Area of Management and Leadership**

Playing different roles in IT projects within both local and globalised, multidisciplinary and multicultural contexts.

Assimilating emerging technological and social changes.

Understanding and applying ethical, legal, economic and financial concepts in order to take decisions and manage IT projects.

- **The Area of Innovation**

Identifying opportunities in order to remedy redundancy in organisations through the efficient and effective use of IT solutions.

- **The Area of Quality**

Conceiving, designing, developing and carrying out IT solutions based on principles of engineering and quality standards.

Implementing quality standards in IT solutions development and assessment.

3. Meta-profile for the area of Computer Science

The following meta-profile was produced for the area of Computer Science:

Latin American computer science professionals contribute with the abilities and skills their expertise in computers, information technologies, systems and organisations to the development of society and the organisations in which they participate, together with comprehensive education based on professional ethics, social responsibility and commitment to quality.

They implement knowledge with a high level of abstraction, enabling them to identify, consider and deal with problems, and provide solutions based on computer sciences and information technologies. Moreover, they stand out for their ability to research and learn new approaches, techniques and paradigms for the discipline by constantly updating and expanding their practical expertise and skills.

Computer Science professionals are willing to form multidisciplinary and multicultural teams and work within national and international contexts, where they take on the profession's different roles with leadership. They are able to design and manage projects by organising and planning the resources required to set them in motion. They develop effective and innovative solutions by applying expertise in computer sciences, information and communications technologies and organisational behaviour, together with engineering principles and quality standards.

Computer Science professionals act according to well-established ethical precepts and respect the legal and socio-cultural framework within which they pursue their professional activity. They are aware of their responsibility towards society and the commitment they take on in the need to conserve the environment.

4. Contrasting the meta-profile in countries from the area

The meta-profile was compared with the profiles from 5 prominent computer science degree programmes in each of the countries attached to the area. 49 graduate profiles were analysed and the level of the presence each competence in the meta-profile was verified by counting the number of times the competence was present in programmes. The following were obtained according to the values for the presence of each competence in the profiles analysed: the penultimate column shows the total average value, and the last shows the average level of competence presence, calculated according to the total average values for the competences: 10 competences with a high level of presence (if the average is higher or equal to 1.5), 11 with a medium level of presence (if the average is higher or equal to 0.85 and lower than

1.5) and 3 with a low level of presence (if the average is lower than 0.85). It can also be seen that the dimensions of Discipline-specific Aspects, Professional Practice and Social Responsibility are present in the profiles analysed, with average levels of presence of 1.5, 1.4 and 1.1 respectively.

Results obtained from the analysis of presence of the competences chosen by the area in the profiles analysed are satisfactory, as they indicate a high level of representativeness of the meta-profile in the Computer Science degrees in countries from the area.

5. Conclusions

The meta-profile for the area of Computer Science in the Tuning Latin America project is the result of collaborative work carried out on a Latin American scale in order to determine the qualities expected of computer science students at the time of completing their degree studies. Having an agreed and representative profile available is also a concrete step towards the curricular convergence of the area of Computer Science in Latin America, which will facilitate the recognition of different countries' degree programmes, expanding and diversifying with it the range of education and facilitating the recognition of learning and qualifications obtained in different educational establishments and countries. This will also facilitate mobility and student and academic collaboration. Benefits are also envisaged for curricular updating processes, where the results achieved in the area could be used as important references.

The result of the meta-profile competence comparisons with the profiles of prominent degree programmes in the countries in the area is auspicious, since most of the abilities and skills that act as the basis of the meta-profile are present in most of the profiles analysed. It should be taken into account that many higher educational establishments are redefining their education models and adjusting their outlooks on vocational education in the face of the new social, political, economic and technological scenarios emerging in society, and it is highly likely that competences which have little presence today will be included in new graduate profiles.

On the other hand, Computer Science continues to evolve and new areas of application emerge daily. Hence, it is important that Computer

Science professionals constantly update and further their expertise and competences so as to adapt to the increasingly dynamic, complex and unpredictable scenarios that characterise the contemporary, globalised world.

It is hoped that the results of the work carried out by the Computer Science area members, within the context of the Tuning Latin America project, will provide specific contributions that may produce better curricular proposals for educating Computer Science professionals and create a Latin American Higher Education Area.

12

Meta-profile for Civil Engineering

Alba Maritza Guerrero Spínola et al.¹

The meta-profile represents the structures of the areas and combinations of competences (generic and specific) that lend identity to the disciplinary area concerned. Meta-profiles are mental constructions that categorise competences in recognisable components and illustrate their inter-relations (Beneitone & González, 2013).

In the case of Civil Engineering within the Tuning Latin America project, the meta-profile was designed through intense reflection, discussion and consultation with a range of actors until consensus was reached regarding the four dimensions in which both the generic and specific competences could be grouped whilst maintaining close inter-relations. There is no hierarchical order in this classification, as all competences selected in the meta-profile are considered to be necessary to ensure that a civil engineering graduate may perform effectively and efficiently within any context.

Below is a summary of the work carried out by the group, and details of the results obtained at each meeting can be consulted in

¹ Antonio Edesio Jungles, César Villagomez Villarroel, German García Vera, German Gallardo Zevallos, Giannina Ortiz Quezada, Jorge Omar Del Gener, Juan Alberto González Meyer, Lacint Manoliu, Luis Enrique Ramos Rojas, María Teresa Garibay, Mario José Lucero Culi, Marta Margarita Castro Santos, Odalys Alvarez Rodriguez, Oscar Gutiérrez Somarriba, Raul Benavente García and Turibio José Da Silva.

the document “Higher Education in Latin America: reflections and perspectives on Civil Engineering”².

1. Meta-profile for Civil Engineering

Table 12.1
Meta-profile for the Civil Engineer (Chile, May 2012)

Dimension	Competence
Cognitive	Abstracts, analyses and synthesises. Represents graphically. Applies knowledge of basic science and engineering science. Devises, analyses, plans and designs civil engineering work. Knowledge about the area of study and profession. Builds, supervises, inspects and assesses civil engineering work. Operates, maintains and renovates civil engineering work. Identifies, considers and deals with problems. Prevents and assesses risks attached to the design and construction of civil engineering work. Identifies, assesses and implements the most suitable technologies for their context. Handles and manages disasters in civil engineering work.
Social	Acts ethically. Considers the environmental and social impact of civil engineering. Proposes solutions that may contribute towards sustainable development. Is committed to quality. Uses quality control techniques in civil engineering materials and services.

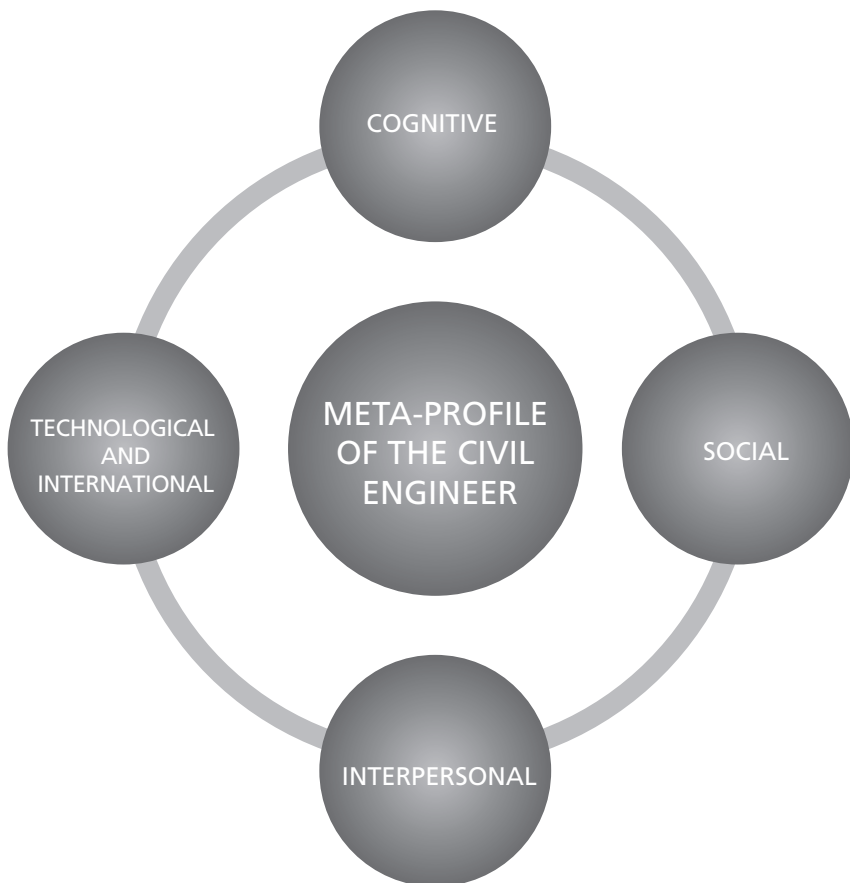
² Guerrero Spínola, Alba Maritza (ed.) (2013). Higher Education: reflections and perspectives on Civil Engineering, University of Deusto Publications, Bilbao.

Dimension	Competence
Technological and international	Possesses skills in the use of information and communications technologies. Uses information technologies, software and tools for civil engineering. Formulates and administers projects. Plans and schedules civil engineering work and services. Handles and interprets field information. Communicates in a second language. Is able to work within international contexts.
Interpersonal	Takes decisions. Manages and supervises human resources. Administers material resources and equipment suitably. Understands and associates legal, economic and financial concepts with decision-making, project management and civil engineering work. Works in teams. Interacts with multidisciplinary groups and provides comprehensive civil engineering solutions. Communicates orally and in writing. Innovates and undertakes business ventures.

Source: put together by the 2013 Civil Engineering team.

The civil engineering team conducted a review of the generic and specific competences to be included in the meta-profile. It also reviewed the classification made for an analysis of generic competences carried out by the Tuning Latin America project during its first phase, referred to as components or factors (Beneitone, 2007, p. 67), and decided how to group together similar competences within four dimensions³ - cognitive, social, technological and international and interpersonal – as shown in Figure 12.1.

³ According to the *Real Academia* dictionary, *dimension* means an aspect or facet of something.



Source: put together by the 2013 Civil Engineering team.

Figure 12.1
Meta-profile dimensions for the Civil Engineer

Cognitive dimension

This includes those competences related mainly to the intellectual system of the human being (Sanz, 2010, p. 21).

Social dimension

Within this dimension can be included those socio-affective competences related to coexistence with other individuals, group work and collaboration, among others. In this aspect, knowing how to work together with other people will be carried out in a communicative and constructive way, evidencing group-oriented behaviour and interpersonal understanding (Blanco et al., 2009, p. 22; Sanz, 2010, p. 21).

Technological and international dimension

The technological dimension includes those competences that are related to the search for and handling of information and communication and to the creation and application of knowledge. New technologies facilitate teaching and learning and communication with others (Sanz, 2010, p. 22).

Interpersonal dimension

This includes individual competences linked to the ability to express one's own feelings, critical own feelings, critical skills and self-criticism. They tend to facilitate social and cooperation processes (Blanco, et al., 2009, p. 23).

The following can be stated with regard to design of the meta-profile:

- a) The first column will be referred to as *dimension* and an updated draft of each of them will be provided in the second column.
- b) In the case of the competence related to the environmental impact of building work, it was agreed to change the draft version, as the previous one was rather too ambitious for a civil engineer. It will thus be referred to as follows: *Consider the environmental and social impact of building work.*

In Latin America, the civil engineer is defined as a professional with a broad command of basic engineering science to enable them to

develop engineering solutions for infrastructure-related problems, whether roads, housing, hydraulics or sanitation.

The civil engineer must have the ability to design, plan, manage and administer projects. Therefore, the meta-profile agreed upon by the Civil Engineering group within the Tuning Latin America project takes into consideration both generic and specific competences that will enable the civil engineer to perform effectively and efficiently.

The process that enabled consensus to be reached regarding the meta-profile included:

- a) Review of the meta-profile: at the first project meeting, a review was carried out of the meta-profile and both generic and specific competences were classified within four dimensions, as shown in Figure 12.1.
- b) Contrasting competences in Latin America: the matrix of any gap existing between the Tuning Latin America project and participant universities was reviewed, and there was discussion about the information provided by each university with each participant offering a brief explanation about it.
- c) At the second Tuning Latin America meeting the results of the analysis of comparative data were submitted (referring to the level of incorporation of the competences defined in the Latin America project in each of the participant universities). Of the 16 participant universities, 15 provided the corresponding data. It is important to clarify the fact that this exercise refers to a self-assessment by participant universities, taking the Tuning Latin America competences as a reference.
- d) Similarly, it was proposed that each of the competences be defined in order to use a common language.
- e) At the third project meeting, a final review was carried out in the form of a drafting of each competence and their classification within the four dimensions selected.

2. Contrasting process for the meta-profile in the participant countries and universities

To proceed with the contrasting of competences in Latin America, the gap existing between the Tuning Latin America Project and participant universities was reviewed, and the information sent was discussed and clarified. In the comparison matrix the competences defined in the meta-profile are included, and each participant in the civil engineering team was requested to contrast the level to which each competence is included.

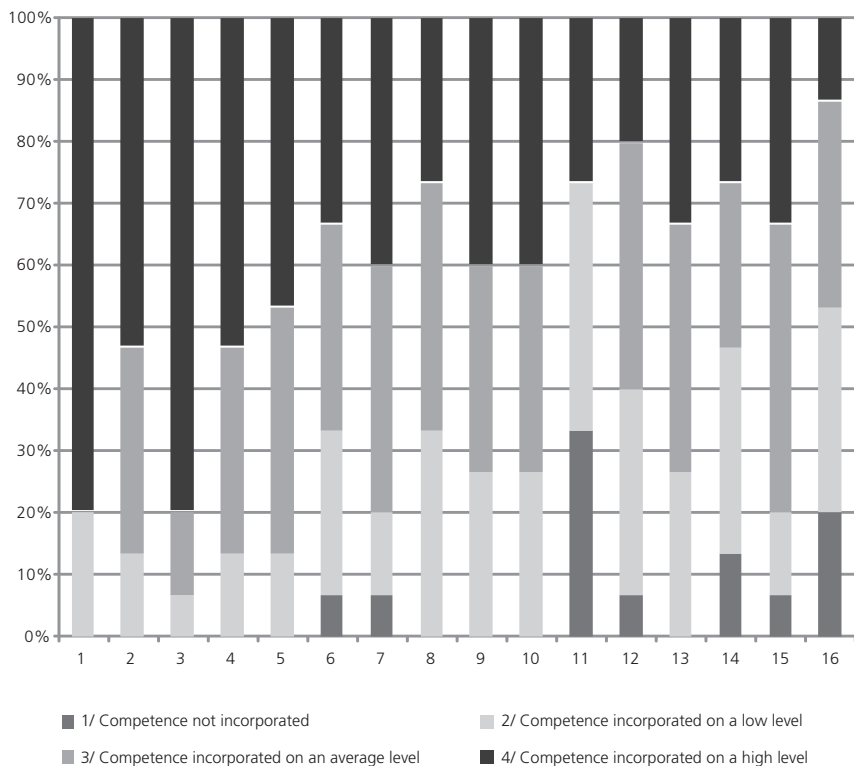
Below are the results of the analysis involving comparison of the level of incorporation of the competences defined in the Tuning Latin America project at participant universities.

It can be observed in Table 12.2 that in the case of the competence *Ability to work within international contexts*, 11 out of 15 universities state that this has not been incorporated or has only been incorporated on a low level. Likewise, the competence *Ability to innovate and undertake business ventures*, 8 out of 15 universities point out that this has not been incorporated or has only been incorporated on a low level, whereas those competences that have been subject to a high level of incorporation in participant universities are: *Capacity for abstraction, analysis and synthesis*; *Knowledge about the area of study and profession*; *Ability to apply knowledge in practice*; *Ability to identify, consider and deal with problems*.

Table 12.2
Level of incorporation of generic competences

	General competence	1 Competence not incorporated	2 Competence incorporated on a low level	3 Competence incorporated on an average level	4 Competence incorporated on a high level
1	Capacity for abstraction, analysis and synthesis	0	3	0	12
2	Ability to apply knowledge in practice	0	2	5	8
3	Knowledge about the area of study and profession	0		12	12
4	Ability to identify, consider and deal with problems	0	2	5	8
5	Skills in the use of information and communications technologies	0	2	6	7
6	Capacity for decision-making		14	5	5
7	Capacity for teamwork		12	6	6
8	Ability to formulate and administer projects	0	5	6	4
9	Ethical commitment	0	4	5	6
10	Commitment to quality	0	4	5	6
11	Ability to work within international contexts	5	6	0	4
12	Ability to communicate in a second language		15	6	3
13	Capacity for oral and written communication	0	4	6	5
14	Social responsibility and citizenship	2	5	4	4
15	Ability to learn and constantly keep up-to-date		12	7	5
16	Ability to innovate and undertake business ventures	3	5	5	2

Source: put together by the 2013 Civil Engineering team within the Tuning Latin America project.



Source: put together by the 2013 Civil Engineering team within the Tuning Latin America project.

Graph 12.1

Level of incorporation of generic competences in participant universities

Table 12.3
Level of incorporation of specific competences

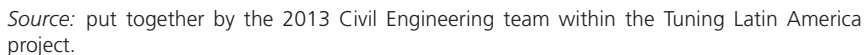
	Specific competence	1 Competence not incorporated	2 Competence incorporated on a low level	3 Competence incorporated on an average level	4 Competence incorporated on a high level
1	Apply knowledge of basic science and civil engineering science	3	5	5	2
2	Identify, assess and implement suitable technologies according to their context	0	5	8	2
3	Devise, analyse, plan and design civil engineering work	0	33		9
4	Plan and schedule civil engineering work and services		14	4	6
5	Build, supervise, inspect and assess civil engineering work	0	3	6	6
6	Operate, maintain and renovate civil engineering work	2	6	4	3
7	Understand the environmental and social impact of building work	3	6	4	2
8	Shape and simulate civil engineering systems and processes	4	3	5	3
9	Manage and supervise human resources	0	6	4	5
10	Administer material resources and equipment		14	2	8
11	Understand and associate legal, economic and financial concepts with decision-making, project management and civil engineering work	0	9	3	3
12	Use spatial abstraction and graphic representation	0	11		13
13	Propose solutions that may contribute towards sustainable development	4	5	4	2

	Specific competence	1 Competence not incorporated	2 Competence incorporated on a low level	3 Competence incorporated on an average level	4 Competence incorporated on a high level
14	Prevent and assess risks attached to civil engineering work	4	7	3	1
15	Handle and interpret field information	1	2	3	9
16	Use information technologies, software and tools for civil engineering	0	3	7	5
17	Interact with multidisciplinary groups and provide comprehensive solutions for civil engineering	2	8	3	2
18	Use quality control techniques in civil engineering work and services	2	3	7	3
19	Handling and management of disasters in civil engineering work	7	4	3	1

Source: put together by the 2013 Civil Engineering team within the Tuning Latin America project.

It can be observed in Table 12.3 that 7 out of 15 universities have not incorporated the competence *Handling and management of disasters in civil engineering work*, in the same way that 9 out of 15 universities have incorporated the competence *Understands and associates legal, economic and financial concepts with decision-making, project management and engineering work* on a low level. Likewise, 8 out of 15 universities have incorporated the competence *Interacts with multidisciplinary groups and provides comprehensive civil engineering solutions* on a low level.

The competences incorporated on a high level refer to *Uses spatial abstraction and graphic representation* in which 13 out of the 15 universities have done this, while 9 out of 15 universities also state that the competences *Devises, analyses, plans and designs civil engineering work* and *Handle and interpret field information* have been incorporated on a high level.



13

Meta-profile for Mathematics

María José Arroyo Paniagua et al.¹

This work is a summarised version of the chapter meta-profile for the area of Mathematics in the publication *Higher Education in Latin America: reflections and perspectives on Mathematics*², which contains further information about the outcomes and the work that members of the area of Mathematics carried out in accordance with the objectives outlined in the Tuning Latin America project during the years 2011-2013.

The meta-profile presented is that for the area of Mathematics in under-graduate university education of future professionals as mathematicians. The process that was carried out to construct it is also described, culminating in the corresponding text being drafted. The meta-profile is based on a selection of generic and specific competences that are grouped together in four dimensions which are desirable for students to develop during their higher education. Each of the four dimensions has a specific purpose – they are not dealt with as isolated parts, and they are linked and articulated with different levels of emphasis within the curricular network, in accordance with the

¹ Roberto Cruz Rodes, Carlos Moisés Hernández Suárez, María Teresa Jiménez Zamora, Orestes Montilla Montilla, Josue Ortiz Gutierrez, Rolando Pomareda Rodríguez, Jorge Humberto Rodríguez Mahaud, Wolfgang Sander, Nelson Subía Cepeda, Baldomero Valiño Alonso and Laurete Terezinha Zanot Sauer.

² Arroyo Paniagua, María José (ed.) (2013). *Higher Education in Latin America: reflections and perspectives on Mathematics*. University of Deusto Publications, Bilbao.

levels of development established in the syllabus according to accepted institutional definitions, capacities and specialities attached to higher educational establishments.

The curricular convergence required for recognition of capacities in mathematics professionals in the region makes it necessary to emphasize the characteristics required of graduates in their education so as to contribute towards the better development of their future professional activities, irrespective of the field of work in which the graduate may be involved – whether university lecturer-researcher, post-graduate student or providing professional consultancy services in different sectors of society.

The meta-profile for under-graduate students in the profession of Mathematician is based on the problems that graduates will need to deal with having completed their studies. It is closely linked to the minimum discipline-specific content required of mathematics graduates from different programmes and courses in the region. Such contents are distributed across the curriculum and in different dimensions of the meta-profile. The minimum content worked on by the area of Mathematics covers the following subjects: Elementary Geometry, Analytical Geometry, Differential Geometry, Linear Algebra, Abstract Algebra, Number Theory, Calculus, Differential Equations, Complex Variable, Mathematical Analysis, Measurement and Integration and Functional Analysis, Topology, Discrete Mathematics, Numeric Methods, Optimisation, Probability and Statistics, Programming and Algorithms, Logic and Basic Principles, History and Methodology of Mathematics, Physics, Chemistry, Biology and disciplines related to Social Science and Humanities.

The work carried out by the area of Mathematics during the first phase of the Tuning Latin America project (2004-2007) was initially used as a basis for determining the meta-profile. In its final report from the year³, 27 generic competences were established as being desirable for development by all graduates enrolled in higher education, together with 23 specific competences determined by the area of Mathematics.

To construct the meta-profile, the 50 generic and specific competences referred to above were analysed during the meta-profile construction

³ *Reflections and perspectives on Higher Education in Latin America*. Final report, Tuning Latin America Project 2004-2007. Spain, University of Deusto Publications, 2007.

process, and four dimensions were defined from this analysis. Without establishing hierarchies between them, the dimension related to the attitude shown by a future professional was initially given prominence as a key element in their education and future professional practice, followed by the dimension related to know-how within the discipline and the underlying tools required for this. The two dimensions related to communication and interpersonal skills of the future professional in Mathematics were also established.

Once this group had been defined, a list of privileged competences was then determined comprising 15 generic competences (GC) and 14 specific competences (SC). It should be pointed out that observations made both by members of the area and colleagues with whom there was interaction in this work about the importance of the competences selected coincided with their assessment provided in the 2007 report. They appear in this document with the number given to them in that report.

It should be noted that non-privileged competences in this document maintain their value by themselves, although they may be developed as a result of the development of other ones and that their evolution may refer to educational background and to the interest on the part of the future professional – and would be associated with the specific academic profile attached to each educational establishment.

The following competences and dimensions associated with them were considered in the meta-profile as follows:

Attitudinal Dimension

Refers to the competences required to train a mathematician who shows human sensitivity and a commitment to society.

- GC5 Social responsibility and citizenship.
- GC10 Ability to learn and keep constantly up-to-date.
- GC26 Ethical commitment.
- SC14 Willingness to deal with new problems in different areas.

Disciplinary Dimension (cognitive and procedural)

Refers to those competences that a mathematician needs to possess with solid education in terms of the knowledge, abilities and skills required of the field and their applications.

- GC1 Capacity for abstraction, analysis and synthesis.
- GC2 Ability to apply knowledge in practice.
- GC4 Knowledge about the area of studies and profession.
- GC8 Skills in the use of information and communications technologies.
- GC15 Ability to identify, consider and deal with problems.
- GC25 Ability to formulate and administer projects.
- SC1 Command of basic concepts in higher mathematics.
- SC2 Ability to construct and develop logical arguments by clearly identifying hypotheses and conclusions.
- SC4 Capacity for abstraction, including the logical development of mathematical theories and relationships between them.
- SC5 Ability to formulate problems in mathematical language in such a way as to facilitate their analysis and solution.
- SC7 Ability to embark on mathematical research under expert guidance.
- SC9 Ability to help construct mathematical models from real situations.
- SC15 Ability to work with experimental data and contribute towards their analysis.
- SC19 Basic knowledge of the teaching-learning process in mathematics.

Communicational Dimension

Refers to those competences that qualify the mathematician to enable them to express themselves correctly and effectively both orally and in writing.

- GC6 Capacity for oral and written communication.
- GC7 Capacity for communication in a second language.
- SC3 Ability to express oneself correctly using the language of mathematics.
- SC16 Ability to communicate with other professionals who are not mathematicians and provide them with advice in the application of mathematics in their respective areas of work.
- SC18 Ability to use mathematical reasoning and draw relevant conclusions with clarity, accuracy and in a suitable manner for the target audience, both orally and in writing.
- SC23 Knowledge of English for the purpose of reading, writing and describing documents, as well as communicating with other specialists.

Relational Dimension

Refers to those competences required to ensure that the mathematician be capable of interacting with other people within different contexts.

- GC13 Ability to act in new situations.
- GC17 Capacity for teamwork.
- GC18 Interpersonal skills.
- GC23 Ability to work within international contexts.
- SC17 Ability to work in interdisciplinary teams.

The meta-profile is expressed as follows:

META-PROFILE FOR THE GRADUATE ON A MATHEMATICS UNDERGRADUATE DEGREE PROGRAMME

The graduate on a Mathematics degree programme is an ethical professional who shows human sensitivity, social responsibility and citizenship, and is willing to learn, keep constantly up-to-date and deal with new problems in different spheres of activity.

They will have undertaken solid education in terms of their own knowledge, abilities and skills in their area of study and their profession, gained a command of basic concepts in higher mathematics and develop logical arguments by clearly identifying hypotheses and conclusions.

They are characterised by their great capacity for abstraction and analysis, including the °logical development of mathematical theories and relationships between them, and are qualified to embark on mathematical research under expert guidance.

They permanently apply knowledge in practice and identify and tackle problems, formulating them in mathematical language in such a way as to facilitate their analysis and solution. They help construct mathematical models from real situations and by analysing experimental data.

They possess basic knowledge of the teaching-learning process in mathematics, formulate and administer projects and use information and communications technologies.

They express themselves correctly and effectively both orally and in writing, have a command of the language of mathematics and use mathematical reasoning and draw relevant conclusions with clarity, accuracy and in a suitable manner for the target audience.

They read, write and explain documents in English in order to interact with the international academic community in their area of knowledge.

They communicate with other professionals who do not work in the field of mathematics and provide advice in the application of mathematics in their respective areas of work.

They possess the interpersonal skills required to interact with other people within different contexts and to work in multidisciplinary teams.

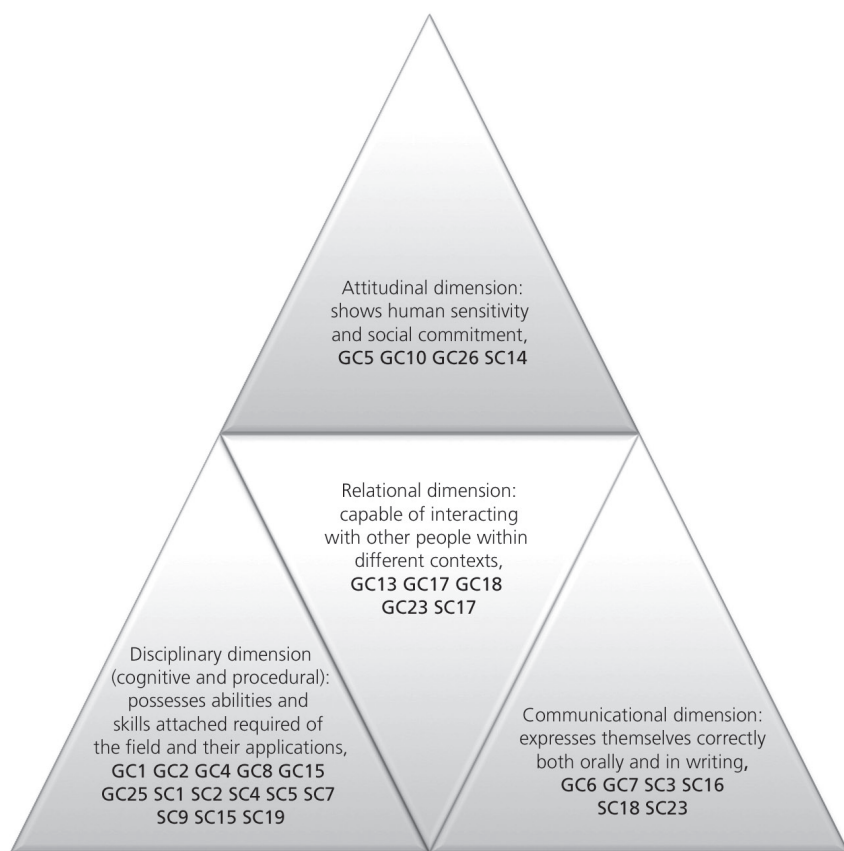


Figure 13.1
Outline of the meta-profile
for the graduate on a Mathematics degree programme

Below is shown the comparison between the meta-profile for the area of Mathematics and graduate profiles for mathematics, as well as the degree of appropriation observed in them.

To be able to establish an approximation regarding the degree of appropriation and assessment of the competences involved in the meta-profile, surveys were conducted and/or consultations made with some lecturers and those in charge (leaders) of groups of subjects or disciplines – schools, academies – at universities who are responsible for developing mathematics syllabuses at universities, in order for their responses to lend support to the conclusions drawn from the diagnosis. Each competence was assigned an indicator value in accordance with the following scale:

- (5) Activities carried out within the discipline – subject, course – contribute fully towards developing this competence.
- (4) Activities carried out within the discipline – subject, course – contribute towards developing this competence, but some aspects still need to be included in order to achieve full development.
- (3) Activities carried out within the discipline – subject, course – contribute partially towards developing this competence, but nonetheless guarantee it to an acceptable extent.
- (2) Activities carried out within the discipline – subject, course – are insufficient for the purpose of developing this competence.
- (1) This competence is not included among the objectives set out in the discipline – subject, course.

The sample of lecturers and academic leaders who took part in the survey amounted to 86 lecturers in total who work at the Latin American institutions that took part in the area of Mathematics. The qualitative and quantitative results were processed and analysed in order to endorse the meta-profile proposed.

The conclusions regarding contrasting and appropriation of the meta-profile for the area of Mathematics are described in the following paragraphs.

The development of the ability to learn and keep constantly up-to-date and to deal with new problems is greatly stressed in mathematics syllabuses, as activities are carried out in all syllabuses within the different disciplines that contribute either fully or partially to developing this competence.

As for social responsibility and citizenship, their development is considered to be undertaken transversally across the curriculum and there is no homogenous drive to do so in evidence in all participant educational establishments. Ethical principles are cultivated in the daily tasks performed in communities, with an emphasis being placed on work carried out by other people. It is deemed necessary to encourage these capacities more, as activities geared towards developing or strengthening them in several educational establishments are insufficient or even non-existent.

Most competences such as knowledge, abilities and skills attached to mathematics, a command of its basic concepts, the construction and development of logical arguments by clearly identifying hypotheses and conclusions, and the capacity for abstraction, analysis and synthesis attain a high level of development during the syllabus and are worked on at different levels or structures within the curriculum.

It can be noted that those competences related to the application of knowledge in practice need to be developed further, as at present emphasis in syllabuses is placed on the formal and abstract rather than on the applied.

The degree of appropriation of communication-oriented competences is high in terms of communication towards mathematics and professionals working in this field as, except for one university, activities are carried out in all educational establishments that are geared towards the proper development of this competence. However, this does not occur in the case of communication in general and other professional spheres of activity. As for command of a second language, this competence is only measured as a degree programme requirement in most syllabuses, and it is thought that this should be developed gradually on their different levels or structures.

It should not be forgotten that ensuring proper development of the capacities in the communicational dimension boosts the attainment of each and every competence established in any curriculum.

Lastly, the capacities established in the relational dimension have not been suitably developed – individual work is regarded and promoted far more than interdisciplinary teamwork and within an international context. Activities and even subjects have been designed in many educational establishments in order to reinforce the development of these capacities.

14

Meta-profile for Medicine

*Christel Hanne et al.*¹

The meta-profile for the medical graduate from Latin American universities was built around discussions and teamwork among medical professionals participating in the different phases of the Tuning Latin America project. Firstly, a list was made of specific competences for qualification in medicine, which were validated by academics, students, graduates and employers by means of surveys in which they were asked about the degree to which they regarded each competence as being achieved or important in medical Education. This resulted in a consensus being reached in the identification of 63 common specific competences for qualification in medicine within the Latin American context, along with the creation of a matrix with the characteristics of all the medical degrees in the region.

In the second stage, the 63 specific competences were winnowed down to 8 in order to create a meta-profile for those graduating in medicine from Latin American universities.

¹ Ana Cusumano, Jorge Luis Flores, Nildo Batista, Patricio Altamirano, Mary Bermúdez, Ana Isabel Gómez, Rodolfo Cabrales, Víctor Hugo Jiménez, Julio Cesar Ruiz, Ana Margarita Rodas, Iris Milagro Tejeda Suazo, Eduardo Gómez, Carlos Staff, Manuel Gutiérrez and Carmen Molina.

The first meta-profile agreed upon was as follows:

The general practitioner graduating in medicine from the universities of Latin America is an all-round professional with scientific, ethical and humanistic education. They understand the health-illness continuum in terms of the factors determining health and take actions seeking the promotion, prevention, attention, rehabilitation and palliative care of individuals and communities at the levels and in the capacities required by their country, in accordance with the epidemiological profile and the scientific evidence available. They participate effectively in the healthcare system and in society, seeking quality of care.

The specific competences agreed upon were:

1. Carries out clinical practice.
2. Provides emergency medical attention.
3. Communicates well in professional practice.
4. Uses evidence in clinical practice.
5. Uses data and technology effectively within a medical context.
6. Applies ethical and legal principles in the practice of medicine.
7. Works effectively within the healthcare systems.
8. Understands the health-illness continuum in terms of the determining factors of health.

Representatives from each participating country were then consulted about their perception of the comparison between the agreed meta-profile and the profiles in their own country, highlighting any discrepancies, as shown in the following table:

Table 14.1
Differential factors in the profile of doctors in Latin America

Meta-profile of doctors qualifying in medicine from Latin American universities	Differential factors (emphasis on or presence of subject areas) in the profiles of medical graduates in each participating country, according to representatives from the Tuning Latin America project
The general practitioner graduating in medicine from the universities of Latin America is an all-round professional with scientific, ethical and humanistic education. They understand the health-illness continuum in terms of the factors determining health and take action in seeking the promotion, prevention, attention, rehabilitation and palliative care of individuals and communities at the levels and in the capacities required by their country, in accordance with the epidemiological profile and the scientific evidence available. They participate effectively in the healthcare system and in society, seeking quality of care.	Argentina: the cost-effectiveness relationship, human rights and continuous learning.
	Chile: emphasis on primary and secondary level.
	Peru: citizenship education, construction as human beings, transformation of society, leadership, vocation for services, differences in the people receiving care, effective use of health-care resources, interdisciplinary work, contributions to knowledge.
	Venezuela: solutions to healthcare problems and needs, independent and creative work, holistic community medicine, attention to communities, participation in healthcare measures in catastrophic situations, role training of technical personnel (state programme).
	Mexico: second language, cultural diversity, applications of information technology, ethical and regulatory principles, patient safety, collaborative work in emergency situations, respect for alternative medicines and lifelong learning.
	Colombia: critical thinking, research competences, national and international mobility, ongoing updating, social outreach, participation in health policies, teamwork, applications of science in health, legal responsibility and critical appraisal of the various determining factors in health.
	Honduras: education in healthcare and management of health resources.
	Panama: capacity for teaching and research.
	Guatemala: management, research and social service.
	Bolivia: research and internationalisation.
	Ecuador: community outreach and respect for traditional lore.
	El Salvador: no significant differences.
	Summary: continuous education, administration of resources, leadership, alternative and traditional medicine, research, management, critical analysis, knowledge of healthcare systems and internationalisation.

In order to fulfil one of the objectives of the “review of the generic and specific competences, the creation of a proposed meta-profile agreed across all of the participating countries, the presentation of each country’s perspective on the meta-profile and the creation of a map of profiles of qualifications in Latin America, representatives of the participant countries were asked to expand on the information provided with regard to the profiles of medical degree programmes in their respective countries and the way in which they differed from the meta-profile agreed by the Tuning Latin America Medicine group”.

To this end, a matrix was created containing a detailed list of the profiles according to country and/or of some or all of the medical degree programmes in each country. The reason for this was that not all of the countries have an agreed profile, while on the other hand not all of the representatives submitted all of the profiles from their country.

Although a wide range of formats of qualification profiles could be seen, it can also be seen that there is broad alignment with the agreed meta-profile for Latin America as a whole, with such aspects standing out as the education of general practitioners with emphasis on primary care.

With these details to hand, a meeting was held of the representatives of the participating countries, in order to review what had previously been agreed using the following methodology and so as to create the definitive meta-profile:

- The participants identified the qualification profiles of the most important medical programmes in their country (including the university they represented).
- These were compared with the meta-profile designed so far, and in each case it was established whether or not they were congruent, and if not, what elements were different in each country. The elements identified were:

Second language (indigenous languages, English, other languages), Interpersonal healthcare education, International mobility, Legal aspects of professional practice (*legal medicine*), Multiculturalism, Alternative medicine, Humanisation of medical intervention, Leadership and agency in social change, Inclusion of the family, Teamwork,

New approaches in medicine (molecular aspects of medicine), Capacity for administration and management, Research, Environmental conservation, Adaptation to different kinds of work, Entrepreneurial spirit, Learning to learn (preparation for lifelong learning), IT systems in healthcare, Emergency care, Natural disasters.

- The different elements were identified which were common to most of the programmes and yet not included in the initial profile.
- Agreement was reached as to which of the different elements should form part of the revised version of the meta-profile. Priority was given to the following aspects:

Basic skills in a second language (English), National and international context, Legal aspects of professional practice, Multiculturalism, Individual, family and community, Working in a team, Capacity for administration and management, Learning to learn (preparation for lifelong learning).

- The initial meta-profile was adjusted accordingly.

The reformulated meta-profile was agreed was as follows:

The general practitioner graduating in medicine from universities in Latin America is an all-round professional with scientific, ethical and humanistic education and social responsibility. They have basic skills in a second language and engage in continuing professional development. They understand the health-illness continuum in terms of the factors determining health, and can take action in seeking the promotion, prevention, attention, rehabilitation and palliative care of individuals, families and communities in all their cultural diversity at both a national and international level, in accordance with the epidemiological profile and the scientific evidence available. They work well in teams, participating effectively in the healthcare system, in accordance with the prevailing legal framework, by means of communication with the patient, their family, the healthcare team and in society, seeking quality of care.

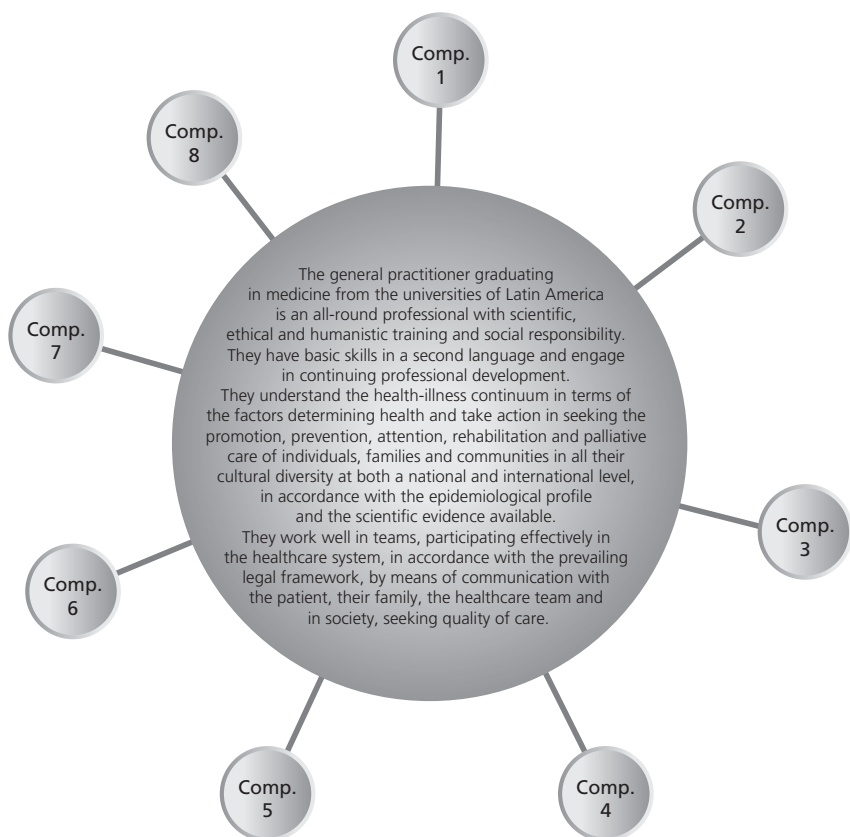


Figure 14.1
Outline of the meta-profile

The specific competences previously agreed were retained. By way of conclusion and as previously mentioned, agreement was reached among the Latin American countries about the meta-profile that had been designed, highlighting aspects such as the education of general practitioners with emphasis on primary health care. This implies a challenge in terms of the implementation of this profile, as innovation is required in teaching-learning scenarios and strategies, in assessment, and in being student-centred by handing them over the tools to enable them to continue education throughout their professional life.

15

Meta-profile for Psychology

Diego Efrén Rodríguez Cárdenas et al.¹

1. Construction process for the meta-profile for the area of Psychology

An academic and professional meta-profile for the qualification of graduate/pre-graduate Psychologist was constructed in the following stages:

a) Drawing up a list of specific competences

This stage began with drawing up of a list of 19 specific competences that psychologists with under-graduate or graduate qualifications should have in Latin America. The Psychology group within Tuning Latin America, comprising representatives from 9 countries and 11 universities from the region, put together the list by consensus at the meeting held in Bogotá (May 2011), subsequently submitting the list for evaluation by two experts from each of the participant countries and institutions. As a result of this, the original list was modified and a list of 24 definitive specific competences was agreed upon:

¹ Roberto Corral Ruso, Roberto Antonio Cruz Murcia, Eva Inés Echeverría Herrera, Mauricio Gaborit, María Angélica González de Lezcano, Martha Lorena Guido, Otilia Seiffert, Gabriela Siufi, Martha María Pereyra González and Olga Puente de Camaño.

Specific competences for the area of Psychology

1. Understand the link between scientific knowledge and everyday knowledge.
2. Know and understand the epistemological foundations of science.
3. Carry out scientific research in the field of psychology.
4. Reflect critically on the problems of the discipline of psychology.
5. Integrate and make use of knowledge of other disciplines.
6. Understand the epistemological foundations of psychological theories.
7. Understand and explain psychological processes from a bio-psycho-social perspective.
8. Understand the transitional stages of a human being throughout a life-time.
9. Identify and understand theories explaining human psychological processes.
10. Understand the biological substrate of human psychological processes.
11. Establish relationships between the theory and practice of psychology.
12. Carry out psychological diagnoses and assessments using the methods and techniques of psychology.
13. Understand and intervene appropriately in the psychological problems of human beings, according to their historical, social, cultural and economic context.
14. Mediate and/or negotiate in different aspects of psychological practice.
15. Carry out psychological consultancy and guidance.
16. Design and develop programmes to nurture the psychological wellbeing of individuals, groups and communities.
17. Work in multi- and interdisciplinary teams towards the production of knowledge and within contexts of professional practice.
18. Provide interested parties with the results of professional undertakings in assessment, diagnosis, intervention and research.
19. Integrate technological instruments into professional practice.
20. Design, carry out and evaluate techniques and strategies for intervention in various fields of activity of psychology.
21. Design psychometric tools in a valid and reliable manner.
22. Respect individual and socio-cultural diversity.
23. Understand the ethical foundations and principles related to professional and scientific work.
24. Accept the ethical commitment of psychological practice.

b) *Consultation about the importance and attainment of the specific competences*

Once a list of 24 competences had been agreed, a consultation was carried out, in which respondents were asked to comment on both the generic competences (which were drawn up in the first phase of the Tuning Latin America project 2004-2007 project, prior to the integration of the area of Psychology), and the specific competences that had been recently listed, approved and validated by experts. This consultation was effected using online surveys among four interest groups: academics, students, graduates and employers. A total of 3,518 responses were received - 1,898 on the generic competences and 1,620 on the specific ones, as shown in the table below:

Table 15.1
Total number of surveys applied, according to group consulted and type of competence

	Generic Competences	Specific Competences	TOTAL
Academics	313	281	601
Employers	223	208	431
Students	791	647	1,438
Graduates	571	477	1,048
TOTAL	1,898	1,620	3,518

The survey was used to investigate the importance attached to each competence in relation to education in Psychology, and its level of achievement in graduate or undergraduate education. Finally each respondent was asked to choose the 5 competences they saw as the most important, ranking them in order of importance.

The average rating in terms of importance awarded to each of the generic competences was above three (3) on a scale of 1 to 4 in the case of all groups interviewed, with the following competences gaining the highest rating: *Ethical commitment*, *Ability to apply knowledge in practice* and *Knowledge about the area and profession*, *Capacity*

for abstraction, analyse and synthesis and Ability to learn and keep constantly up-to-date. For their part, the generic competences *Ability to communicate in a second language* and *Commitment to conservation of the environment* obtained the lowest ratings in terms of importance, although their ratings were above three (3) in the case of all groups, as indicated.

In the case of specific competences, the results showed that the competences that obtained the highest ratings for all groups interviewed are as follows:

Table 15.2
Specific competences with the highest average ratings in terms of importance

Competence	Academics	Employers	Students	Graduates
Accept the ethical commitment of psychological practice.	3.80	3.91	3.66	3.92
Establish relationships between the theory and practice of psychology.	3.75	3.79	3.65	3.84
Understand and intervene appropriately in the psychological problems of human beings, according to their historical, social, cultural and economic context.	3.75	3.78	3.64	3.86
Reflect critically on the problems of the discipline of psychology.	3.71	3.60	3.72	3.68
Design and develop programmes to nurture the psychological wellbeing of individuals, groups and communities.	3.70	3.72	3.73	3.72
Understand the ethical foundations and principles related to professional and scientific work.	3.70	3.78	3.60	3.84
Carry out psychological diagnoses and assessments using the methods and techniques of psychology.	3.60	3.76	3.57	3.78

Competence	Academics	Employers	Students	Graduates
Work in multi- and interdisciplinary teams towards the production of knowledge and within contexts of professional practice.	3.69	3.76	3.73	3.81
Identify and understand theories explaining human psychological processes.	3.65	3.68	3.69	3.69

The average ratings for all competences were above three for all those interviewed, indicating that they are all considered important. However, a discrepancy was noted between the average ratings in terms of importance and those obtained for achievement, with the latter gaining a lower rating than the rating for importance. Table 15.3 shows the highest average ratings in terms of degree of attainment or achievement.

Table 15.3

Specific competences with highest average ratings for achievement

Competence	Academics	Employers	Students	Graduates
Accept the ethical commitment of psychological practice.	3.14	3.31	3.20	3.25
Understand the transitional stages of a human being throughout a lifetime.	3.06	3.15	3.10	3.17
Respect individual and socio-cultural diversity.	3.04	3.07	3.08	3.07
Understand and explain psychological processes from a bio-psycho-social perspective.	2.99	3.13	3.14	3.14
Understand the ethical foundations and principles related to professional and scientific work.	3.07	3.10	3.10	3.20

Unlike the average ratings in terms of importance, the lowest average ratings for achievement were lower than three, as shown in table15.4.

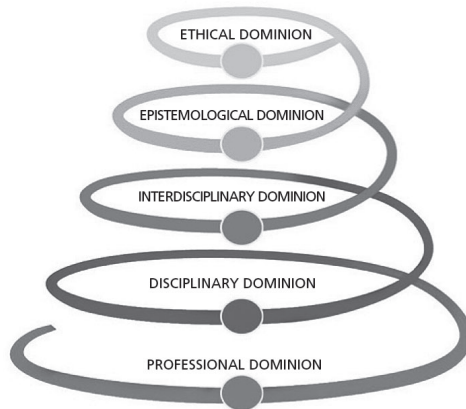
Table 15.4
Specific competences with lowest average ratings for achievement

Competence	Academics	Employers	Students	Graduates
Design psychometric tools in a valid and reliable manner.	2.32	2.55	2.40	2.33
Integrate technological instruments into professional practice.	2.50	2.65	2.34	2.31

In the rankings, all of the groups ranked in first place the competence *Ability to accept the ethical commitment of psychological* and *Ability to understand and intervene appropriately in the psychological problems of human beings, according to their historical, social, cultural and economic context* in second place.

c) *Design of the meta-profile*

The meta-profile was designed based on the analyses carried out by bringing together all the specific competences attached to the area of Psychology, and five domains were defined in the sense of fields of theoretical, practical and theoretical-practical knowledge which the psychologist needs to master and which give direction to their scientific and professional activity. The domains and the competences of which they are made up cannot be considered as watertight compartments, isolated one from the other. On the contrary, the borders of each are permeable, so that the competences and the profile of the psychologist can only be understood as a mutual inter-relationship. For this reason, a spiral design was used to show the interaction between the domains and the specific competences as follows:



■ Ethical dominion

- Respect individual and socio-cultural diversity.
- Understand the ethical foundations and principles related to professional and scientific work.
- Accept the ethical commitment of psychological practice.

■ Epistemological dominion

- Understand the link between scientific knowledge and everyday knowledge.
- Know and understand the epistemological foundations of science.
- Understand the epistemological foundations of psychological theories.

■ Interdisciplinary dominion

- Integrate and make use of knowledge of other disciplines.
- Understand the biological substrate of human psychological processes.
- Work in multi and interdisciplinary teams towards the production of knowledge and within contexts of professional practice.

■ Disciplinary dominion

- Reflect critically on the problems of the discipline of psychology.
- Understand and explain psychological processes from a bio-psycho-social perspective.
- Understand the transitional stages of a human being throughout a lifetime.
- Identify and understand theories explaining human psychological processes.
- Establish relationships between the theory and practice of psychology.

■ Professional dominion

- Carry out scientific research in the field of psychology.
- Carry out psychological diagnoses and assessments using the methods and techniques of psychology.
- Understand and intervene appropriately in the psychological problems of human beings, according to their historical, social, cultural and economic context.
- Mediate and/or negotiate in different aspects of psychological practice.
- Carry out psychological consultancy and guidance.
- Design and develop programmes to nurture the psychological wellbeing of individuals, groups and communities.
- Provide interested parties with the results of professional undertakings in assessment, diagnosis, intervention and research.
- Integrate technological instruments into professional practice.
- Design, carry out and evaluate techniques and strategies for intervention in various fields of activity of psychology.
- Design psychometric tools in a valid and reliable manner.

Figure 15.1
Academic and professional profile for the area of Psychology

2. Comparing the meta-profile

The profile was cross-checked against the graduate and undergraduate degree profiles for Psychology in each of the participant universities from the various countries, and against the national legislation for the education of psychologists in each country, it being found that the profiles for the programmes analysed bring together all the domains defined in the meta-profile designed in the Tuning Latin America project. However, not all of the competences are made explicit to the same degree in the profiles.

The domain which was most developed in the various profiles and a programme reviewed was the professional domain, possibly indicating that professionalization is to some extent prioritised. There is clear evidence of emphasis in the traditional fields of Psychology (clinical, educational, organisational and social psychology) and of the existence of professional practice in most of the academic programmes.

The competences of the professional domain concerning assessment, diagnosis and intervention, appear in most undergraduate profiles, though it is generally accepted that their full development requires participation in postgraduate programmes. There is also clear evidence of the current debate in the region regarding differentiation of teaching and learning processes between undergraduate and postgraduate programmes.

The competences related to the interdisciplinary domain are strongly related to those of the professional and epistemological domains, in the sense that they are mainly geared towards preparation for work with professionals trained in other similar disciplines in labour-related terms. They also, however, include education in scientific work geared to knowledge production.

The difficulty with the contrastive analysis was that the profiles for the different academic programmes and countries are not necessarily formulated in terms of competences like the profile drawn up in the Tuning Latin America project, which makes the contrastive process a complicated one. Moreover, the profiles attached to psychology programmes were not sufficient to carry out the contrastive analysis, as they do not contain all the information about the programme. It was therefore necessary to extend the review to the curricula and syllabuses underpinning the profiles defined.

Meta-profile for Chemistry

Gustavo Pedraza Aboytes et al.¹

1. Definition of the meta-profile

The term “meta-profile” in this work refers to the graduate profile that can be applied to any chemistry syllabus in any Latin American institution. When referring to the “graduate profile”, we are referring to the professional profile of a particular institution’s chemistry programme².

On this basis, the meta-profile in the area of chemistry was defined as: **“the description of a professional graduating from a general chemistry programme in which the generic and specific competences characterising chemistry degrees in the Latin American region are clearly evident”**, taking into account factors such as scientific and economic development and globalisation; generating specialist knowledge with a regional, national and international focus; innovation and competitiveness in teaching, research and the economic and productive sectors; implementing new abilities and capacities based on the new challenges posed by technological advances and the changing environment, all of which

¹ Cristián Blanco Tirado, Gloria Cárdenas Jirón, Juana Chessa de Silber, Ximena Chiriboga Pazmiño, Nadia Gamboa Fuentes, Claudio Gouvêa dos Santos, Lucía Pastore Favotto, Gilberto Piedra Marín and Pedro Rafael Sojo Cardozo.

² Pedraza Aboytes, Gustavo (ed.) (2013). Higher Education in Latin America: reflections and perspectives on Chemistry. University of Deusto Publications, Bilbao.

must be carried out in a sustainable and ethical way, caring for the environment and with clearly defined social values.

The meta-profile for Chemistry was obtained by reviewing the generic and specific competences classified in the first phase of the Tuning Latin America project³.

The generic competences were grouped into four factors associated with the teaching-learning process: learning process, social values, technological and international context, and interpersonal skills, with each factor being grouped together as follows:

- **Factor 1: learning process [knowledge]:** **GC1.** Capacity for abstraction, analysis and synthesis; **GC2.** Ability to learn and keep up-to-date; **GC3.** Critical and self-critical capacity; **GC4.** Ability to search for, process and analyse information; **GC5.** Capacity for oral and written communication.
- **Factor 2: Social values [savoir-faire]:** **GC6.** Commitment to their socio-cultural milieu; **GC7.** Appreciation and respect for diversity and multiculturalism; **GC8.** Social responsibility and citizenship; **GC9.** Commitment to conservation of the environment; **GC10.** Ethical commitment.
- **Factor 3: Technological and International context [know-how]:** **GC11.** Ability to communicate in a second language; **GC12.** Ability to work within international contexts; **GC13.** Skills in the use of ICTs.
- **Factor 4: Interpersonal skills [savoir-faire and know-how]:** **GC14.** Capacity for decision-making; **GC15.** Interpersonal skills; **GC16.** Ability to motivate and steer towards common objectives; **GC17.** Capacity for teamwork; **GC18.** Ability to organise and plan time; **GC19.** Ability to act in new situations.

³ Beneitone et al. (2007). Reflections and perspectives on Higher Education in Latin America. Tuning Latin America Project, 2004-2007. University of Deusto Publications, Bilbao.

Similarly, the specific competences considered for the area of Chemistry were as follows:

SC1. Ability to apply knowledge and understanding of chemistry to solve qualitative and quantitative problems; **SC2.** Ability to understand the fundamental concepts, principles and theories of the area of Chemistry; **SC3.** Ability to interpret and assess data deriving from observations and measurements by relating them to the theory; **SC4.** Ability to acknowledge and analyse problems and plan strategies for their solution; **SC5.** Ability to develop, use and apply analytical techniques; **SC6.** Ability to keep up-to-date with regard to the development of Chemistry; **SC7.** Ability to plan, design and execute research projects; **SC8.** Command of chemical and nomenclatural terminology, conventions and units; **SC9.** Knowledge of the main synthetic routes in Chemistry; **SC10.** Knowledge of other scientific disciplines which enable an understanding to be gained in Chemistry; **SC11.** Ability to monitor, by means of the measurement and observation of chemical properties, events or changes and their systematic and reliable compilation and documentation; **SC12.** Command of Good Laboratory Practice; **SC13.** Ability to act with curiosity, initiative and entrepreneurship; **SC14.** Knowledge, application and advice on the legal framework in the field of Chemistry; **SC15.** Ability to apply knowledge of Chemistry to sustainable development; **SC16.** Understanding the epistemology of science.

Once the generic and specific competences for the area of chemistry had been established, they were grouped together with a view to building the meta-profile. The specific competences to be applied to each of the generic competences were then analysed by building a matrix as shown in table 16.1.

Table 16.1

Correlation matrix between generic competences
and specific competences for the Chemistry degree programme
(GC: Generic competence, SC: Specific competence)

GC/SC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	X	X	X	X	X		X		X	X	X					X
2		X		X	X	X	X	X	X	X	X	X	X			
3			X	X		X	X			X	X	X	X			
4	X	X	X	X	X	X	X	X	X	X	X	X	X			X
5				X			X			X	X		X			
6													X		X	
7													X			
8													X	X	X	
9													X	X	X	
10													X	X	X	
11							X							X		
12							X						X	X	X	
13							X					X	X	X		
14				X			X					X	X			
15							X						X			
16				X			X						X			
17				X			X					X	X			
18				X			X					X	X			
19				X			X					X	X			
FACTOR 1:	LEARNING PROCESS															
FACTOR 2:	SOCIAL VALUES															
FACTOR 3:	TECHNOLOGICAL AND INTERNATIONAL CONTEXT															
FACTOR 4:	INTERPERSONAL SKILLS															

Table 16.2

Map of the meta-profile for the Chemistry degree programme
with greater than 50% correlation

GC/SC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	X	X		X			X			X	X					X
2				X		X	X	X		X	X					
3				X			X			X	X					
4	X	X		X		X	X	X		X	X					X
5				X			X			X	X					
6													X		X	
7													X			
8													X			
9													X			
10													X			
11							X							X		
12							X							X	X	
13							X					X		X		
14							X						X			
15							X						X			
16							X						X			
17							X						X			
18							X						X			
19							X						X			
FACTOR 1:	LEARNING PROCESS															
FACTOR 2:	SOCIAL VALUES															
FACTOR 3:	TECHNOLOGICAL AND INTERNATIONAL CONTEXT															
FACTOR 4:	INTERPERSONAL SKILLS															

100% correlation with factors 1, 3 and 4, and competence SC13 also has a 100% correlation with factors 2 and 4. On the other hand, the competences remaining in the outer circle are the specific competences which do not relate 100% to at least one factor. This map is called the "100% AL meta-profile".

The outcome, according to this exercise, shows that there are specific competences showing a high correlation with the factors taken into consideration when constructing the graduate profile for Chemistry. However, the fact that a specific competence with a 100% correlation with the four factors was not observed led us to think that the construction of an ellipse map allowing a correlation with a different value could be taken into consideration.

A correlation of at least 50% was chosen in a second exercise, i.e. the specific competence analysed is related to at least half of each factor's generic competences. Table 16.2, showing the "50% meta-profile", was obtained from this analysis, in accordance with the same criteria used in the previous case.

This table shows the competences that were 100% related, with the competences which were at least 50% related being added. Thus, for example, competences 3, 5, 9, 12 and 13 are shaded for factor 1, which are added to competences 4, 7, 10 and 11 shown in Table 16.1, and the same was done for the other factors. The "**50% Meta-profile Map**" shown in Figure 16.2 was redrawn using this information, and greater coincidence can be seen between the specific competences and generic competences in this map. It can therefore be deduced that competences SC4 (*Ability to acknowledge and analyse problems and plan strategies to solve them*) and SC12 (*Command of Good Laboratory Practice*) coincide with factors 1 and 4; SC14 (*Knowledge, application and advice relating to the legal framework in the field of Chemistry*) coincides with factors 2 and 3; SC7 (*Ability to plan, design and execute research projects*) coincides with factors 1, 3, and 4; and competence SC13 (*Ability to act with curiosity, initiative and entrepreneurship*) coincides with all four factors. It can be seen from this exercise that specific competences SC1, SC2, SC6, SC8 and SC16 do not coincide in over 50% with the generic competences for any of the four factors.

Based on this outcome, it is clear that the graduate profile in our model syllabus must explicitly contain competence SC13, and that the competences SC4, SC7, SC12 and SC14 must also be taken into consideration. These competences uniquely characterise the

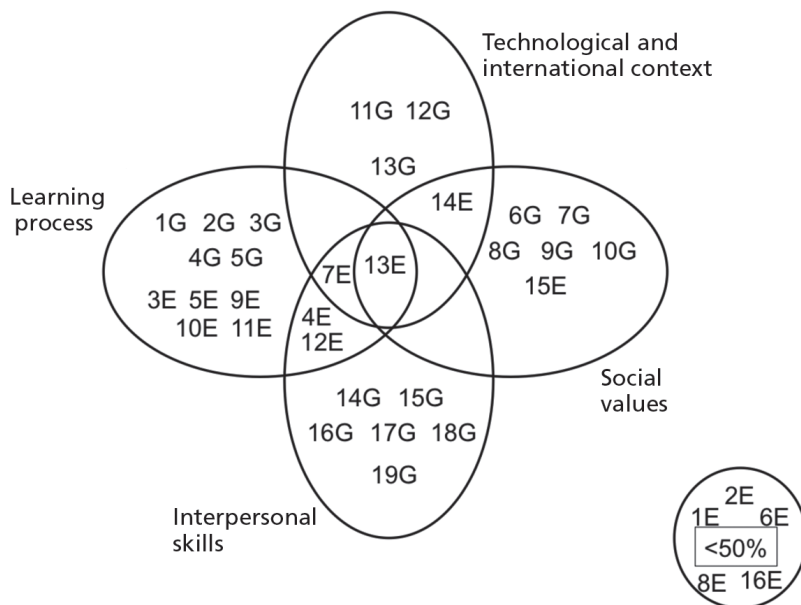


Figure 16.2

Map of the meta-profile for the Chemistry degree programme with over 100% correlation

graduate of this chemistry syllabus model and, taking the established methodology into account, the proposed graduate meta-profile (profile) for a university student in Latin America would be described as follows:

“The graduate of the Chemistry syllabus at a Latin American University is a professional who has the ability to act with curiosity, initiative and entrepreneurship; the ability to acknowledge and analyse problems and plan strategies to solve them; the ability to plan, design and execute research projects and advise businesses within the legal framework of the field of chemistry, and has command of Good Laboratory Practice”.

These exercises show that the correlation between factors and generic and specific competences depends on the emphasis each educational establishment wishes to place on their syllabus. Therefore, the

establishment concerned must decide on the following: the number of factors, the generic and specific competences, the relationship between the competences and the expected degree of correlation between the competences and factors and, without forgetting that the competences remaining outside the ellipse diagram must not be excluded from the student's education, emphasis on the graduate profile is simply stressed on the basis of the outcomes obtained from the methodology. In this way, and with the help of this meta-profile creation model, preparing graduate profiles of professionals in chemistry syllabuses is made easier.

2. Contrasting the meta-profile in Latin America

The meta-profile created enabled the graduate profiles of Latin American universities to be contrasted by construction a correlation matrix for each university. Given that the volume of information is extremely large, it was decided that all the information from the chosen universities should be consolidated in Tables 16.3 and 16.4. Each of the columns corresponds to the institutions whose chemistry syllabuses were taken into account for this analysis⁴.

The bottom of the table shows the percentage of coincidence between the specific and generic competences of each university's syllabuses in each country. The percentage of the generic and specific competences' appearance in the academic programmes at the institutions analysed was calculated in the last column. With regard to the generic competences, it can be seen that not all the programmes include them. In fact, there are some which do not give great importance to these types of competences in their graduate profiles and/or their subject curricula. Regarding the specific competences, it can be seen that all the programmes take a high percentage of these into consideration in their graduate profiles and syllabuses. Those with a percentage of coincidence higher than 90% in the programmes are SC3, SC4 and SC7; SC7 is associated with three factors (learning, technological and international context, and interpersonal skills), SC4 with two factors (learning and interpersonal skills) and SC3 with just one factor (learning). With a percentage of at least 80% appearance, competences SC1S, SC2S, SC5, SC6 and SC9 were added, which relate to the learning factor.

⁴ Pedraza Aboytes, Gustavo (ed.) (2013). Higher Education in Latin America: reflections and perspectives in Chemistry. University of Deusto Publications, Bilbao.

Table 16.3
Correlation matrix of generic competences for several universities in the participant countries

General Competences																																			
N.º	AR								BR			CO				CH				CR		EC				ME				PE			UR	VE	%
Com	BA	UC	UT	NE	RC	FK	T	UI	UN	UA	LA	SC	CC	AF	UR	UE	NM	CH	EM	IT	SM	NI	CHI	CP	RP	CV									
1			X	X			X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	81						
2	X	X		X	X		X	X		X	X	X		X		X	X	X	X			X	X	X	X	X	X	77							
3		X		X	X		X		X		X	X	X	X	X	X	X					X	X	X	X	X	X	73							
4	X	X	X	X	X	X	X	X		X	X		X	X		X	X	X	X		X	X	X	X	X	X	X	85							
5				X	X		X	X	X	X	X	X			X	X	X				X	X	X	X	X	X	X	62							
6		X		X	X		X	X	X	X	X	X		X		X	X	X	X				X	X	X	X	X	69							
7				X	X			X				X	X			X		X	X				X	X	X	X	X	42							
8		X		X	X	X	X	X				X	X	X		X	X					X	X	X	X	X	X	65							
9	X	X	X	X	X	X	X	X	X			X		X	X	X	X	X	X			X	X	X	X	X	X	85							
10					X		X	X			X	X		X	X	X	X					X	X	X	X	X	X	58							
11					X	X	X	X		X	X					X	X	X					X	X	X	X	X	46							
12					X			X		X	X					X	X					X	X	X				38							
13		X			X	X	X	X				X				X	X					X	X	X	X	X		50							
14	X	X	X	X	X	X	X	X	X				X		X	X	X	X	X		X	X	X	X	X	X		73							
15		X			X		X	X	X	X	X	X	X		X	X	X	X	X	X		X	X	X	X	X		65							
16	X	X		X	X			X	X		X	X				X			X	X		X	X	X	X	X		58							
17	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		81							
18					X			X	X	X	X					X		X	X			X	X	X	X	X		46							
19							X	X				X	X	X		X	X	X	X	X		X	X	X	X	X		58							
%	32	58	21	63	99	32	79	100	48	48	68	74	47	53	21	100	84	68	37	2	84	84	100	100	95	58									

Table 16.4
Correlation matrix of specific competences for several universities in the participant countries

N.º	Specific Competences																									
	AR						CO						CH			CR	EC	ME			PE			UR	VE	%
	BA	UC	UT	NE	RC	FK	UN	UA	LA	SC	CC	AF	UR	UE	NM	CH	EM	IT	SM	NI	CH	CP	RP	CV		
1	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X		X	X	X	X	X	X	X	86
2	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X	X	X	X	90
3	X	X	X	X	X	X		X		X	X	X		X		X	X	X	X	X	X	X	X	X	X	86
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	97
5	X	X	X	X	X	X		X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	86
6	X	X	X	X	X	X	X	X		X	X			X	X		X		X	X	X	X	X	X	X	83
7	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	93
8	X	X	X		X	X		X	X	X	X	X		X						X	X	X	X	X	X	76
9	X	X	X		X	X		X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	86
10	X	X	X	X	X	X	X	X	X	X				X	X				X	X	X	X	X	X	X	79
11	X	X	X		X	X	X	X		X	X	X		X	X	X		X	X	X	X	X	X	X	X	83
12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	83
13		X		X	X		X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	76
14	X	X	X		X	X	X	X	X	X		X	X	X	X			X	X	X	X	X	X	X	X	79
15	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	86
16		X		X	X		X	X	X	X				X					X				X	X	X	41
%	88	100	88	75	100	88	75	100	81	100	81	75	31	100	69	56	31	11	88	94	94	94	100	100	100	

It follows from the above that there is acceptable coincidence between the generic and specific competences in the programmes analysed and the competences proposed in this meta-profile model. Nonetheless, it must be stressed that each country needs to carry out a thorough analysis of the most relevant competences and factors in order to create professional profiles in chemistry according to the required specificity and relevance to each region.

Some conclusions

Julia González, Pablo Beneitone and Robert Wagenaar

The study provided here constitutes open-ended, collaborative and also brave work. It is open-ended for different reasons – firstly, because it is a genuine synthesis of a far more extensive contribution that attempted to gather together and put in words the tasks performed by hundreds of academics over years of analysis and collective reflection. It is open-ended because it is by its very nature incomplete and always needs to be updated, reconsidered and redrafted – it is a genuine ongoing, dynamic piece of work. It is also important to highlight the fact that it has been devised as a summary of broader-ranging studies that target professionals from the specific relevant areas in particular, and constitutes a kind of mosaic that attempts to contribute towards an analysis of the concept of meta-profile in the search for the design and development of qualifications.

It is collaborative along the same lines as Tuning. It has been devised by teams of experts from diverse Latin American countries that have brought together views involving design, review and comparison to the extent of reaching agreement that may prove significant for their national contexts and also for the region as a whole. The consequence of this shared learning has been greater passion for and commitment to higher education. Only this can explain the full devotion shown by all participants in the project and the tireless search for relevance and quality - the experience of being in a position to stimulate thought by promoting a sphere of activity in which new ideas emerge and the path to reaching an implementation phase is shared.

It is also brave because it has posed a series of challenges – some have been taken into consideration since the project first got underway and others gradually appeared as the project has taken shape: the challenges involved in obtaining comparable qualifications through transparency that can be recognised, qualifications which to some extent are universal while at the same time face up to regional and national challenges - qualifications that take into consideration the concerns and needs of certain contexts and specific individuals that speak in their accents and are not detached from the local soul, that are varied, colourful and understand and contribute towards global harmony, and are expressed in languages and categories that can be understood at an international level.

When we refer to qualification profiles, we think of the design and, hence, another challenge that emerges is that of combining the art of designing profiles with rigour in terms of their organisation within the programme. Designing a profile goes beyond the present, as it involves envisaging future generations, the resources available to them, and the way in which they can be equipped to deal with tomorrow. Thinking about how future professionals will be able to build new societies is a major milestone for all societies – taking in what has always been of value and paving the way for what is new and emerging. Yet this type of art that we might to a certain extent dream of needs to be combined with the coherence involved in forging paths to enable it to be achieved, and in the ability of those who seek to do so to deliver on their promises.

A further challenge has been to pursue all of this by building bottom-up. Tuning has always been a bottom-up system – a proposal whose strength is confined to fostering the ability to inspire, stimulate and offer different paths. This takes place not through norms but through joint learning, by providing from the participants a range of solutions, the chance to create useful paths with other individuals to help develop higher education. It means the determination to build on the advances made on that upward spiral in terms of a review of the consistency of the changes being made and from where new concepts emerge and become integrated, as expressed by the Business Administration group in their work.

Another challenge has involved searching for areas of convergence and consensus, creating models, trying out what has been articulated and observing how the different areas forge their own paths - their most significant languages. From this inductive work emerged *classifications*,

groups of competences, “clusters”, dimensions, factors, domains, categories, components, key concepts, areas or parameters and macro competences – all of them different ways of explaining the meta-profiles. We have tried to respect these so as to remain close to the language that best expresses the essence of the different disciplines, the categories of which the same groups explain when analysing the processes that have been set in motion.

There are groups who seek a connection via other classifications. Thus, the Specific Competence classification was adopted for the area of Physics, featuring three main categories and two sub-categories, namely: *cognitive, methodological (including instrumental and systemic)* and *labour or social competences*, whilst in the case of the Geology group a classification was defined that is in line with radical outlines of understanding: knowing, doing and being. This outline also appears in the study carried out by the area of Chemistry in which it is summarised in factors that contain these underlying categories, although with some specific details. Chemistry takes four factors into consideration: *the learning process (knowledge), social values (savoir-faire), technological and International context (know-how)* and *interpersonal skills (savoir-faire and know-how)*.

What is expressed by the Civil Engineering group is featured in nearly all of the other areas: *the meta-profile is constructed via intense process of reflection, discussion and consultation with a range of actors until consensus is reached about the dimensions in which both the generic and specific competences should be grouped whilst maintaining close inter-relations*. In all cases, there is a common, diversified process that can be clearly followed, as explained by the Medicine group: 1) *The participants identified the qualification profiles of the most important medical programmes in their country;* 2) *These were compared with the meta-profile designed so far, and in each case it was established whether or not they were congruent, and if not, what elements were different in each country;* 3) *The differential elements were identified which were common to most of the programmes and yet not included in the initial profile;* 4) *Agreement was reached as to which of the differential elements should form part of the revised version of the meta-profile. Lastly, the initial meta-profile was adjusted accordingly.*

Generally speaking, the way in which the process has been carried out to develop the meta-profiles in the different areas leads us to integral concepts such as groups or categories that cover the essence of learning outcomes and guides us towards the designated profiles. They

define the development of competences in broad-ranging areas of the profile by describing it and ensuring that is applicable to different academic and professional contexts. These broad-ranging concepts provide an overview of the key competences in a qualification, enabling there to be greater clarity and identification of the elements attached to a given profile. They facilitate and make the formulation of profiles more specific by focusing on a small number of core themes. They also help to convey the essential concepts of a qualification and are useful documents for reflection by groups who are working on syllabuses.

Throughout the process described in the work carried out on the 15 subject areas, both a balance and tension can be perceived between the common framework asked of a shared, comprehensible language that encourages variety, together with use of the different methodologies in analysing consultation, studies about competences, diversified approaches to the reality of the situation, contrasting methods and the different extents to which some aspects are studied in depth rather than others - which each group chooses to pursue as an expression of the most genuine side of their experience.

One challenge which cannot be ignored is the very creation of the mental construct, and hence the key question posed by the area of Education: *why an Education meta-profile for Latin America?* To which the same group replies: *simply owing to the need to progress towards a shared area for universities while reflecting and planning joint action, respecting institutional autonomy and backed up by a joint and highly-participative construction methodology.* By virtue of the work carried out, the area of Education rounds off its contribution with the statement that *the meta-profile developed is a valid tool for the purpose of reflecting on and generating processes involving curricular transformation and innovation. We therefore consider it to be a valid contribution and could be a useful benchmark in guiding such processes.*

In its first phase (2004-2007), Tuning Latin America had considered some generic competences that were deemed common and unique to the region. In the course of the intense and enriching reflection that was pursued for consultation purposes, some competences emerged that no other region deemed necessary to develop. One of these was the *Social commitment* competence. This is a sign of the rigour and coherence with which experts from Tuning Latin America have carried out their work in ascertaining the undeniable social outlook of their understanding of meta-profiles, from where the qualifications

themselves derive. This challenge was overcome by combining a concern with awareness about and commitment to the region to which they belong and of the *Weltanschauung* they share.

By way of an affirmation of the commitment to the social milieu, we can refer to the contribution made by the area of Agronomy, in which it is mentioned that *each participant from the area of Agronomy expressed interest in and a commitment to improving and analysing the tasks performed by their university, faculty and degree programme, taking into account the importance placed on the education of professionals who are responsible for aspects such as food safety, sustainability of renewable natural resources and the environment.* The area of Computer Science also considered that *Latin American computer science professionals contribute to the development of society and the organisations in which they participate with the abilities and skills their expertise in computers, information technologies, systems and organisations bestows on them, together with comprehensive education based on professional ethics, social responsibility and commitment to quality.* To this view of commitment to the social milieu can be added the contribution made by the History group, in which it is explained that *to create the Latin American higher education area, history contributes to the construction of a society based on citizenship values and respectful of cultural.* Along the same lines, it can also be mentioned what is offered to society by the area of Nursing, *with care and quality of life within the demographic, epidemiological, cultural, political and economic context facing Latin America in a globalised, interdependent and highly-technological world.*

Reflection about meta-profiles leads to a significant analysis in the most profound sense of what is meant by degree programmes or the social contribution they entail, and whereby they need to be particularly coherent. This is the case with the area of Law, in which it is acknowledged that *an attempt is made to offer a vision of the future, an education on a cognitive level in terms of procedures and values of a graduate who is going to become integrated within the context of their professional demands on the Latin American continent. A greater relevance of legal education also constitutes a way of strengthening this vision, in particular in terms of the effective democratisation of Latin America.*

The attempt to contrast the meta-profile with what effectively takes place at each of the educational establishments taking part in the

project revealed how much headway still needs to be made. This has meant, in other cases such as Architecture, an enriching of the concept of profile and of the framework of competences, in addition to a new revolutionary discovery of how they are articulated. The area of Architecture draws the conclusion that *the purpose of the project was to try and establish a meta-profile for the Latin American architect - not a real profile in terms of uniqueness, but rather, a profile of reference and convergence in the form of a theoretical construct*. Thus, it was possible in this area to establish ten meta-competences that, within their definitions, bring together both the specific and generic competences that had been initially formulated. It was also understood that a meta-competence was essential and that it identified the architect and ensured that they differed from other professions. On a peripheral level, the other nine complementary meta-competences that had been defined lend support to consolidation and education in students – and evidence in professionals – of the core meta-profile that had been drafted. These are referred to as satellite or peripheral competences, which enable the different emphases of programmes to be defined, guide the different emphasis placed on the discipline-specific performance of architects and establish both academic and professional specialisation routes.

Agreeing to provide an image and outline to the specifying of how the meta-competences would be articulated proved to be no less a challenge. There are examples that truly express a wide variety of concepts. We could compare on the one hand the geometric image of the profile of the future mathematician that breaks the mould with all those previously established, owing to its boldness and the fact that it constitutes a genuine road map and, on the other, the spiral of domains in Psychology which, from an ethical, broader and even all-encompassing standpoint, continue making headway in areas that always remain open and are repeated without halting the onward and upward march forward.

Lastly, we believe that this book rises to an essential challenge faced by all individuals, but even more so by all professionals who, being aware of their responsibility for devising and designing future generations, accept the challenge of envisaging and insisting on analysing the present whilst dreaming of the future via joint, generous work – in which their own ideas take root when they are criticized, intertwined and merged with those of other people who also wish to build the future.

List of contacts for the 15 coordinators of the Tuning Latin America subject areas

ADMINISTRATION César Esquetini Universidad Tecnológica Equinoccial Ecuador cesqueti@innovateq.net	AGRONOMY Jovita Antonieta Miranda Barrios Universidad de San Carlos de Guatemala Guatemala jovitaantonietamiranda@gmail.com
ARCHITECTURE Samuel Ricardo Vélez González Universidad Pontificia Bolivariana Colombia samuel.velez@upb.edu.co	LAW Loussia Penha Musse Felix Universidade de Brasilia Brasil loussia.felix@gmail.com
EDUCATION Ana María del Pilar Montaña López Universidad Núr Bolivia amontano@nur.edu	NURSING Luz Angélica Muñoz González Universidad Andrés Bello Chile lmunoz@unab.cl

PHYSICS Armando Fernández Guillermet Universidad Nacional de Cuyo Argentina afg@cab.cnea.gov.ar	GEOLOGY Iván Soto Espinoza Universidad Católica del Norte Chile isoto@ucn.cl
HISTORY Darío Campos Rodríguez Universidad Nacional de Colombia Colombia dcamposro@unal.edu.co	COMPUTER SCIENCE José Lino Contreras Véliz Universidad Técnica Federico Sta. María Chile jose.contreras@usm.cl
CIVIL ENGINEERING Alba Maritza Guerrero Spinola de Lopez Universidad de San Carlos de Guatemala Guatemala aguerrero@ing.usac.edu.gt	MATHEMATICS María José Arroyo Paniagua Universidad Autónoma Metropolitana México mja@xanum.uam.mx
MEDICINE Christel Hanne Altermatt Universidad de Chile Chile channe@uchile.cl	PSYCHOLOGY Diego Rodríguez Cárdenas Universidad de la Sabana Colombia diego.rodriguez3@unisabana.edu.co
CHEMISTRY Gustavo Pedraza Aboytes Universidad Autónoma de Querétaro México peag@uaq.edu.mx	

For further information about Tuning

General coordinators of Tuning	
Julia González juliamaria.gonzalez@deusto.es	Robert Wagenaar r.wagenaar@rug.nl

Pablo Beneitone (Director)

International Tuning Academy
Universidad de Deusto
Avda. de las Universidades, 24
48007 Bilbao
Tel. +34 94 413 9467
Spain
pablo.beneitone@deusto.es

Co-financed by

