T**ning** Journal
for Higher Education

Policy and
implementation:
actions for
curriculum reform

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Tuning Journal for Higher Education (TJHE)

Policy and implementation: actions for curriculum reform

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Editorial

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Paul D. Ryan

Editor

Welcome to Volume 2, Issue Nº·1 of the Tuning Journal for Higher Education entitled *Policy and implementation: actions for curriculum reform*. This issue aims to address some of those aspects of policy and its implementation that affect the ongoing global reform of higher education. The need for such policies is clearly stated in the opening sentence of the OECD 'Education at a Glance 2014' report: "Governments are increasingly looking to international comparisons of education opportunities and outcomes as they develop policies to enhance individuals' social and economic prospects, provide incentives for greater efficiency in schooling, and help to mobilise resources to meet rising demands."[1] This report shows that 40% of the population of surveyed countries have undertaken some form of tertiary education. However, the proportion is lowest amongst older members of society. Student mobility is increasing from about 0.8 million in 1975 to about 4.5 million in 2012, especially in the area of higher degrees and research. 12.9% of national public expenditure is on education, with about one quarter of that sum being spent on higher education.

Higher education cannot be reformed by governments acting in isolation. In many cases these policies must operate over a longer timescale than the life of a given administration. Policies must be developed by all stakeholders at all levels ranging from intergovernmental agreements to decisions taken by the director of an individual module. It is probable that the most influential such policy statement was the Bologna Declaration (1999),[2] initially signed by 31 European jurisdictions. This commitment to harmonise policies to enable the development of the European Higher Education Area took just 970 words. The effects of this Declaration and the

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[1] Organisation for Economic Co-operation and Development (OECD), *Education at a Glance 2014: OECD Indicators* (Paris: OECD Publishing, 2014), 3, http://dx.doi.org/10.1787/eag-2014-en.

[2] "The Bologna Declaration of the 19th June 1999, a Joint declaration of the European Ministers of Education," http://www.ehea.info/Uploads/about/BOLOGNA_DECLARATION1.pdf.

changes it promoted and promotes in the higher education area are now being felt in over 100 countries.

This issue tries to address some of these topics. Van der Hijden reviews European policies designed to develop educational 'markets' at international level. New initiatives such as the European Student Loan Guarantee Facility and the European Charter for Researchers will drive change by promoting educational and research activities and by improving quality, mobility and co-operation. In particular, he highlights the pivotal future role of doctoral training. Isaacs shows how the perceived benefits of creating transnational areas of higher education in Central Asia can drive partners to try to overcome long and proud traditions of culture and history. Lennon gives an account of the actions amongst the thirteen jurisdictions in Canada, but most notably Ontario, in trying to develop a common understanding and implementation of competence-based higher education. Although Isaacs and Lennon describe processes at federal, governmental and inter-governmental levels, I suspect the ongoing debate they report will resonate with those engaged in such negotiations at sector or even programme level. Vargas argues that lifelong learning principles must be incorporated into higher education policies. This should not only make higher education more inclusive but will address the 'generation gap' where a lower proportion of the older population have third level training.

Policy cannot be formed in a vacuum. It requires research. Higher education policy cannot be isolated from those directing secondary or primary education. If we have competence-based education only at third level, students will find the transition from second to third level confusing. De Prada and González report on a research programme applying a methodology developed during the Tuning Higher Education in Europe programme[3] to mathematics education for 11 to 14 year olds in Spain. They report not only an increase in performance, but involvement of the teachers in promoting competence-based education.

The final three articles deal with the various stages of policy implementation. Ssentamu describes the development of teacher training standards in East Africa over fifty years, which has resulted in their standardisation and harmonisation at regional level. This review argues that the structure and organisation of the programmes for teach education have evolved in response to the post-independence cultural landscape. Sackey,

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[3] Julia González and Robert Wagenaar, eds., *Tuning Higher Education Structures in Europe. Reference Points for the Design and Delivery of Degree Programmes in Education* (Bilbao: University of Deusto, 2009), http://www.deusto-publicaciones.es/deusto/pdfs/tuning/tuning18.pdf.

Venkata, Chinyama, Onana, Danwe, Megahed, Delpouve, Chama, Mahomed, Kayibanda, Yakasham, and Müller report on a study within the Tuning Africa project whose aim is to reform Mechanical Engineering higher education in Africa to make it more responsive to that continent's developmental needs. Such cooperation to develop agreed standards is essential to the formulation of good policy. The final article shows how methodologies and policies developed as a result of the international Tuning Latin America project can be applied at programme level. Dias, Fernández, Rubau, and Tovar Toulouse report a case study identifying the competencies required to develop research skills as part of the undergraduate programme in Chemistry. It could be argued that much of the fabric of modern society stems from the competence 'Research Skills in Chemistry'.

The Editorial Board welcomes submission of articles that fall within the compass of this Journal (see www.tuningjournal.org) and in particular articles that would be relevant to the theme of our next issue, Volume 2, Issue Nᵒ· 2, 'The Student Learning Experience'.

Articles

Modernising higher education:
the emergence of European public goods

Peter van der Hijden

Abstract: Universities cater mainly for national audiences. But the days of splendid isolation are over. Students, graduates, faculty and staff vote with their feet. Institutions and system are, increasingly, involved in processes of regionalisation and globalisation. This article describes how a number of European initiatives are transforming the way universities operate in education, research and management. Incentives for change range from earmarked funding to projects grants and loans, from voluntary networking and benchmarking to quality audits and rankings. These instruments for change have become part of the fabric of university life, often consolidated in institutional strategies and national legislation. They are emerging as 'European public goods'. This article highlights a number of these initiatives in the various categories and points at their impact on university practice.

Keywords: European Higher Education Area; Bologna Process; European Research Area; EU Modernisation Agenda for Higher Education; Erasmus+; Horizon 2020; Human Resources Strategies; Doctoral Training.

I. Introduction

Universities are teaching, doing research and fostering innovation. They are contributing substantially to the well-being of their region and country, but not only that. Ideas born at universities can resonate throughout the world. Alumni can find places to study and work at home and abroad. From an EU perspective, universities are helping to build the 'Innovation Union' and reach the aims of the 'Europe 2020 strategy for smart, sustainable and inclusive growth'.[1] The new Commission, started 1 November 2014, will develop its own plans, but will, no doubt, build on these overall strategies.

The EU Modernisation agenda for higher education was laid down in a series of Commission Communications, Expert Groups, Council Conclusions and Resolutions in 2005, 2006, 2007, and 2011.[2] The EU is an important

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[1] European Commission, "Europe 2020," http://ec.europa.eu/europe2020/index_en.htm.

[2] "Communication from the Commission of 20 April 2005 — Mobilising the brainpower of Europe: enabling universities to make their full contribution to the Lisbon

source of funding for universities through programmes like Erasmus+ and Horizon 2020, the European Investment Bank (EIB) and the European Structural and Investment Funds (ESIF).

This paper points at a number initiatives taken at European level in order to stimulate universities to modernise the way they operate in education, research, knowledge transfer and governance. Special attention is given to human resources management and doctoral training. Initiatives with the potential to trigger substantial change in the landscape of European higher education or research are considered 'European Public Goods'.[3]

II. **Modernising higher Education — Bologna Process — Erasmus+**

Universities have been challenged to rethink the way they operate by a number of European initiatives. The most well known and influential is the Bologna process; the most comprehensive is the EU Modernisation agenda for higher education.

The Bologna process requires the introduction of three cycles (bachelor, master, doctorate) with distinct durations and characteristics. Bologna is also about quality, transparency (ECTS credits, Diploma Supplement), student-centred learning, employability, competitiveness, mobility, European dimension (double and joint degrees), connecting education and research (notably doctoral training), social dimension (widening access) and international dimension (attractiveness, capacity building, science diplomacy).

Strategy [COM(2005) 0152 final]," http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52005DC0152. Informal meeting of the European Council at Hampton Court in October 2005 and Council Resolution of 15 November 2005. Expert Group "Creating an Innovative Europe," chaired by Mr Aho, European Commission, January 2006. Conclusions 1 777/06 of 24 March 2006 European Council. "Delivering on the modernisation agenda for universities, education, research and innovation [COM (2006) 208 final of 10 May 2006]." Council Resolution on modernising universities for Europe's competitiveness in a global knowledge economy of 23 November 2007. 16096/1/07REV 1 "Supporting growth and jobs — an agenda for the modernisation of Europe's higher education systems [COM(2011) 567 final of 20 September 2011]." Council conclusions on the modernisation of higher education of 28 and 29 November 2011.

[3] Public good in the general sense: "a shorthand signal for shared benefit at a societal level." Kevin Morrell, "Governance and the public good," *Public Administration* 87, no. 3 (2009): 543, doi: 10.1111/j.1467-9299.2009.01756.x.

**The EU Modernisation agenda for higher education** _has embraced the Bologna action lines and has put its own emphasis on good governance (balancing autonomy and accountability), appropriate funding (balancing public and private money), widening access (balancing excellence and equity), lifelong learning and educational innovation (Open Educational Resources, including MOOCs).[4]_

Countries have defined National Qualifications Frameworks (NQFs), which describe the various levels of education and training, including the three levels of higher education, in terms of 'learning outcomes' or 'competences': what graduates know and can do. These definitions should fit the references laid down in Bologna- and EU Qualifications' Frameworks (EQF).[5] Academics gathered in the 'Tuning' project have translated these general statements into subject-specific profiles, which can be used for re-writing curricula together with stakeholders.[6]

The Erasmus+ programme (2014-2020) offers many opportunities to engage in activities, which could help to modernise universities and bring their ambitions in line with the Bologna process and the EU Modernisation agenda for higher education.[7] One new initiative merits special attention: the European student loan guarantee facility.

1. *European student loan guarantee facility*

Erasmus+ Master degree loans will allow students to apply for support for their master's studies abroad. Loans will be offered by participating banks and student loan agencies on favourable conditions to mobile students, including, better than market interest rates and up to two years to allow graduates to get into a job before beginning repayment. The loan scheme will be established in cooperation with the European Investment Bank Group and

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[4] Massive Open Online Courses.

[5] "Qualifications Frameworks in the EHEA," http://www.ehea.info/article-details.aspx?ArticleId=65; "RECOMMENDATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning (Text with EEA relevance) (2008/C 111/01)," http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008H0506(01)&from=EN.

[6] "Tuning Educational Structures in Europe [and elsewhere]," http://www.unideusto.org/tuningeu.

[7] European Commission, "ERASMUS +," http://ec.europa.eu/programmes/erasmus-plus/index_en.htm.

will be gradually rolled out across the programme countries over the first few years of the programme.[8]

This new facility will operate at the heart of the Bologna process. Too few universities have interiorised the principal distinction between the bachelor and master programmes, including the option for the student to 'opt out' after the bachelor and go and work or study in another field, at another institution at home or abroad. The question *"should I stay or should I go?"* is a very existential one, existential for the student, starting a new life, and existential for the university, which may run empty, unless it offers attractive masters to incoming students. Information on study programmes is increasingly available through English language online course catalogues and national and international portals.[9] Quality of provision is made public through national and international comparisons and rankings, notably the new U-Multirank.[10] A systematic international comparison of higher education learning outcomes at institutional level would provide much needed insights into educational performances, which are currently lacking.[11]

So far only small percentages of students have opted out after the bachelor. In some fields of study, like engineering, law and medicine, they are even actively encouraged to stay. The number of students leaving after the bachelor will, however, steadily increase and this is a silent revolution for the continental European higher education systems. The European student loan guarantee facility will support and accelerate this trend. It will have an impact on actions universities will take in the areas of curriculum development, recruitment, student selection, mentoring, student services, career services etc. On a different scale, the European student loan guarantee facility will be a kind of *G.I. Bill of Rights,* which provided grants to returning veterans and thus triggered important developments in post war US higher education.[12]

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[8] European Commission, "EDUCATION AND TRAINING. Supporting education and training in Europe and beyond," http://ec.europa.eu/education/opportunities/higher-education/masters-loans_en.htm.

[9] Notaby "StudyPortals," http://www.studyportals.eu/.

[10] "U-Multirank," http://www.u-portal.org/u-multirank.

[11] See the attempt through the OECD project Assessment of Higher Education Learning Outcomes (AHELO): "Testing student and university performance globally: OECD's AHELO," http://www.oecd.org/edu/skills-beyond-school/testingstudentanduniversityperformance-globallyoecdsahelo.htm.

[12] Michael J. Bennett, *When Dreams Came True: The GI Bill and the Making of Modern America* (Dulles, VA: Potomac Books Inc., 1999).

III. **Modernising Research and Innovation — European Research Area (ERA) — Horizon 2020 — EIB and ESIF**

Universities are key players in research and innovation. They train the next generation of researchers and innovators and they help to find solutions for societal challenges such as climate change, healthy ageing and building innovative and inclusive societies. EU policies and programmes provide guidance and incentives. The main EU policy goal for research remains to establish the European Research Area (ERA) *"in which researchers, scientific knowledge and technology circulate freely"* (art 179 of the EU Treaty).[13] The ERA reform agenda consists of five big priorities:

- *More effective national research systems;*
- *Optimal transnational co-operation and competition (on common research agendas, grand challenges and infrastructures);*
- *An open labour market for researchers (open recruitment, access and portability of grants, mobility information, innovative doctoral training, careers and HR strategies in line with Charter & Code, mobility between industry and academia, recognition, social security, pensions, visas);*
- *Gender equality and gender mainstreaming in research (encouraging gender diversity to foster science excellence and relevance);* and
- *Optimal circulation and transfer of scientific knowledge (to guarantee access to and uptake of knowledge by all).*

Horizon 2020 (2014-2020) is one of the world's largest framework programmes for research and innovation.[14] The programme contains a wealth of opportunities for individuals with bright ideas (Marie Sklodowska-Curie Actions, European Research Council/ERC), companies (new SME instrument, access to risk finance, etc.) and transnational teams of researchers (addressing societal challenges together). The Knowledge and Innovation Communities (KIC) of the European Institute for Innovation and Technology (EIT) combine education, research and innovation. The European Investment Bank (EIB) has Innovation and Skills as one of its four priority areas[15] and guarantees, for example, the funding of the new European student loan guarantee facility.

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[13] European Commission, "European Research Area," http://ec.europa.eu/research/era/eraprogress_en.htm.

[14] European Commission, "HORIZON 2020. The EU Framework Programme for Research and Innovation," http://ec.europa.eu/programmes/horizon2020/.

[15] European Investment Bank, http://www.eib.europa.eu/projects/priorities/innovation/index.htm.

The European Structural and Investment Funds (ESIF) were designed to help less developed and transition regions catch up. In the new funding period, 2014-2020, the focus is on education (skills) innovation, research and development. Each country/region has adopted a Smart Specialisation Strategy, signed an Agreement with the European Commission and adopted a Work Programme. ESIF funding can be combined with funding from other EU programmes like, Erasmus+ and Horizon 2020. ESIF is supporting, for example, the upgrading of university campuses.[16] Of particularly importance in the European research landscape is the European Research Council, part of the Horizon 2020 excellence pillar.

1. *European Research Council*

Grants from the European Research Council (ERC) are awarded through open competition to thousands of projects headed by starting and established researchers, irrespective of their origins, who are working or moving to work in Europe. The ERC's mission is to support investigator-driven frontier research across all fields, on the basis of scientific excellence as the sole criterion. The aim is to recognise the best ideas, and confer status and visibility on the best brains in Europe, while also attracting talent from abroad. Being 'investigator-driven', or 'bottom-up', in nature, the ERC approach allows researchers to identify new opportunities and directions in any field of research, rather than being led by priorities set by politicians. This ensures that funds are channelled into new and promising areas of research with a greater degree of flexibility.[17]

ERC grants are portable. Grant holders can move with their grant to another European research location of their choice. The mere existence of a scheme like ERC stimulates universities to rethink the research environment they offer to current and future staff.

IV. **Modernising human resources management**

The European Commission has taken several initiatives to improve the career and mobility of researchers laid down in Communications and Council

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[16] For inspiration see: http://managingtheuniversitycampus.nl.

[17] European Research Council, "Mission," http://erc.europa.eu/about-erc/mission.

Recommendations and Conclusions.[18] Thousands of jobs and fellowships, funded from various public and private sources are made accessible through EURAXESS Jobs. EURAXESS Services centres are spread out across the wider Europe with Links offices in other continents as well.[19] The Scientific Visa Directive is under review in order to reduce the red tape for incoming third-country nationals wishing to stay in Europe for the purposes of research, studies, pupil exchange, remunerated and unremunerated training, voluntary service and au pairing.[20] Two initiatives of particular significance are highlighted below, the Human Resources Strategy for Researchers and the Pan- European Pension Fund for Researchers.

1. *Human Resources Strategies for Researchers*

The European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers are sets of principles and requirements, which specify the roles, responsibilities and entitlements of researchers as well as of employers and/or funders of researchers (Charter & Code).[21] 1200 organisations from 37 countries have endorsed the Charter & Code. More than 300 universities, research institutes and funders are currently participating in a peer review exercise based on the Charter & Code. So far, close to 200 'HR Excellence in Research' logos have been awarded to acknowledge their efforts.[22] The Human Resources Strategy for Researchers consists of five steps:

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[18] European Commission's Communication "Researchers in the European Research Area: One Profession, Multiple Careers [COM(2003) 436 final of July 2003, Brussels]," http://ec.europa.eu/research/fp6/mariecurie-actions/pdf/careercommunication_en.pdf . European Commission's Communication "Better careers and more mobility: a European partnership for Researchers" [COM(2008)317 final of 23.5.2008]," http://ec.europa.eu/euraxess/pdf/research_policies/comm_pdf_com_2008_0317_f_en_communication.pdf. Council Conclusions on Communication "Better careers and more mobility: a European partnership for Researchers," 26 September 2008. Council Conclusions on "A Reinforced European Research Area Partnership for Excellence and Growth," 11 December 2012, http://ec.europa.eu/euraxess/pdf/research_policies/era-communication_en.pdf . Council Conclusions of European research area Progress Report 2014, 5 December 2014.

[19] European Commission, "EURAXESS –Researchers in Motion," http://ec.europa.eu/euraxess/.

[20] European Commission, http://ec.europa.eu/dgs/home-affairs/e-library/documents/policies/immigration/study-or- training/docs/students_and_researchers_proposal_com_2013_15 l_en.pdf.

[21] European Commission, "The Human Resources Strategies for Researchers (HRS4R)," http://ec.europa.eu/euraxess/index.cfm/rights/strategy4Researcher.

[22] European Commission, "The Human Resources Strategies for Researchers (HRS4R)," http://ec.europa.eu/euraxess/index.cfm/rights/strategy4Researcher.

1. *An internal analysis by the participating research institution or funding organisation, involving all key players, to compare policies and practices against the Charter & Code principles;*

2. *On the basis of the results of this analysis, the participating institution or organisation develops its own HR strategy for researchers, which should include a concrete action plan. This document is made public;*

3. *The analysis and action plan are then reviewed and acknowledged by the European Commission. The acknowledgement implies the right to use the 'HR Excellence in Research' logo;*

4. *Progress in the implementation of the strategy and action plan is subjected to a self- assessment after 2 years;* and

5. *An external evaluation is carried out at least every 4 years.*

The Charter & Code are gaining momentum. An Expert Group is examining ways to strengthen step 5, external assessment, of the Human Resources Strategy, whereas the new Horizon 2020 Model Grant Agreement states in Art 32 that *"The beneficiary must take all measures to implement the principles set out in the Commission Recommendation on the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers".[23]*

2. *A Pan-European Pension Fund for Researchers*

The mobility of researchers is a driver of excellence in research. However, researchers face many difficulties in preserving their supplementary pension benefits when moving between different countries. To overcome this problem, the European Commission is supporting a consortium of employers, through Horizon 2020, in creating a single European pension arrangement (RESAVER) that will offer a defined contribution plan, tailor-made for research organisations and their employees.[24] RESAVER will enable mobile and non-mobile employees, within a growing network of employers, to remain affiliated to the same pension vehicle when moving between different countries and changing jobs. This will make Europe a more attractive place

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[23] http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf

[24] European Commission, "RESAVER — A Pan-European Pension Fund," http://ec.europa.eu/euraxess/index.cfm/rights/resaver.

to do research, both for EU national and incoming talent. It will also encourage more cooperation between existing national pension funds in the interest of a wider range of mobile citizens.[25]

V. **A pivotal role for doctoral training**

Doctoral degree holders are crucial to the knowledge society. Their critical minds and innovative competences are highly valued by employers. Some become professors, researchers or teachers. Most fullfil important positions outside academia. The EU will need at least an estimated one million new research jobs in order to increase the research intensity of our economies and reach the R&D target of 3% of GDP spending.[26] Universities are changing the way they train doctoral candidates. Inspiration is drawn from the Salzburg Principles and Recommendations of EUA[27] and the related EU Principles for Innovative Doctoral training.[28] The EU Principles refer to:

1. *Research Excellence;*
2. *Attractive Institutional Environment (in line with the Charter and Code);*
3. *Interdisciplinary Research Options:*
4. *Exposure to industry and other relevant employment sectors;*
5. *International networking;*
6. *Transferable skills training;*and
7. *Quality Assurance.*

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[25] See for example Barbara Ottawa, "Germany's VBL launches pension tracker platform for researchers," http://www.findyourpension.eu/portals/vblmaps/story_docs/News/IPE_Interview.pdf.

[26] According to recent estimates, achieving the target of spending 3% of EU GDP on R&D by 2020 could create 3.7 million jobs and increase annual GDP by close to EUR 800 billion by 2025. This estimate does not include the additional need for researchers to replace those leaving their employment for retirement. Commission Communication Europe 2020 Flagship Initiative Innovation Union COM(2010) 546 final of 6 October 2010 and Researchers Report 2014, European Commission DG Research and Innovation.

[27] European University Association (EUA), "Salzburg II Recommendations: European universities' achievements since 2005 in implementing the Salzburg Principles," http://www.eua.be/Libraries/Publications_homepage_list/Salzburg_II_Recommendations.sflb.ashx.

[28] European Commission, "Principles for Innovative Doctoral Training," http://ec.europa.eu/euraxess/pdf/research_policies/Principles_for_Innovative_Doctoral_Training.pdf, endorsed by the EU Council of Ministers in November 2011.

The Salzburg Principles refer to the following:

i)   *The core component of doctoral training is the advancement of knowledge through original research;*

ii) *Embedding in institutional strategies and policies;*

iii) *The importance of diversity;*

iv) *Doctoral candidates as early stage researchers;*

v)   *The crucial role of supervision and assessment;*

vi) *Achieving critical mass;*

vii) *Duration;*

viii) *The promotion of innovative structures;*

ix) *Increasing mobility;* and

x)   *Ensuring appropriate funding*.

Doctorates in Europe, brought in line with these two sets of principles, acquire certain characteristics, which can make them attractive, also because European doctorates have relatively short completion times as compared to doctorates in other world regions. Both the EU and Bologna Ministers of Education and Research have expressed their support for these principles.[29] The EU Ministers have even invited Member States to *"link, where relevant and appropriate, national funding for doctoral programmes to the Principles for Innovative Doctoral Training"*.

Hundreds of thousands of doctoral candidates are supported, directly or indirectly, through EU programmes, which refer to these principles. Erasmus+ supports the mobility of doctoral candidates as third cycle students. Horizon 2020 provides grants for doctoral candidates under the Marie Sklodowska-Curie Actions (MSCA). Doctoral candidates also benefit, as team members, from other Horizon 2020 grants (ERC, Societal Challenges). Other programmes for doctoral candidates are set up and funded locally and nationally, often with support of MSCA COFUND and the European Structural and Investment Funds (ESIF).

The aim is to embed doctorates in Europe in a qualitative framework, which, inevitably, will be implemented in many varieties across Europe. Some doctorates will put emphasis on collaboration with industry and other

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[29] Council of the European Union, "Council Conclusions on the modernisation of education," http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/educ/126375.pdf. "Making the Most of Our Potential: Consolidating the European Higher Education Area Bucharest Communiqué. FINAL VERSION," http://www.ehea.info/Uploads/%281%29/Bucharest%20Communique%202012%281%29.pdf.

employment sectors. Other doctorates will put an emphasis on cross border cooperation of universities, sometimes being called "European doctorates". Some doctorates will put an emphasis on interdisciplinary research. They are all encouraged to offer research excellence, an attractive institutional environment and internal quality assurance as core elements.[30]

Universities in Europe have taken up this challenge and are reforming their doctoral programmes on an unprecedented scale. They help each other through their networks, notable EUA with its Council for Doctoral Training (CDE).[31] Smaller networks like Coimbra, LERU and UNICA are also active in this field. A communication strategy will be developed to promote the advantage of "doing your doctorate in Europe" and this should, in my view, become a prominent topic for the Bologna Ministerial Conference in May 2015 in Yerevan, Armenia.

VI. **Concluding remarks**

Universities play a central role in the development of their country. They produce and process knowledge and transmit this knowledge to the next generation, to the economy and to society at large. Universities need to take action in order to become even more successful players at local, regional, national, European and international level. Actions include modernisation in education, research and innovation. Special attention should be given to human resources management and doctoral training. European initiatives can act as a catalyst. Some are emerging as 'European Public Goods' as is illustrated in this article, notably the European student loan guarantee facility, the European Research Council and the European Pension Fund for Researchers.

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[30] "Report of the ERA Steering Group Human Resources and Mobility (ERA SGHRM)," http://ec.europa.eu/euraxess/pdf/research_policies/SGHRM_IDTP_Report_Final.pdf.

[31] EUA Council for Doctoral Education (EUA-CDE), http://www.eua.be/cde/Home.aspx.

Building a Higher Education Area in Central Asia: challenges and prospects

Ann Katherine Isaacs

Abstract: In recent years, for a variety of reasons, higher education has begun to be considered much more frequently than previously in terms of 'regions', or 'macro-regions'. Although for decades countries sharing some characteristics, or perceived as geographically or culturally closely related to each other, have promoted forms of cooperation between their higher education institutions (with varying degrees of success), it is now widely accepted that to 'count' on the world stage, it is useful for single countries, and especially for smaller countries, to work together with a view to making their systems better able to interact and hopefully to promote, increase and make visible their merits. Of course, in higher education as in many other fields, the regions or macro-regions are not defined once and for all, but are the result of stronger or weaker ad hoc groupings which take into account different factors in different contexts. Central Asia is one such potential region: it does not have unquestioned boundaries, but like other macro-regions, and more so than most, it can be understood and constructed in different ways. A current shared understanding of 'Central Asia' is that it is formed by the 4 ex-Soviet Republics of Central Asia (Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan), plus Kazakhstan. Over the last decade the possibility of building a Higher Education Area in those five republics has been explored, and a large-scale project which uses Tuning methodology to this end is under way. This project, called TuCAHEA ("Towards a Central Asian Higher Education Area: Tuning Structures and Building Quality Culture"), has already elaborated a Central Asian list of Generic Competences and eight Subject Area Groups have formulated their Reference Points and Guidelines. The five Ministries of the five countries have signed a Communiqué indicating their intention to collaborate more closely; a pilot student mobility scheme is soon to start. This article explores the Central Asian experience as an example of the construction of a Higher Education area in Asia, and looks at what the future appears to promise, in terms both of challenges and of positive developments.

Keywords: Tuning Process; Central Asian higher education area; Tempus projects; higher education regions; international cooperation.

I. Introduction

Efforts at improving education through international cooperation are hardly new. Between the World Wars, in the hopeful times of the League of

Nations, Europe gave birth to the International Committee on Intellectual Cooperation and the International Bureau of Education,[1] ancestors or predecessors of UNESCO. UNESCO itself was founded in the aftermath of the Second World War, again with the hope of improving education as a major tool for preventing war; it encouraged cooperation and recognition agreements in world regions, and several of these were signed especially in the 1970s and 1980s (by Latin America and the Caribbean, Africa, Mediterranean and Arab states, as well as in Europe).[2] Such initiatives represented expressions of good will, and hopes for the future, but as we are well aware today, they were timid and uncertain beginnings with respect to the requirements of higher education in the 21st century.

The hope for peace and well-being of the world's peoples continues to bring to the fore the need for cooperation in higher education, and the possibilities for students and academic staff to be mobile, in the interests of improving international understanding and developing knowledge to the benefit of all. Today the stakes are as high as ever, but the context has changed. Universities are now participating willy-nilly in the globalisation process. Levels of academic mobility are unprecedented, and Higher Education Institutions measure each other on a world scale. Competition as well as collaboration is inevitable. National systems and individual universities want to appear among the best in order to attract students from abroad, or simply to keep their own best students at home rather than allowing them to enrol elsewhere. At the same time, a complex and important process of reform is under way, in which Higher Education has been forced by governments and society to explain more accurately and effectively what it is doing, and to ensure that its offer is actually relevant and needed.

This general process of reorganisation has many protagonists, many beneficiaries, and many strands. It includes developments in learning/teaching and assessment (the shift to the learner-centred paradigm), in governance, in quality assurance and enhancement. It pressures HEIs to coordinate their systems and to work together at regional or macro-regional

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[1] The UNESCO Archive entry for the International Committee on Intellectual Cooperation (ICIC) describes its purposes and its actual modes of operation: http://biblio-archive.unog.ch/Detail.aspx?ID=408 . The International Bureau of Education (IBE) has been a part of UNESCO, with intellectual and functional autonomy, since 1969: http://www.ibe.unesco.org/en/about-the-ibe/who-we-are/history.html.

[2] Fernando Miguel Galán-Palomares and Kevin Guillaume, *Europe at the Global Edge, articulating the global dimension of EHEA through recognition*, presentation 25 November 2014, Bucharest, Bologna Process Researchers Conference, forthcoming (at present available at http://fohe-bprc.forhe.ro/papers/).

level. In this process, Tuning[3] and the Bologna Process[4] have had key roles, as pioneers and as models. Here we examine how such developments are interpreted in Central Asia, with particular reference to the TuCAHEA ("Tuning Central Asia") project.[5]

II. **Tuning and the development of Macro-regions in HE**

The beginnings of Tuning, in parallel with those of the Bologna Process, involved Europe, indeed only the western part of what is now the European Union. The reasons were many: although it had very recently (1999) become possible to include central and eastern European countries in Erasmus projects, the sheer scale of the initial Tuning Project was daunting. Even limiting it to Western Europe, the financial and organizational challenge was immense. With officially five, but in practice seven, pilot Subject Area Groups, 14 member countries, and a methodology still to be invented, "Tuning Educational Structures in Europe" took the first steps toward providing tools for the practical and positive implementation of student centred learning on a regional scale. European Tuning was subsequently extended to include (in some Subject Areas) the central and eastern European countries which were then preparing for entry into the European Union. The Erasmus Thematic Networks, which by definition had members in all eligible countries, were also asked to 'tune', so that the European Tuning world came to embrace all the countries admitted to Erasmus at that time. The model and the methodology were created in what today we can understand were unusually challenging conditions: in Europe each country had its own strong cultural, academic and linguistic traditions, often conceived in opposition to those of its neighbouring countries. Cooperation, and agreement on such

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[3] On Tuning as a worldwide process, a good starting point is the Tuning Educational Structures in Europe website (http://www.unideusto.org/tuningeu/), which provides links to the Tuning projects in Europe and in other countries and continents, and allows access to all publications.

[4] Most of the basic information on the Bologna Process can be accessed through the website of the European Higher Education Area (EHEA): (http://www.ehea.info/) which, in addition to information on current activities, also provides links to information on the earlier phases of the Bologna Process.

[5] "TuCAHEA. Towards a Central Asian Higher Education Area: Tuning Structures and Building Quality Culture" is a Structural Measures Project (2012-2015) supported by the European Commission through DG EAC, Tempus Programme (Project 530786-TEMPUS-1-2012-1-NL-TEMPUS-SMHES) Grant Agreement: 2012-3025. The website in English and Russian can be found at www.tucahea.org.

sensitive matters as the competences to be formed in higher education, was truly difficult, truly needed, and, amazingly, successful.[6]

Other European 'tunings' were carried out subsequently in single countries: in the Russian Federation, in Georgia, and in Lithuania for example. In each case they contributed new and important insights. However the multi-country model by its very nature proved more incisive, more difficult, and also more innovative. Tuning showed the effectiveness of its approach in particular at a regional level.[7]

The second great regional initiative was Tuning Latin America. In this case, as is well known, 18 countries of South and Central America joined together to tune 12 Subject Areas, involving several hundred institutions, and — very importantly — the eighteen Ministries. It was the first time in history that these countries were able to cooperate on this scale in the field of higher education. Today the successes of Tuning Latin America are before the eyes of all, and the milestones reached in terms of regional cohesion and cooperation in higher education are truly remarkable. At the outset, the difficulties seemed overwhelming, because of the social and political disparities between the countries. And yet, in some significant ways, Tuning Latin America was less challenging than Tuning Europe, because of the shared language and similar roots of the Latin American HEI models.[8]

As in Europe, the factor that allowed the success of Tuning Latin America was the natural curiosity and desire to collaborate of academics working in the same Subject Areas, but in systems which were not able to communicate easily because of their diverging cultural and political histories. Although academia has often supported nationalism and conflict, Tuning showed decisively that academics and academic authorities were ready and able to cooperate on a regional scale when offered cogent reasons for doing so and a carefully organised platform which could guide them step by step to reach their objectives.

The successful European and Latin American models, the former accompanied by the important developments in the Bologna Process, naturally drew the interest of other countries and regions. Very large countries, such as the United States of America, China and the Russian

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[6] Tuning Educational Structures in Europe, *Final Report. Pilot Project — Phase I* (Bilbao and Groningen: University of Deusto Press, 2003).

[7] For Tuning in Georgia: http://tuningacademy.org/tuning-georgia/?lang=en; for Lithuania: http://tuningacademy.org/tuning-lithuania/?lang=en; for Russia, see below, n. 9.

[8] From the general Tuning Latin America website (http://www.tuningal.org/) one can access links to all information and publications relating to both the first and the second phases of the project (2004-2007 and 2011-2013).

Federation, have chosen to 'tune' by themselves, albeit observing and taking inspiration from the European and Latin American projects.[9]

Most remarkable is the truly macro-regional Tuning Africa. Because of the sheer size of the continent, with its more than 54 countries, its territory of more than 30 million km², and its 1.1 billion people — not to speak of its great political, cultural, economic and climatic differences — Tuning Africa was organised in its first phase by attributing the responsibility for one large sector (Medicine, Teacher Education, Agriculture, Mechanical Engineering, and Civil Engineering) to a sub-region (Northern, Southern, Western, Central, and Eastern Africa respectively), although HEIs were allowed to participate in SAGs in other regions.[10] Certainly such a project as Tuning Africa could be conceived of and implemented because of the examples and the experience of the previous macro-regional projects.

III. **Central Asia, a macro-region?**

Tuning has developed remarkable experience in organising initiatives which contribute in a substantial way to developing cooperation and excellence in macro-regions, which typically have coincided with continents.

Continents, however — geographers and historians tell us — are constructed realities rather than certain and obvious divisions of the landmasses of the globe.[11] In no case is this more evident than that of the large Eurasian mega-continent with its many possible subdivisions. Is Europe distinct from Asia? Or vice versa? There are many who would prefer to consider that Europe, wherever it begins or ends, and Asia form one large continent, Eurasia, and that the inner divisions are simply misleading. Today one may hear references to 'the Americas' (which? North, South, Central? Latin America or North America — with or without Mexico?), to North Africa, Sub-Saharan Africa, Central, Eastern or Western Africa and so forth. In the case of the various parts of "Eurasia", we may speak of Europe (Eastern, Western, Southern, Northern, Central, Baltic, Balkan) — and then there are the Far East, the Near East, the Middle East (East being understood from a European point of view), the Indian 'sub-continent', South East Asia and so forth. Each of which has possible aspects of ambivalence and overlap.

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[9] For the USA: http://tuningusa.org/; for China: http://tuningchina.org/; for Russia: http://tuningrussia.org/.

[10] For Tuning Africa, see the information and publications on http://www.tuningafrica.org/.

[11] Martin W. Lewis and Kären E. Wigen, *The Myth of Continents. A Critique of Metageography* (Berkeley and Los Angeles: University of California Press, 1997).

Last but not least, there is 'Central Asia' — also known as Middle or Inner Asia.[12] Here too, the opportunities for confusion, ambivalence and overlap are numerous. Which countries or territories exactly does it comprise? Today there are a number of competing definitions, from the very inclusive to the very restricted. Under the USSR, on the one hand, Central Asia was considered to consist of Tajikistan, Turkmenistan, Uzbekistan and Kyrgyzstan. Subsequently, by agreement of the rulers of the new republics that emerged in the early 1990s, Kazakhstan, territorially larger than any of the other four, was added to the new grouping. On the other hand, very inclusive definitions (such as that of UNESCO) link up with the five republics the western territories of the present Peoples' Republic of China (Xinjiang), Mongolia, Tibet, parts of Russian Siberia, with territories including Pakistan, Afghanistan, not to mention parts of Iran and India.[13]

The reason for such uncertainty, or variety of understandings, is easy to comprehend. Central Asia, whether in a larger or smaller version, is located at the 'core' or the heart of the entire continent, and historically has been connected tightly with all the bordering and outlying regions. Iranian, Turkic and Mongolian peoples have been the most in evidence in the rich and varied history of the region; sometimes conquered from the outside, more often conquering, and often assimilating into the neighbouring regions. Central Asia in the vast extension of its steppes, forests, deserts and high mountains has generated such empires as Timurid or Mughal India, or Yuan China. It has also experienced times of political division, such as that in the 19th century which made possible the Russian conquest of 'Turkestan' as an outcome of the struggle with the British Empire that goes under the name of the 'Great Game'.

Present-day Central Asia still constitutes an object of interest for various outside actors, and in its turn looks toward the rest of the world for economic and political partners, as well as for collaboration in higher education. In the

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[12] There is a vast bibliography on Central Asia, its history and present day society: useful overviews where maps and other references may be found are, e.g., Svat Soucek, *A History of Inner Asia* (Cambridge: Cambridge University Press, 2000 [2006, 7th printing]); Rafis Abazov, *Palgrave Concise Historical Atlas of Central Asia* (New York: Palgrave Macmillan, 2008); Peter B. Golden, *Central Asia in World History* (Oxford: Oxford University Press, 2011). An illuminating comparative study is Alexander Morrison, *Russian Rule in Samarkand 1868-1910: A Comparison with British India* (Oxford: Oxford University Press, 2008).

[13] UNESCO's 6 volume *History of Civilizations of Central Asia*, including volume VI which covers the area until very recent times (*Towards the contemporary period: from the mid-nineteenth to the end of the twentieth century* [Paris: UNESCO Publishing, 2005]), uses the broadest criteria. Instead, for the United Nations in its *Composition of macro geographical (continental) regions, geographical sub-regions, and selected economic and other groupings* (http://www.cnbc.com/id/102166864) the region comprises the standard five republics.

context of the attempt we describe here to build a CAHEA (a Central Asian Higher Education Area), this geopolitical and cultural reality cannot be forgotten. The Muslim Turkic speaking population of Xinjiang (Xinjiang Uyghur Autonomous Region) borders on Kazakhstan, Kyrgyzstan and Tajikistan (as well as Mongolia, Russia, India, Afghanistan and Pakistan), and is the seat of ethnic conflict, as the Han Chinese population increases. China is currently investing great sums in building infrastructure in the neighbouring republics, and has very recently announced its strategic objective of realizing important new commercial and political bonds in the framework of its 'Silk Road' project.[14]

The Russian Federation also sees itself, rightly, as strongly connected with the five Central Asian republics which identify themselves as today's Central Asia. The Confederation of Independent States (the Russian 'Commonwealth' initially formed by the Russia Federation, Ukraine and Belarus), was joined almost immediately by all of the present five, along with Azerbaijan, Armenia and Moldova. Subsequently the "CIS" confederation has continued to exist, supported with varying degrees of conviction by most of the rulers of the Central Asian countries and Moscow, although their paths have diverged to varying degrees in recent years. The indisputable fact is that all five emerged from the Soviet decades with a number of features in common, including a Russian speaking and a Russian educated elite, and the nearly universal use of Russian as the language of academia and government. Citizens of Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan may travel to Russia without needing a visa; only the citizens of Turkmenistan, which follows a policy of 'permanent neutrality' — understandable considering that it is located between Kazakhstan, Uzbekistan, Iran and Afghanistan — require a Russian visa, and indeed are allowed entry without a visa by no major country except Turkey.[15]

The five Central Asian countries now engaged in working towards a CAHEA are united by a number of important factors. These include periods of shared history, of which the most relevant at present are the most recent — the

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[14] China's President Xi Jinping announced an investment of 40 billion US dollars in the "New Silk Road" on 8 November 2014 (see, e.g., http://news.xinhuanet.com/english/china/2014-11/08/c_133774993.htm); on 10 December the first train from China arrived in Madrid. "The Guardian": http://www.theguardian.com/business/2014/dec/10/silk-railway-freight-train-from-china-pulls-into-madrid).

[15] The United Nations, with the resolution of its General Assembly (90th plenary meeting, 12 December 1995, A/RES/50/80 of 11 January 1996), recognized the status of permanent neutrality declared by Turkmenistan and called upon its members to respect that status as well as the "independence, sovereignty and territorial integrity" of that country (http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/50/80&Lang=E) Turkmenistan celebrates 12 December each year as Neutrality Day.

inclusion in the Russian Empire and the common experience as part of the Soviet 'Imperium'; the shared Russian language as a lingua franca not only within the elites, the common origin of the present HE system in the Soviet system, and the common perception of being subject to many of the same pressures and tempted by many of the same opportunities, as represented by foreign investment, and the policies of Russia, China, the United States and the European Union. They share their Islamic heritage. There are also striking similarities from a demographic point of view: the population pyramids of all five countries look very different from those of European countries: they show very young populations, with strikingly numerous age groups from 15 to 29, a marked contraction in the immediately younger age groups (5 to 14) and a very vigorous expansion in the numbers of those aged 0 to 4.[16]

And then there are differences: in territorial extension, in overall population, in self-image, in prosperity, in language, and in bonds with other countries. In territorial extension, Kazakhstan is much the largest, stretching from Mongolia to the Caspian Sea, counting nearly 3,000,000 km², whereas Uzbekistan and Turkmenistan each have slightly under 500,000 km², largely desert; and Kyrgyzstan and Tajikistan respectively close to 200,000 km² and 143,000 km², mostly very high mountains. The most populous by far is Uzbekistan, with close to 30 million inhabitants, whereas Kazakhstan counts 18 million, Tajikistan 8 million, Turkmenistan 5 million and Kyrgyzstan nearly 6 million inhabitants.[17] In all countries most of the Russian population has left, whereas there are significant mixtures of ethnic and linguistic groups, notably Tajiks in Uzbekistan, and smaller numbers of the various peoples in each of the neighbouring countries. Most importantly, the 'national' languages of four of the five countries belong to the Turkic family, whereas that of Tajikistan is a neo-Persian language, akin to those spoken in Iran, much of Afghanistan and some of Pakistan and India. Nominal GDP per capita ranges from around $1000 US in Tajikistan and Kyrgyzstan to more than $13,000US in Kazakhstan.[18] All are presidential republics.

Central Asia over the millennia has typically included both sedentary urbanised and mercantile populations and more mobile nomadic populations. Until modern times the prosperity of area was due to its very advanced

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[16] United States Census Bureau, *International Data Base*: https://www.census.gov/population/international/data/idb/informationGateway.php, search by country for Mid-year Population by Five Year Age Groups and Sex.

[17] Central Intelligence Agency (CIA). *The World Factbook* (https://www.cia.gov/library/publications/the-world-factbook/index.html).

[18] World Bank figures for 2013 (http://data.worldbank.org/indicator/NY.GDP.PCAP.CD).

agriculture, and the production and trade along the Silk Road. Settlements were often ethnically and linguistically mixed, or alternatively different villages in a single region were formed of peoples of different languages and cultures. With the advent of the post-Soviet national republics, each with a titular 'people', language and culture, governments have encouraged the construction of national diversity, creating national heroes and emphasizing certain aspects of past history.

Periodically efforts have been made, with greater or lesser resolve and success, to replace Russian as the language of instruction with the titular national languages. Efforts have been made to 'cleanse' the national language of borrowed words, and a *leit motif* over the last century has been oscillation as to whether the national languages should be written using Latin or Cyrillic characters. Today both can be found in Uzbekistan for example, where the younger generations tend to know Russian much less well than their elders, and where the Uzbek language is widely used in University settings as well as in ordinary life. In Turkmenistan all higher education is carried out in Turkmen, whereas in the other countries Russian is used along with the 'national' language. The younger generations increasingly study English as well.

Certainly linguistic issues create one of the challenges for building a higher education area, in that replacing the common vehicular language with national languages or English complicates regional cooperation and mobility. Even more complicated challenges derive from the ups and downs of political relations between the countries themselves and their governments. During the more than two decades since the break-up of the Soviet Union, there have been armed conflicts and incidents, including a war between Tajikistan and Uzbekistan, border tensions between Kyrgyzstan and Uzbekistan and so forth. The borders between the countries were designed to make it difficult to unite them, as part first of a Russian and then of a Soviet effort to weaken larger pan-Islamic or pan-Turkic alternatives.[19]

In all five countries, the Higher Education systems are highly centralised under the authority of Ministries, typically of Education and Science, and changes in Higher Education institutions and systems require the support of ministerial personnel at many levels. Academic staff are the object of much attention, including, for example, being asked by their Ministry to attend

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[19] On the political debates and the decision to emphasize or even create national divisions in Central Asia (or Russian Turkestan as it was then known) at the time of the Russian Empire, and above all under the Soviet Union, see Olivier Roy, The *New Central Asia. The Creation of Nations* (New York, London: I.B. Tauris, 2000; reprinted in 2007 with the title *The New Central Asia. The Birth of Nations*; French original*: La Nouvelle Asie centrale ou la fabrication des nations* (Paris: Editions du Seuil, 1997).

centrally organised courses to keep their knowledge of the subject matter up to date. Rectors are appointed by central authorities, and often convened to meetings in the capital cities. Academic authorities are considered so important that they may need special permission for visits abroad. All countries place the education of their citizenry very high among their official priorities. Pressure for or against cooperation with neighbouring countries, in higher education as in other areas, is subject to change in direction and intensity, according the overall political scenario and relations with each of the other countries taken separately.

Central Asia, as a world region, like all world regions, has uncertain borders and its component countries are pulled to varying degrees to make agreements or collaborate with other actors. In this picture, Europe, the EHEA and European Commission programmes play and foreseeably can play a relevant role.

IV. **Europe, the European Commission, and the EHEA**

Since the early 1990s, the Central Asian countries have been objects of interest for many countries and organisations — including not only the Russian Federation, but also Turkey, Saudi Arabia, China, Korea, the United States of American, and UNESCO, among others. Agendas have changed with the development of the new republics and the more general political situation, where propinquity to Afghanistan, Iran and China has an obvious influence. As regards higher education, the interventions have been in the direction of encouraging mobility, founding and financing HEIs to support and extend cultural and economic affinities,[20] and also in promoting own HE institutions and systems.

In this general context the European offer of non-invasive non-prescriptive models and assistance in developing HE has had notable success. The European 'soft' proposals have proved attractive and useful for the Central Asian countries. Some Central Asian HEIs chose early on to sign the Magna Charta Universitatum,[21] and looked with interest at the Bologna

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[20] See, for example, the Kazakh-British Technical University, founded in 2000-2001 on the basis of an agreement between the President of Kazakhstan and the British Prime Minister with the support of the British Embassy and the British Council (http://www.kbtu.kz/en/node/62), and a number of world class actors in the oil and gas field among the sponsors; the Krygyz-Turkey Manas University in Bishkek, founded jointly by the governments of Turkey and Kyrgyzstan by an agreement stipulated in Izmir in 1995. (http://manas.edu.kg/index.php/manas-university/introduction);the Russian Tajik (Slavic) University in Dushanbe was founded in 1996 by the governments of the two countries 8 http://www.rtsu.tj/rtsu/istoriya).

[21] At present 68 Kazakh HEIs are among the signatories; 13 Kyrgyz HEIs; one Turkmen HEI, one Uzbek HEI and no Tajik University (http://www2.magna-charta.org/).

declaration and the early developments of the Bologna Process. The adhesion of the Russian Federation to the EHEA defused some of the tensions that the countries experienced in being pulled on the one hand toward the higher education policies that Russia wished to extend to the CIS countries, and on the other toward the European system. Some Central Asian Universities have joined EURASHE or the EUA.[22]

An important facilitator of successful higher education reform in Central Asia has been the European Commission through its TEMPUS and TACIS programmes. TACIS promoted "democratization, the rule of law and the transition toward the market economy of the CIS countries"; TEMPUS was the educational arm of that support. TEMPUS (Trans European Cooperation Scheme for Higher Education) was adopted by the Council of Ministers of the European Union in May 1990, and subsequently extended until 2013; its initial mandate was "to stimulate cooperation with the New Independent States and Mongolia (the Partner States) in the restructuring of their higher education systems". It was part of the TACIS Programme, which had the overall remit of fostering "the development of harmonious and prosperous economic and political links between the European Union and these Partner States".[23]

TEMPUS channelled effectively the enthusiasm of many European HEIs for the new possibilities of cooperation with the countries formerly part of the Soviet Union, and the willingness of most of the Central Asian countries to look towards Europe to establish reciprocal relations.[24]

V. **Building a CAHEA**

1. *Beginnings*

The breakup of the Soviet system placed each of the nascent republics in a complicated situation in which cultural reference points as well as political

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[22] EURASHE has 3 individual Kazakh member HEIs including the TuCAHEA partner Korkyt Ata Kyzlorda State University; and the EdNet Association, also a TuCAHEA partner, is a full member of EURASHE, representing 37 Kyrgyz HEIs. There are 9 Kazakh members of the EUA.

[23] *Tempus Tacis Project Management Handbook*, edited by Marek H. Dominiczak (Luxembourg: Office for Official Publications of the European Communities, 1996), available at http://eacea.ec.europa.eu/tempus/doc/tacishandbook_en.pdf.

[24] Róisín McCabe, Philippe Ruffio, and Chiara Tiberi, *The Main Achievements of the Tempus Programme in Central Asia 1994-2013* (European Commission, Education, Audiovisual and Culture Executive Agency, Brussels, 2014), available in pdf format in English and Russian at http://eacea.ec.europa.eu/tempus/tools/publications_en.php#1.

and economic structures and practices needed to be modified radically and rapidly, notwithstanding the economic meltdown. On the one hand, the consolidated scholastic and higher education systems bequeathed by past generations constituted an important positive patrimony for the young countries, who could count at least on the high existing levels of scholarization; on the other there were strong pressures to develop new national systems, capable of educating future citizens to enter the 'free market' and make their way in the capitalistic world, and such as to encourage identification with their new country.

Simplifying, we may say that the countries first looked to differentiation rather than continuing cooperation. Universities which had been important in Soviet times formed the basis of the new national systems, while new institutions were created to ensure geographic and disciplinary spread. Naturally the academic and scientific elites who had been colleagues in Soviet times, receiving their degrees from institutions in Moscow or Leningrad, looked back to Russian academia with a degree of nostalgia.

In April 2004 an important conference of Central Asian ministers and rectors was held in Almaty, and the invited key note speech was on the prospects of Bologna Process and also provided the opportunity to present Tuning. Already at least some of the main actors had begun to support the idea that something similar could be attempted in Central Asia.[25]

In Kyrgyzstan in particular a project was set up directly under the President of the country to develop new criteria for the curricula in Economics. Two members were chosen from each of a number of key universities from various parts of the country to work together to develop new pilot curricula. Thanks to the then director of the Tempus Office in Bishkek and the EdNet association of Universities, it was possible to work intensively together under the guidance of the author of the present text, at that time member of the Tuning Management and ECTS Counsellor, and to elaborate new competence-based curricula for programmes in Economics, including Accounting and Macroeconomics, taking into account workload measured in terms of student time. The new curricula were immediately applied, first experimentally in selected institutions and then more widely. Tuning-

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[25] Ann Katherine Isaacs, "The Bologna Process. A Geography of European Higher Education for the 21st century", Almaty, Alatau, 5 April 2004. The speech presented not only the Bologna Process, but also the achievements at that time of Tuning Educational Structures in Europe, and its extension to the Thematic Networks, the 'Archipelagos' (see http://www.archhumannets.net) and Latin America. There is a brief note about the Conference on the useful website of the "Central Eurasian Studies World Wide" programme (http://cesww.fas.harvard.edu/index.html), maintained by the Davis Center for Russian and Eurasian Studies, Harvard University, p. 16 (see http://cesww.fas.harvard.edu/cel_conf16.html).

Bologna-ECTS definitions and methodologies began to enter the national academic culture and new expertise and bonds of trust were formed.[26]

In November 2004 a Tempus regional conference on "Higher education in Central Asia: on-going reforms and future perspectives" was organised by the European Commission in Tashkent. The Kyrgyz pilot Tuning and related themes were presented and discussed,[27] and the conference itself provided an opportunity to look at concrete ways in which Tuning and other tools for higher education reform could be implemented in the Central Asian area.[28]

2. *Bologna.kg: Tuning in the Kyrgyz Republic*

The first Tuning project in Asia was Bologna.kg, a Tempus Structural Measures project carried out in 2005 — 2006, followed by a second project, Bologna.kg2 which made it possible to involve more institutions and more Subject Areas. Both were designed and coordinated by the University of Pisa and aimed to build on and develop the accomplishments of the 2004 ad hoc Presidential working group in Economics. In the course of the two projects, 11 subject areas were 'tuned', and the results of the work were published and distributed in various forms by the Bologna information and dissemination centres that were set up not only in Bishkek, the capital, but also in various other regions of the country, including Karakol, Naryn, Osh and Jalalabad and in the final part of the project, Talas. Only the remote Batken province in the end did not have a Bologna.kg centre or partner. The implications of student-centred learning, teaching and assessment were generic competences were presented, debated and officially approved at national level.[29]

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[26] See Ann Katherine Isaacs, "An ECTS/'Tuning' –based experiment in curriculum design by Kyrgyz Universities"; Kynatbek Smanaliev and Farida Ryskulueva, "Prospects of Development of the Higher Education in Kyrgyzstan and problems of joining the Bologna Process"; and Chinara Adamkulova, "Influence of the Tempus Programme in the reformation of higher education", all in *Proceedings of the Tempus Regional Conference "Higher Education in Central Asia: Ongoing Reforms and Future Perspectives"*, Tashkent, 22-23 November 2004, edited by Aziza Abdurakhmanova, Claire Morel, Heather Mowbray, and Shokhida Safarova (available online in English and Russian at http://eacea.ec.europa.eu/tempus/doc/tashkent_en.pdf, 68-80).

[27] Ibid.

[28] *Proceedings of the Tempus Regional Conference* cit., passim.

[29] The first phase of Bologna KG was entitled "Creating National Information Centers about the Bologna Process in the Kyrgyz Republic", and it was a Tempus Structural Measures Project (SCM TO12B04): http://www.bolognakg.net/default2.html. The second phase (Bologna.KG2, http://www.bolognakg.net) "Extending Centres on the Bologna Process and

More or less at the same time an official Russian Tuning, in Mathematics and European studies, was inaugurated, and a second Tuning related Tempus project, RHUSTE, was implemented under the guidance of the State University of Milan.[30] The RHUSTE project undertook to tune the Subject Areas of "Culturology" and History and also developed positive synergies with Bologna.kg. A happy circumstance was the fact that Deans of all Russian History Faculties were working together at that time to update their 'standards': they were able to utilise the Tuning methodology proposed by the RHUSTE project to achieve their aims.

The Kyrgyz project used and developed the results of Tuning Education structures in Europe and Tuning Latin America as well as to contributing to them and to Russian Tuning. Its results and findings, along with those of other Tempus projects, were used to inform the reorganization of the higher education sector in the country and led to a request to accede to the EHEA, signing the Bologna Agreements. The request was refused on the basis that Kyrgyzstan had not signed the European Cultural Convention, which it could not do insofar as it was not (and could not be for geographical reasons) considered European, and become a member of the Council of Europe.[31] The request of the Kyrgyz Minister of Education to attend the up-coming London conference as an observer was rejected by the Bologna Follow-Up Group (BFUG) on the grounds that places were 'very limited', to the distress of those who had worked so hard to develop and implement the reforms. On the positive side, a 'Bologna Policy Forum' was instituted at the next Bologna Ministers' conference, and the Kyrgyz Republic was invited to attend along with the non-European 'heavyweights' (such as the United States, India, China and South Africa).[32] Subsequently, Kazakhstan was allowed to adhere

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supporting Tuning Teams in Kyrgyz Republic", was also a Tempus Structural Measures project (SCM TO57A06-2006).

[30] Tuning Russia, *Reference Points for the Design and Delivery of Degree Programmes in Education*, edited by Ivan Dyukarev, Arlene Gilpin and Evgeniya Karavaeva (Bilbao: University of Deusto Press, 2009); *History and Culturology. Russian Tuning/ECTS-based educational models for the implementation of the Bologna Process in Human Sciences* (Cheliabinsk State University: Cheliabinsk 2008), available at http://tuningacademy.org/wp-content/uploads/2014/02/RHUSTE_Booklet-for-the-Subject-areas-of-History-and-Culturology.pdf.

[31] Letter from Alan Johnson, then UK Secretary of Education and Skills, to the Minister of Education of the Kyrgyz Republic, forwarded to the author on 19 February 2007; for the signatories of the European Cultural Convention: http://conventions.coe.int/Treaty/Commun/ChercheSig.asp?NT=018&CM=&DF=&CL=ENG; on the Convention itself: http://conventions.coe.int/Treaty/Commun/QueVoulezVous.asp?CL=ENG&NT=018.

[32] The First Bologna Policy Forum, which both Kyrgyzstan and Kazakhstan attended, was held in Louvain-la-Neuve, 29 April 2009: http://www.ond.vlaanderen.be/hogeronderwijs/bologna/forum/.

to the EHEA and to sign the European Cultural Convention, although it still has not obtained full membership in the Council of Europe — which it was allowed to request because it is recognised that 4% of its territory is 'European'. It has a special observer status.[33]

3. *The TuCAHEA Project: objectives and achievements to date*

The TuCAHEA project was conceived in 2009 in the context of a Central Asian conference held in Bishkek at Kyrgyz-Turkey Manas University under the auspices of the Kyrgyz National Tempus Office. There, the coordinator and the partners of the Bologna.kg projects were able to discuss ways forward with representatives of the other four countries, including their National Tempus Officers, and begin to elaborate a concrete regional strategy. The project was eventually designed and proposed in spring 2012 as a Tempus Structural Measures Project, coordinated administratively by the University of Groningen (NL) and scientifically by the University of Pisa (IT). The Consortium comprises eight European HEIs, all of which have important Tuning and Bologna experience, including Groningen and Deusto as Joint Coordinators of Tuning. The Central Asian partners, from all five countries, are 33 HEIs, one HE Association, and the five Ministries responsible for Higher Education in the five countries.

TuCAHEA's title is "Towards a Central Asian Higher Education Area: Tuning Structures and Building Quality Culture". The project summary recites as follows:

> The broad aim of TuCAHEA is to contribute to building a Central Asian Higher Education Area [CAHEA], aligned with the European Higher Education Area [EHEA], able to take into account and valorise the specific needs and potentials of the Region and of the partner countries, thus responding to the needs of the higher education community and society at large.

> The project is organised as a Central Asian [CA] Tuning Process based on the methodology developed worldwide by academics in collaboration with students, graduates, administrators, employers and ministries. TuCAHEA aims to extend the use of competence-based quality tools for planning and delivery of Higher Education [HE] programmes, enhance regional HE

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[33] For the decision to allow Kazakhstan to accede to the European Cultural Convention: https://wcd.coe.int/ViewDoc.jsp?Ref=CM/Del/Dec(2010)1074/7.3&Language=lanEnglish& Ver=original. As to its observer status in the Council of Europe, see Resolution 1526 of 2006: http://assembly.coe.int/Main.asp?link=/Documents/AdoptedText/ta06/ERES1526.htm.

systems, create a platform for sharing knowledge and elaborating quality tools across the region and in each country. It encourages legislation to create regional cohesion in alignment with the EHEA, it establishes pilot Tuning Subject Area Groups able to formulate Guidelines and Reference Points for key sectors, it trains ministerial, academic and independent experts in the use of competence-based tools, it fosters student mobility within and outside the region and tests and perfects the quality and recognition tools necessary for mobility; it establishes information/dissemination centres both in capitals and in other areas of the partner countries

The principal outcomes will be to extend knowledge of the worldwide Tuning process, involving the CA Area directly in its broad international context; to enhance knowledge of existing quality and recognition tools as a basis for further elaboration; to carry out broad consultations on both generic and subject specific competences, to produce a number of Tuning Subject Area reports; to produce competence- learning out-comes based descriptions of degree programmes using the Degree Profile template developed by Tuning and the ENIC-NARIC Network, and more generally to creating a basis for a Central Asian Higher Education Area, developing premises for a CA Qualifications Framework and Credit System.[34]

The project is now entering its third year, and has adhered very closely to the original plan. To date it has held four Plenary Conferences and Working Meetings (in Almaty, Bishkek, Dushanbe and Samarkand) and 20 'Country Meetings' of the members of each country, two Study and Training Visits to Europe; it has developed a Central Asian list of Generic Competences; eight Subject area groups (Business and Management, Economics, Education, Engineering, Environmental Protection and Food Safety, History, Language, Law) have elaborated their Subject Specific competence lists, and prepared their Guidelines and Reference points. A very large-scale consultation on the perceived importance and degree of achievement of the competences was carried out in the five countries in 2012, and it yielded 20,463 responses.

In June 2014 TuCAHEA Ministerial representatives of four of the five countries met in Rome under the auspices of the Italian Ministry of Education, Universities and Research, where they signed a Communiqué agreeing to explore the possibilities for closer collaboration in the Higher Education sphere

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[34] The summary appears in English and Russian on the project website, http://www.tucahea.org. For an overview of the project, its objectives and its accomplishments at the end of the first year, see Ann Katherine Isaacs, *TuCAHEA: A Regional Strutural Tempus Project for creating a Central Asian Higher Education Area and contributing to the worldwide "Tuning Process"*, in National Tempus Office in Uzbekistan ed., *Tempus IV in Uzbekistan*, Tashkent 2013, 293-303. In the same section there are other articles in Russian on TuCAHEA by Dilshadbek Nurmatov , Karligash Umatova and Pulatkhon Lutfullayev, Ibid., 303-320.

and to facilitate the TuCAHEA pilot regional student mobility scheme.[35] The Communiqué was later signed by the representative of the fifth country as well. These developments are most encouraging, and are the result of a lively and on-going process of collaboration and debate. Each step has required efforts on the part of all the participants to understand the systems and concerns of the others, and to explain and clarify their own points of view. This is the essence of Tuning, and the experts formed in the TuCAHEA project, many of whom are HEREs (Higher Education Reform experts, formerly in the Tempus context, now in that of Erasmus+)[36] are well positioned to use the results of the project and to build on them in the Central Asian and broader contexts.

4. *The future of the TuCAHEA project*

In its final year TuCAHEA has a broad path before it. The obstacles are many, but its supporters are proactive and motivated to travel along it as far and fast as possible. The eight SAGs are perfecting the Russian and English versions of their Reference Points and Guidelines so that they can be published in various formats in the spring of 2015. The regional pilot student mobility scheme is about to take off: the selection of the students has already been made and the students will soon begin their studies in host Central Asian country different from their own. Their institutions are using adapted Inter-institutional Agreements and Learning Agreements modelled on those in use in Erasmus+. The Ministerial working group has prepared a 'road-map' to guide the elaboration of a development of the Communiqué in the direction of a stronger and more ambitious agreement at Ministerial Level. The Ministries have declared their intention to disseminate the TuCAHEA Reference Points among all the HEIs of their countries. They have also asked TuCAHEA to make a full report on the regional student mobility scheme, including descriptions of both the difficulties encountered and the solutions found, with a view to encouraging Central Asian HEIs to promote mobility within the region and not only outside of it.[37]

The foundations have been laid for creating a Credit Reference system, in order to allow the member countries not to change their current systems,

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[35] The representative of the Turkmen Ministry was not able to get to Rome in time, and signed later. See http://www.tucahea.org/news/study_trainig.html.

[36] On the Network of Higher Education Reform Experts, their activities and profile, see http://eacea.ec.europa.eu/tempus/programme/heres_en.php.

[37] Ingrid van der Meer and Ann Katherine Isaacs, *Minutes of the Fourth TuCAHEA Plenary Conference and Working Meeting (Samarkand, 14-15 November 2014)*, unpublished.

but rather to identify a standard measurement to which those systems can connect. The proposal at present is to use a 60 credit standard, which would of course facilitate transparency with respect to ECTS in Europe and the Tuning initiated Crédito Latinamericano de Referencia (CLAR).[38]

Relevant steps have also been taken in the direction of creating overarching descriptors for a possible three cycle system aligned with the EHEA. The eight TuCAHEA Subject Area Groups, which include Social Sciences and Humanities as well as Engineering, have developed descriptors for first, second and third levels of Higher Education for their own area, and have begun to think in terms of overarching level descriptors for all disciplines.[39] It is premature to imagine that these will be agreed in the very near future; still the fact that tens of academics in the five countries now realise the potential usefulness of defining levels in terms of competences measured in learning outcomes bodes well for a future Central Asian qualifications framework, compatible with but not identical to that of the EHEA.

The future development of TuCAHEA will be defined by the degree of success it achieves in the coming months. Clearly, the overall goal of creating a CAHEA which constitutes a real framework for building excellence in Central Asian HE will require time, tenacity and good luck. Higher education priorities are not normally those that guide Ministers of Foreign Affairs, which is paradoxically is one of the strongest reasons for looking to the realm of higher education to build regional confidence and trust. If conditions permit, the logical continuation would comprise both the 'Tuning' and the normative sides of the TuCAHEA strategy. An obvious step forward would be to 'tune' a certain number of Subject Areas in the sectors which TuCAHEA has not yet addressed, that is principally the Natural, Exact and Health-related Sciences. Ministerial input will be fundamental in many ways: in developing competence-based standards and in promoting the use of such tools as Course Catalogues, as well as in supporting and facilitating regional mobility.

5. *UZHELTH and Public Health in Uzbekistan*

The necessity of enlarging the range of TuCAHEA's work to create or to facilitate the creation of a CAHEA was the inspiration for another TEMPUS

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[38] Tuning Latin America, http://www.tuningal.org/es/publicaciones/cat_view/48-publications-in-english-books?start=15.

[39] Alessandra Guidi, Shavkat Hasanov, Ann Katherine Isaacs, *Minutes of the Joint UZHELTH-TuCAHEA* meeting (Samarkand, 15-16 November 2014), unpublished.

Structural Measures project, now in its second year.[40] This project has the title "Higher Education Structures to Enhance Public Health Learning and Teaching in the Republic of Uzbekistan" and involves the use of Tuning methodology to create a new holistic and collaborative approach to the various disciplines that bear directly on Public Health, in the most inclusive definition. The UZHELTH consortium has already elaborated Subject Specific competences for Human Medicine, Agriculture, Veterinary Sciences and Environmental Protection and Food Safety. A large-scale consultation has been carried out by the Uzbek partners, which include all the HEIs and Institutes dedicated to the relevant disciplinary areas plus two 'generalist' state universities. The consultation has been carried out in such a way as to allow distinctions between various levels of students and has included in the stakeholder groups consulted separately practicing rural doctors, practicing clinical doctors, patients, parents and care givers amongst others, yielding significant qualitative and quantitative data which is now being analysed.

The UZHELTH project was organised not only for its importance in addressing the Public Health sector in the Republic of Uzbekistan, but also as a pilot initiative for the consolidation and extension of the TuCAHEA strategy. The extreme complexity of broad area addressed made it necessary to begin with one country rather than attempt to involve all five. In fact, the HEIs involved depend on three different Ministries, all of which are full and active partners in the UZHELTH Consortium: the Ministry of Higher and Secondary Specialised Education, the Ministry of Health, and that of Agriculture and Water Resources.

The UZHELTH partners from Uzbekistan recently had the opportunity to participate in the Plenary Conference and Working meeting of the TuCAHEA Consortium held in Samarkand in November 2014. The interacted in several useful ways: the representatives of the Ministries involved in UZHELTH were able to meet with the Ministerial representatives from TuCAHEA; the UZHELTH colleagues contributed to the TuCAHEA

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[40] The project summary may be accessed at http://www.uzhelth.org. UZHELTH is a Tempus Structural Measures project. Several articles illustrating its achievements and contribution to Tuning can be found in

Tempus: 20 years of programme activities in Uzbekistan, Erasmus+ Office in Uzbekistan ed., Tashkent 2014. http://tempus.uz/download/19.12.2014_tempus_20_years_of_programme_activities_in_uzbekistan.pdf.

Including: Francesco Fornai, "The UZHELTH Experience: exploring communalities and differences in Tuning Public Health related disciplines in Uzbekistan", and Ann Katherine Isaacs, "The Uzbek Contribution to Tuning Central Asia: the TuCAHEA Tempus Project for Creating a Central Asian Higher Education Area and the UZHELTH Project for Public Health in Uzbekistan", respectively: 168-175 and 161-167.

Environmental and Food Safety SAG which was finalising the English and Russian texts of their Guidelines and Reference Points. Thanks to the reciprocal 'inter-project coaching' the UZHELTH colleagues now have inside knowledge of how Tuning Guidelines are elaborated and how other activities, such as regional student mobility, can be organised.[41]

6. *From Tempus to Erasmus+*

Although the Erasmus+ era began on 1 January 2014, the calls regarding the countries now called "Partner Countries" (which means, curiously, all those that are not "Programme Countries": EU and EFTA member states plus Turkey and the ex-Yugoslav Republic of Macedonia) were published on 8 October 2014.[42] The prospects for European support of the CAHEA countries in Erasmus+ can be quickly summarised, and they are promising. Bilateral inter-institutional mobility of staff and students between Programme and Partner countries is now possible; cooperation projects between Programme and Partner countries now go under the name of 'Capacity Building', and are foreseen as part of the Erasmus+ Key Action 2.The model is very familiar to those operating in the ex-Tempus countries, including Central Asia: the Tempus model, because of its success, has been extended to the rest of the world. The new Capacity Building projects can be — as Tempus projects were — either Joint or Structural Projects (involving systemic reform and requiring the support of the relevant Ministries, such as TuCAHEA and UZHELTH). Projects again can be national or regional, opening the door to coordinated projects developing different facets of Higher Education reform.[43]

The opportunities for contributing to the consolidation of the CAHEA are many and various aspects of potentialities of the new Programme now must be explored, and coordinated with the new format for mobility.

VI. **The CAHEA: Challenges and Prospects**

The idea of creating a Central Asian Higher Education Area, which seemed entirely unrealistic and impractical only a few years ago, is now

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[41] Minutes of the Joint TuCAHEA-UZHELTH Meeting, cit. above, n. 39.

[42] European Commission, Erasmus+ Programme Guide, Version 3 (2015): 14/11/2014 (http://ec.europa.eu/programmes/erasmus-plus/documents/erasmus-plus-programme-guide_en.pdf).

[43] Ibid., 35-50, 145-165.

entertained seriously by a relevant number of people and institutions in the countries concerned, including people of authority in ministries, rectors, academics and even students. Since achieving that goal depends on coordinated multi-level actions of several types, the possible obstacles and difficulties are numerous.

In fact, the experience of the EHEA and of Tuning in Europe, which provides much of the model for TuCAHEA, has shown itself to be a game-changing development on a world scale. But, at the same time, 15 years after the Bologna agreements — and not considering the previous decade or more of concentrated work that had prepared the terrain for those agreements — it is clear that much remains to be done to make the vision of the EHEA correspond to reality. The central intuition that Ministries and normative structures would have to change in compatible directions in order to make communication possible between the very different European higher education systems already at the time was recognised as being necessary, but not sufficient. The 'common architecture' would not be enough, which is the reason that Tuning project was designed and began its work at subject area level. Today we are aware that however remarkable achievements have been, there are gaps between what we know can and should be done to build a coherent Higher Education Area and what has actually been accomplished. Awareness is growing that top-down, or even 'middle-down' approaches are not sufficient. For a learner-centred approach to yield all its benefits, teaching staff and students as well as ministerial and academic experts need to understand and contribute more effectively to implementing the new approaches in specific situations and according to specific and verifiable needs. The framework has been elaborated and in many cases applied, as have been many powerful tools; what is still needed is to complete the planned structural changes in all countries, and for the real stakeholders and practitioners — students and academics — to understand better the potential benefits of the changes in progress, and access them.

In Central Asia, as we have illustrated and discussed above, the process of agreement on basic structures or the search for compatibility of cycles or workload measurements has begun. The formulation of level descriptors, applicable to a possible Central Asian Overarching Framework has begun to be discussed. The building blocks for such a development are being put into place through the elaboration and publication, now in progress, of Guidelines and Reference Points for a significant number of key subject areas. Academic and ministerial personnel in all five countries have not only been 'trained', but more to the point, have actually participated in the activities leading to those accomplishments, and hence will be able to extend their activities to other fields and share their knowledge and experience with others.

Still, as is obvious, each step taken is the result of efforts which in final analysis are dependent on single individuals' commitment, willingness, and ability to participate in the general project — which for a variety of legitimate reasons, of work, family, career, health and so forth, may not continue indefinitely. Many of the necessary normative changes still must be undertaken, and although Ministries now express their desire to address them, clearly each system — just as was the case in Europe — has its own logic and its own rules, which are not given up lightly. As we have mentioned above, relationships between the countries themselves are not stable, but follow political logics not centred on higher education. If anything, cooperation in higher education is seen as a possible way of bring the five countries closer together, at least in the long term.

We may point to a number of areas in which certain basic questions will need to be addressed. For example, Kazakhstan is a full member of the EHEA, and is the only one of the countries concerned that has been allowed to sign the Bologna agreements. It held the co-presidency of the EHEA in the first semester of the current year (2014) during the Greek presidency of the European Union.[44] Does this mean that Kazakhstan's inclusion in the EHEA will make it necessary for the other countries to follow the lines of the EHEA in order to build a CAHEA that includes Kazakhstan? Kazakhstan is by far the richest country at present among the CAHEA countries, and tends quite naturally to present itself as leader of the region, an attitude not always accepted by the other countries. It is also the case that many young people from the other countries, including the highly educated, emigrate to Kazakhstan to find work. On the one hand, this factor can push toward a greater integration of the higher education sector; on the other, it strengthens the influence of the Kazakh interpretation of the Bologna Process.

Pertinent to our question about whether Kazakhstan will inevitably have a dominant position in the projected CAHEA, it is worth considering that in many ways — as we have seen — the Kyrgyz republic has pioneered 'Tuning', and also the correct application of ECTS, whereas Kazakhstan is using a 'coefficient' system not compatible with ECTS. Although the Kyrgyz request to sign the Bologna agreements as an 'outside' or associated partner was turned down at the time of the London conference, not only had it already implemented a number of 'Bologna' reforms at that time, but it has continued to develop and apply standards for higher education based on competences. Both Kyrgyzstan and Tajikistan are engaged in extending ECTS, using it correctly as a measure of student work load, although not in

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[44] http://www.ehea.info/article-details.aspx?ArticleId=8.

all HEIs. Uzbekistan, with its nearly 30 million inhabitants and its 72 HEIs, has its own well consolidated system, and can look with interest at the opportunities for closer cooperation, without necessarily abandoning its specific solutions. For example, today the country does not use a credit system, however its 'rating' system of the parameters for the various degree programmes offered, are in reality based on student workload measured in time, and hence can be easily related to ECTS. The Turkmen system[45] which today has one long undergraduate cycle (5 years except for Medicine which has six) followed by a possible Candidate of Science and Doctor of Science levels, has no credit system, although certainly — as was done in Europe in the 1990s — it is possible to relate existing workload to other systems using a credit reference system.

This variety of situations and differing degrees of compliance with the existing rules of the EHEA suggest that the optimal way forward is to 'align' the future CAHEA with Bologna, but to implement a specific Central Asian Tuning as the proper way to ensure that it responds to specific needs and understandings of the countries in question. This seems to be the only realistic way to develop real ownership at all levels, a crucial feature in the Tuning philosophy.

A further question which must be addressed in the future is the relationship between learning/teaching and research, not only in the context of the Bologna third or doctoral cycle, but also more generally with respect to the role of research in HE and in Central Asian HEIs. As is or was the case to varying degrees in several European systems, in the Soviet Union there was a strong distinction between Universities as places where teaching takes place and the Academies of Science (or Culture, and so forth) which are by statute the research institutions par excellence. This binary system differs from the Humboldtian idea that many other countries have followed, according to which the Universities themselves are the places where both basic and applied research is supposed to take place, and students are expected to be involved in research directly. From a Tuning point of view, it is very reasonable that research and learning/teaching go hand in hand, and that learners from the beginning of their higher education experience be brought into direct contact with 'real-world' research. This is seen as one of the most effective way to form and enhance the qualities of curiosity, creativeness, critical thinking, inventiveness that are essential not only in

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[45] European Commission, Higher Education in Turkmenistan, updated to July 2012: http://eacea.ec.europa.eu/tempus/participating_countries/reviews/Turkmenistan.pdf.

On the EACEA website, one can find similar studies on the higher education systems of all Tempus countries: http://eacea.ec.europa.eu/tempus/participating_countries/.

research but in all professions. At present the question of increasing the research functions of Central Asian HEIs is on the agenda; rectors worry about such parameters as the percentage of "PhDs" that they have on their staff. At the same time, the long two tier doctoral studies which were the rule in the Soviet system (with their Candidate of Science and Doctor of Science phases), are being dismantled in some countries, in order to align with Bologna, whereas in others — not only in Central Asia — the double tier system remains. TuCAHEA/Tuning reference points have been developed for the third cycle as well; it will be important to implement the substance of Tuning's insights into doctoral studies rather than (or at least, as well as) focussing on such indicators as the percentage of PhDs.

VII. **Concluding Remarks**

Central Asia, as defined in TuCAHEA, is territorially nearly as large as the entire European Union. Its population, however, is very slightly greater than that of Italy. This datum by itself is enough to remind us of the low overall density of population, the large areas where the economy is still prevalently rural or pastoral, and the great expanses of desert or mountainous territories. At the same time, there are many cities, both large and smaller, where major state universities as well as regional universities are located. The population structure implies that there may soon be a relevant contraction in HE student numbers. After a very few years however the age cohorts interested in higher education should return at least to present levels.

The structures and the advances which have been built up and achieved in the meantime, through Bologna.kg, TuCAHEA, UZHELTH and related initiatives, as well as through the investments in time, money and expertise developed individually and thanks to the interest and support of the countries involved, need to be preserved, consolidated and developed for the coming decades. There may be a 'window of opportunity' in which the higher education resources, the capacity to build new understanding through cooperation and apply it, can make the Central Asian Higher Education Area better recognised , more attractive and more closely connected to other Higher Education Areas developing since the beginning of this century. This is a hope, and a goal, of TuCAHEA, and all those working to build the new Central Asian Higher Education Area.

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Incremental steps towards
a competency-based post-secondary
education system in Ontario

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Abstract: As one of Canada's 13 distinct jurisdictions, Ontario is a national leader in developing a competency-based postsecondary education system. Hindered by challenges of a disaggregated system of policy actors in system design, quality assurance and credit transfer, sweeping change has not occurred. Instead, various bodies with operational powers over university, college, or private-provider quality assurance have slowly incorporated concepts of competency-based education into frameworks by introducing learning outcomes. This paper outlines the challenges facing Canadian and Ontario postsecondary education, discusses the roles and responsibilities of agencies involved in quality assurance, and actions made towards developing and implementing learning outcomes at the system level. The research highlights the ad-hoc and unaligned activities, but also demonstrates the commitment to move towards a competency-based education system.

Keywords: Learning outcomes; competency-based education; system design; quality assurance; credit transfer; Canada; Ontario.

I. Introduction

Around the world, a number of policy activities over the past 20 years have focused on articulating and assessing competencies of students and embedding expectations into educational programming.[1] Canada has joined in these activities at both global and local levels in order to understand better and demonstrate the quality of education, improve teaching and learning, and to support system level coordination: ultimately aiming to provide education that supports students in achieving their goals both within the classroom and in entering the workforce.

There are numerous reasons to support a competency-based education system. Through clearly articulated skills and capacities, the value of a

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[1] Karine Tremblay, Diane Lalancette, and Deborah Roseveare, *AHELO: Feasibility Study Report: Volume 1: Design and Implementation* (Paris, France: Organisation for Economic Cooperation and Development, 2012).

credential is transparent to students, employers, and the wider public;[2] it also aligns expectations of students, faculties, programmes, institutions and governments; improves teaching and learning techniques;[3] and supports curriculum development.[4] Competency-based education facilitated by clear learning outcomes can also support issues of system design, quality assurance, credit transfer and articulation which improves jurisdictional, national, and international understanding.[5]

Recognising the varied goals, purposes, and levels at which activities can be focused, this article examines activities that are incorporating learning outcomes and the ideals of competency-based education as means to improve system design and quality assurance in Canada, and specifically the province of Ontario. Education is the sole jurisdiction of the Canadian provinces and territories. The Federal Government has limited reach into matters pertaining to education policies, system design, funding, quality assurance or curriculum development. While this presents challenges for developing nation-wide understandings and practices, it also provides opportunities for independent and innovative decisions made in the jurisdictions.[6] Hence the article, focuses specifically on the activities of the Province of Ontario, the largest postsecondary education (PSE) system in the country and the most advanced in learning outcomes activities.

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[2] Trudy W. Banta, Elizabeth A. Jones, and Karen E. Black, *Designing Effective Assessment: Principles and Profiles of Good Practice* (Jossey-Bass, 2009); John Hattie, "The Black Box of Tertiary Assessment: An Impending Revolution," in *Tertiary Assessment and Higher Education Student Outcomes: Policy, Practice and Research*, ed. Luanna H. Meyer et al. (Wellington, New Zealand: Ako Aotearoa).

[3] Trudy W. Banta and Charles Blaich, "Closing the Assessment Loop," *Change: The Magazine of Higher Learning* 43, no. 1 (2010): 22-27; Banta, Jones and Black, *Best Practice*; John Hattie, *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement* (New York: Routledge, 2009).

[4] John Biggs and Catherine Tang, *Teaching for Quality Learning at University* (UK: Open University Press, 2011); Sally Johnstone and Thad Nodine, "Hard Work, High Demand," *Inside Higher Ed*, May 14 (2014).

[5] Mary Catharine Lennon et al., *Tuning: Identifying and Measuring Sector-Based Learning Outcomes in Postsecondary Education* (Toronto, Ontario: Higher Education Quality Council of Ontario, 2014); Jenneke Lokhoff et al., *A Tuning Guide to Formulating Degree Programme Profiles Including Programme Competences and Programme Learning Outcomes* (Deusto, Spain: Competences in Education and Recognition Project (CoRe) / European Commission, 2010); Stephanie Allais, *The Implementation and Impact of National Qualifications Frameworks: Report of a Study in 16 Countries* (Geneva: International Labour Office, 2010).

[6] Theresa Shanahan and Glen Jones, "Shifting Roles and Approaches: Government Coordination of Post-Secondary Education in Canada, 1995-2006," *Higher Education Research and Development* 26 (2007); Barbara Haskel, "Where there's a Will…: Reforming Postsecondary Education in Canada's and the European Union's Decentralized Systems," *Canadian Public Administration* 56, no. 2 (2013).

Since 2006 Ontario has been striving to develop a PSE system focused on accountability, accessibility and quality,[7] and the continued commitment of government is aimed at supporting student achievement, ensuring high quality provision, and establishing fair accountability measures of success.[8] This work has involved a number of policy actors including government, arms-lengths agencies, college and university non-governmental associations, and organisations responsible for quality assurance.[9] This article focuses on initiatives that are enhancing system-wide change occurring at the level of the provincial government, its agencies, and non-governmental quality assurance organisations. Specifically, it demonstrates how the province is moving towards a competency-based system through a number of activities in a slow, uncoordinated, but steady manner by establishing expectations.

II. Concepts of Competency-based learning and learning Outcomes

Competency-based education is a conceptual framework that puts student learning at its core. It sees education as a process to provide students with demonstrable knowledge, skills and abilities. It represents a shift away from understanding and regulating education as a structural framework of inputs and outputs such as length of program and course material,[10] and instead allows students to progress as they demonstrate mastery.

The notion of competency-based education can be traced back to the time of Plato,[11] and has been an explicit component of vocational and professional education (such as nursing and medicine) and adult education since the 1960s.[12] Over the past 20 years, the philosophy has gone beyond

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[7] Bob Rae, *Ontario: A Leader in Learning. Report and Recommendations* (Toronto, Ontario: Government of Ontario, 2005).

[8] Ontario Government, *Reaching Higher: The McGuinty Government Plan for Postsecondary Education* (Ontario: Ontario Government, 2010).

[9] Pockets of highly innovative activities also occur within disciplines, individual institutions and programmes. For examples see the University of Guelph: http://www.uoguelph.ca/vpacademic/avpa/outcomes/, and the Faculty of Engineering at Queen's University: http://egad.engineering.queensu.ca/.

[10] Stephen Adam, "A Pan-European Credit Accumulation Framework — Dream or Disaster?" *Higher Education Quarterly* 55, no. 3 (2001).

[11] Martin Mulder et al., "The New Competence Concept in Higher Education: Error or Enrichment?" *Journal of European Industrial Training* 33, no. 8/9 (2009).

[12] Gilbert Jessup, *Outcomes: NVQs and the Emerging Model of Education and Training* (New York: Palmer Press, 1991); Rebecca Klein-Collins, *Competency-Based Degree Programs in the U.S.: Postsecondary Credentials for Measurable Student Learning and Performance* (USA: Council for Adult and Experiential Learning, 2012).

independent programs and boutique institutions: it is increasingly part of all types of programming including arts and science and humanities,[13] has been incorporated into traditional higher education institutions,[14] and established as part of national higher education systems.[15]

The implementation of competency-based education systems or programming can be extreme or incremental.[16] In the most extreme application of competency-based education, entire undergraduate degrees are provided to students who demonstrate mastery of the requirements at their own pace and through a variety of means. Western Governors University in the US is an example of comprehensive competency-based higher education that is not confined by traditional structural boundaries or time, place, or space.[17]

The European Union is a prime example of how a meta-system and 47 national systems shifted to competency-based higher education in approximately 10 years. The parallel forces of the European Commission's 1999 Bologna Declaration (aimed to create an integrated European Higher Education Area), and the 2002 Lisbon strategy (focusing on the modernization of higher education) revamped higher education across the continent.[18] The processes each had a number of complimentary goals and activities,[19] but two elements are key to the present discussion:

- Establishing a common system of degree comparison through qualifications frameworks
- Establishing common understanding and expectations of curriculum and performance criteria at the discipline level

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[13] Alicia J. Batten, "Metaphors we Teach by: The Language of "Learning Outcomes," *Teaching Theology & Religion* 15, no. 1 (2012): William D. Buhrman, "Globalization, Learning Outcomes, and Possibilities for Theological Education," *Religious Education* 106, no. 1 (2011).

[14] Klein-Collins, *Programs in the U.S.*

[15] Allais, *Impact*; Robert Wagenaar, "Qualifications Frameworks, Sectoral Profiles and Degree Programme Profiles in Higher Education." *Tuning Journal for Higher Education: New Profiles for New Societies* 1 (2013); Leesa Wheelahan, "From Old to New — the Australian Qualifications Framework," in *Learning from the First Qualifications Frameworks*, ed. Stephanie Allais et al. (Geneva, Switzerland: International Labour Office, 2009).

[16] Klein-Collins, *Programs in the U.S.*

[17] See: www.wgu.com

[18] Luigi F. Dona dalle Rose and Guy Haug, "Programme Profiles and the Reform of Higher Education in Europe: The Role of Tuning Europe," *Tuning Journal for Higher Education: New Profiles for New Societies* 1(2013).

[19] For details see: Clifford Adelman, *The Bologna Process for US Eyes: Re-Learning Higher Education in the Age of Convergence*. (Washington, D.C., USA: Institute for Higher Education Policy, 2009); European Commission, *The European Higher Education Area in 2012: Bologna Process Implementation Report* (Brussels: European Commission, 2012); Wagenaar, Sectoral Profiles.

Through these two activities, national systems (formerly based on credit hours and a myriad of structural designs) moved to a system that incorporated student work-load hours and student learning outcomes, which dramatically changed the framework of how higher education delivery and administration was conceptualized.[20]

A less reformist way of moving towards competency-based education is to simply establish, or tack on, learning expectations to existing structures and curriculum.[21] In this case, it is assumed that the development of competencies is already present in the curriculum, but that it becomes more transparent when articulated and identified through learning outcomes. Once established, incorporating learning outcomes into internal and external quality assurance regimes, into institutions, programs and curriculum, can be a significant task. This curriculum mapping — or constructive alignment, though simple in concept, and not nearly as reformist as the 'extreme' model, proves to be a challenge for many institutions. There have been a number of models of best practice put forth. For example, the US DQP/Tuning and the Ontario Tuning project present a detailed road maps for implementation from top to bottom,[22] and Lennon and Frank[23] describe how learning outcomes can be incorporated into a specific program and course curriculum.

The move to competency-based education is functionalised through the clear articulation of expectations of student learning. Though simple in concept, this is laden with verbiage that includes competencies, competence, learning outcomes, expectations, capacities, attributes, descriptors, standards, and more that are often entwined and can be conflicting.[24] For example, the South African Qualifications Authority states "outcomes are the qualities…that are expected at the end of a process of learning. The meaning of outcomes is similar to the

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[20] Amy Mitchel et al., *Facilitating College to University Transfer in the European Higher Education Area and Beyond: Opportunities for Ontario's College of Applied Arts and Technology* (London, Ontario: ONTransfer and College University Consortium Council, 2013).

[21] Klein-Collins, *Programs in the U.S.*

[22] See for example, Natasha Jankowski and David Marshall, *DQP Road Map to Enhanced Student Learning: Implementing the DOP and Tuning* (Urbana, IL: National Institute for Learning Outcomes Assessment (NILOA) and Institute for Evidence-Based Change (IEBC), 2014); Lennon, *Tuning*.

[23] Mary Catharine Lennon and Brian Frank, "Learning Outcomes Assessments in a Decentralized Environment: The Canadian Case," in *Higher Education Learning Outcomes Assessments: International Perspectives*, ed. Hamish Coates (Frankfurt: Peter Lang, 2014).

[24] Declan Kennedy, Aine Hyland and Norma Ryan N "Writing and using Learning Outcomes," in *Bologna Handbook, Implementing Bologna in your Institution* (2006) C3.4-1,; Allais, *The Implementation and Impact*; European Centre, *The Shift.*; D. Royce Sadler, "Making Competent Judgements about Competence," in *Modelling and Measuring Competencies in Higher Education: Tasks and Challenges*, ed. Sigrid Blömeke et al. (Rotterdam: Sense Publishers, 2013).

concept of competence".[25] Sadler, on the other hand, posits that competences are the broad "envelope term" that is made up of skills and competencies.[26]

For clarity, this article uses two types of expectations commonly employed: 'competencies' and 'learning outcomes'. Competencies are broad cumulative statements "of what a learner knows, understands and is able to do on completion of a learning process".[27] Very often they are categories of integrated skills, knowledge and abilities, which group sets of cognitive and non-cognitive skills that underlie performance. Commonly, four to eight competencies are established for a sector of education; be it k-12, lifelong, college-level diplomas, undergraduate, masters or doctoral degrees. For example, the Ontario Qualifications Framework and the Ontario Undergraduate Degree Level Expectations include: depth and breadth of knowledge; knowledge of methodologies, research and scholarship; application of knowledge, communications skills; awareness of the limits of knowledge, autonomy; and, professional capacity.[28]

Learning outcomes, on the other hand, are "clearly defined and measurable statements of learning that reflect the scope and depth of performance; what a learner is expected to know, understand and be able to demonstrate after completion of a process of learning".[29] In the most technical sense, learning outcomes are action-oriented measurable knowledge, skills, and abilities that form the basis of the competencies.

Literature often uses the terms graduate capacities or attributes interchangeably with learning outcomes, but the intent is the same. The term 'learning objective' is also used in place of learning outcomes or competencies.[30] Though Teichler and Shomburg[31] (2013, 217-228) assert that the term 'learning

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[25] South Africa Qualifications Authority, *NQF Support Link: Reader for Learning Programme* (Pretoria, South Africa: South Africa Qualifications Authority, 2004), 6.

[26] Sadler, "Competent Judgements," 13.

[27] European Commission, *Implementing the Community Lisbon Programme: Recommendation of the European Parliament and of the Council on the Establishment of the European Qualifications Framework for Lifelong Learning* (Brussels, Belgium: European Commission, 2006), 16.

[28] "Ontario Qualifications Framework (OQF)," Ontario Ministry of Training, Colleges and Universities, accessed February 10, 2014, http://www.tcu.gov.on.ca/pepg/programs/oqf/QsAsOQF.html, Ontario Universities Council on Quality Assurance, *Quality Assurance Framework* (Toronto, Ontario: Ontario Universities Council on Quality Assurance, 2010).

[29] Lennon, *Tuning*, 47.

[30] Johnstone and Nodine, "Hard Work".

[31] Ulrich Teichler and Herald Shomburg, "Analyzing the Results of Study in Higher Education and the Requirements of the World of Work," in *Modelling and Measuring Competencies in Higher Education: Tasks and Challenges*, edited by Sigrid Blömeke et al. (Rotterdam: Sense Publishers, 2013).

objectives' is used more commonly and for the same purpose as learning outcomes, it is also argued that outcomes are distinct from learning objectives in that the former are short term and explicit to the content, where the latter deal with long-term 'above content' acquisition of knowledge, skills, and abilities.[32]

Refraining from a more lengthy debate on the semantic use of terms,[33] the ultimate purpose is to translate a course of study in to a set of understandable, measurable elements, and Canadian audiences use 'learning outcomes' as the generic term.[34]

III. **Background context and rationale for activities**

Unlike some federated systems (such as the US or Australia), the Canadian Federal Government does not have any jurisdiction, or federal ministry, over educational issues.[35] Each province or territory is responsible for organising, funding and directing K-12 and post-secondary education independently.[36] Lacking strong federal involvement necessitates a number of actors in post-secondary education policy, at both national and provincial/territorial levels, which creates discrete realms of power in the policy and quality assurance landscape.[37]

The number of actors and discrete realms of power in Canadian policy and quality assurance landscape is a significant hindrance to sweeping changes. What has occurred, instead, have been small changes within the parameters of the existing systems that are articulating expectations within traditional courses and programmes. Ontario's quality assurance agencies,

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[32] "Learning Outcomes vs. Learning Objectives," University of Toronto, accessed April 23, 2014, http://www.teaching.utoronto.ca/topics/coursedesign/learning-outcomes/outcomes-objectives.htm.

[33] For a review of the historical development of the language of learning outcomes see: European Centre for the Development of Vocational Training, *The Shift to Learning Outcomes: Conceptual, Political and Practical Developments in Europe* (Luxemburg: European Centre for the Development of Vocational Training, 2008).

[34] Ken Norrie and Mary Catharine Lennon, "Introduction and Overview," in *Measuring the Value of a Postsecondary Education*, ed. Ken Norrie and Mary Catharine Lennon (Montreal-Kingston: McGill-Queen's University Press, 2013), 1; John FitzGibbon, *Learning Outcomes and Credit Transfer: Examples, Issues, and Possibilities* (Vancouver, British Columbia: British Columbia Council on Admissions and Transfer, 2014).

[35] Shanahan and Jones, *Shifting Roles*.

[36] The exception to this is Aboriginal Education which is under the purview of the Ministry of Aboriginal Affairs and Northern Development Canada. See: https://www.aadnc-aandc.gc.ca/eng/1100100033601/1100100033605.

[37] Michael Skolnik, *(How) Do Quality Assurance Systems Accommodate the Differences between Academic and Applied Higher Education?* (forthcoming).

for example, are currently working to integrate learning outcomes into traditional course based programmes. Klein-Collins[38] suggests this is the most basic move towards competency-based education.

Similarly, Canada has not had a significant external pressure to revise the system.[39] Unlike Europe or South America, for example, there have been no international or regional forces to support large or strategic moves towards a system overhaul or competency-based education model. Instead, seeing the potential of the model, a variety of activities have taken place and are slowly moving the system forward.

Instead, a close watch is kept on the development of the European Higher Education Area particularly in the development of the European Credit and Articulation System and the European and International Tuning Initiatives. The emergence of these activities in provided valuable insight into how Ontario can mitigate structural confines while preserving sectoral autonomy in governance and quality assurance.[40] Similarly viewing the US activities of Degree Qualifications Profile (DQP)[41] and the American Association of Colleges and Universities LEAP initiative,[42] has helped Ontario has shifted from 'fear and denial',[43] towards acceptance of the value of integrating learning outcomes into the system.

This incremental approach is gaining traction in the various spheres of influence and control. Ad-hoc and unaligned, but with the dedication of many major players, the interests and activities incorporating learning outcomes at the system level, in quality assurance activities, institutions and the classroom, has increased. While there hasn't been a system overhaul, instead there have been tentative steps towards incorporating learning outcomes, and a gradual move towards a system based on student competencies rather than a system based on administrative design.

1. *National activities in quality assurance and learning outcomes*

At the pan-Canadian political level, the Council of Ministers of Education Canada (CMEC) brings the jurisdictional governments together to discuss

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[38] Klein-Collins, *Programs in the U.S.*
[39] Haskel, "Where there's a Will."
[40] Haskel, "Where there's a Will"; Mitchel, *Transfer*.
[41] Lumina Foundation, *The Degree Qualifications Profile* (USA: Lumina Foundation, nd).
[42] "Liberal Education and America's Promise (LEAP)," Association of Community Colleges and Universities, accessed February 26, 2014. https://www.aacu.org/leap/.
[43] Margaret A. Miller, *From Denial to Acceptance: The Stages of Assessment* (USA: National Institute for Learning Outcomes Assessment, 2012).

policy matters of mutual importance. It supports the provinces in common areas such as K-12 and postsecondary education, lifelong learning, aboriginal education, and is the international voice of Canadian education. In these capacities CMEC has some jurisdiction in quality assurance, credit transfer and learning outcomes conversations. In 2007 it developed the Canadian Degree Qualifications Framework (CDQF)[44] which provides guidelines for degree-level standards/expectations for Bachelors, Masters and PhD degree programmes. This is similar to the European Qualifications Framework which provides a reference point for participating nations in conducting and examining their own systems, but is not legally binding.[45] Unfortunately, perhaps because it is non-binding, the CDQF guidelines have been described as 'little known' and 'not impactful'.[46]

In representing Canadian interests on the international stage, CMEC supports international credit recognition and also has the opportunity to engage in international projects on learning outcomes, such as the OECD's Assessment of Higher Education Learning Outcomes (AHELO) Feasibility Study.[47] CMEC requires the agreement of all the provinces and territories to proceed with any activity. In the case of the AHELO Feasibility Study, the jurisdictions did not come to consensus on participation and Canada, as a nation, did not participate. Instead, the province of Ontario participated independently.

There are a number of national non-governmental organisations engaged in aspects of system design, quality assurance and credit transfer.[48] These organisations represent their constituents' needs to the broader Canadian audience that have contributed to the conversation on learning outcomes primarily through the publication of reports and guiding principles, conferences, and network building. One national organisation that has engaged specifically in learning outcomes is the Canadian Bureau for International Education (CBIE), a non-profit organisation supporting international activities and internationalisation of all levels of education.

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[44] Council of Ministers of Education, Canada, *Ministerial Statement on Quality Assurance of Degree Education in Canada* (Toronto, Ontario: Council of Ministers of Education, Canada, 2007).

[45] Christine Trampusch, "Europeanization and Institutional Change in Vocational Education and Training in Austria and Germany," *Governance* 22 (3) (2009).

[46] Association of Universities and Colleges of Canada, *The Revitalization of Undergraduate Education in Canada* (Ottawa, Ontario: Association of Universities and Colleges, Canada, 2011).

[47] For a description of the OECD AHELO Feasibility Study see http://www.oecd.org/education/skills-beyond-school/testingstudentanduniversityperformancegloballyoecdsahelo.htm.

[48] Including the Association of Universities and Colleges Canada (AUCC), Association of Canadian Community Colleges (ACCC) and the Conference Board of Canada (CoBC).

CBIE does not generally engage in issues of PSE quality assurance or curriculum development, focusing instead on supporting international student recruitment, student services and at-home internationalisation activities.

However, CBIE saw the value of establishing Canada-wide consensus in credentialing in order to promote international relations and understanding. In 2010, in collaboration with the European Commission, they conducted a Tuning Feasibility Study to explore establishing common standards and reference points for the fields of Engineering, Nursing and History.[49] Despite the support of the EC and the interest of participants, their lack of political power and influence at both the provincial level and within the institutions was a challenge; and the project did not progress beyond the feasibility study.

The lack of authority of these pan-Canadian agencies and organisations demonstrates how firmly PSE lies in the hands of the provinces and territories. It is extremely difficult to establish consensus and develop nation-wide activities. Under these conditions the provinces are independently working through common issues. When possible, they come together through forums and working groups, but are independent in their legislature, policies, system design, and quality assurance models.

2. *Provincial activities in quality assurance and learning outcomes*

Each of the 10 provinces and 3 territories have their own system and structure for higher credential provision. Universities typically provide undergraduate and graduate degrees, where colleges generally provide more technical diplomas similar to UNESCO's 2011 ISCED description of a short cycle qualification (as being typically practically based and occupationally specific).[50] Some provinces, such as British Columbia, are structured to allow two years of college credits to be transferred into a bachelor's degree. Quebec, alternatively, has a system where 2 years of college is mandatory for entrance into bachelor's degree programmes. Others, such as Ontario, operate a binary system where there are no clear pathways between college and university sectors. The variety of system structures is important to understanding the breadth of work necessary to implement common expectations both within and across the provinces.[51]

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[49] "About IE: Tuning," Canadian Bureau for International Education, accessed February 26, 2014. http://www.cbie-bcei.ca/about-ie/tuning/.

[50] *Revision of the International Standard Classification of Education (ISCED,* 2011): 36 C/19.

[51] For a thorough overview of the provincial systems, see Glen A. Jones, ed., *Higher Education in Canada: Different Systems, Different Perspectives* (New York: Garland Pub., 1997).

All provincial governments have accountability agreements with the publically-assisted universities and colleges. The agreements set out block funding and targeted funding packages for strategic initiatives. The exact nature of the accountability agreements vary in the jurisdictions, but the institutions provide significant amounts of information to the government including enrolment rate, retention rate, graduation rate, etc. which are required for funding eligibility.

Governments have differing involvement in the day to day activities of the institutions, varying by province as well as by sector. Traditionally, as colleges are more aligned with labour market needs, the governments maintain a strong role in determining programme offerings, establishing programme standards and operating quality assurance frameworks. Alternatively, Canadian universities are given complete autonomy in all these aspects. While the provincial governments legislate degree-granting status to institutions, they are not responsible for quality assurance activities.

There are a number of ways which provinces organise their quality assurance activities.[52][53] The Maritime Provinces (New Brunswick, Prince Edward Island, and Nova Scotia) have collectively developed an agency responsible for university-level quality assurance across the region. Some provinces self-regulate through member-based organisations, such as the provincial Council of Ontario Universities (COU), or through voluntary agreements with government agencies (such as British Columbia). Others, such as Alberta, allow each institution to be responsible for their own quality assurance (through governing councils and internal mechanisms) which are then related to the government. It should be noted that, to date, very few of the provinces have taken on the language of learning outcomes or competency-based education in their quality assurance systems.[54]

The very small private sectors of PSE provision in Canada are heavily regulated by the provincial governments. Outside the purview of the public college and university quality assurance sectors, governments maintain a role in approving programming and performing institutional and programme

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[52] See http://www.cicic.ca/658/quality-assurance.canada for an overview of quality assurance structures in Canadian provinces.

[53] There are no accreditation agencies in the country; however, some universities have sought accreditation from US agencies. Many professional programmes are accredited by their appropriate professional bodies, and the Ontario College system is currently moving towards the accreditation model.

[54] Council of Ministers of Education, Canada, *Ministerial Statement on Quality Assurance of Degree Education in Canada* (Toronto, Ontario: Council of Ministers of Education, Canada, 2007).

reviews. While the governments do not accredit or fund private programming, they do 'recognise' programmes and provide student financial assistance to some.

The challenges of these disparate systems creates issues of recognition both across the country and within provincial systems. There are significant challenges in student mobility, credit transfer and articulation. There is a good deal of movement across provincial boundaries. In a survey of 40 universities across the nation, it was found that 18% of students lost prior credits when transferring to another province.[55] Similar research within Ontario highlights that students transferring institutions within the province, are also likely to lose prior credits particularly if they are transferring from a college to university.[56] For decades, most provinces have operated transfer activities on 'case-by-case' model of course credit acceptance,[57] and many are still working on developing course-to-course credit transfer using course hour equivalences. One explanation for the continued work in this area is that there is no common definition of the credit: in some cases it is 24 hours of classroom time and others 39.[58]

A number of provincially funded agencies, colloquially known at the 'CATs' — the Councils for Articulation and Transfer — have been developed within the past 5 years (i.e. ACAT,[59] BCCAT,[60] ONCAT[61], NBCAT,[62] etc.). These agencies are responsible for ensuring smooth transitions between institutions and programmes within each province and are critical in developing common expectations for programmes. Given the nature of the organisations, and that the majority of student transfer occur intra-provincially,[63] they work primarily within the confines of their jurisdiction to improve college-to-university, college-to-college, university-to-university and university-to-college transfers.

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[55] Nick Heath, *Student Mobility in Canada across Canadian Jurisdictions* (Windsor, Ontario: Pan-Canadian Consortium on Admissions and Transfer, 2012).

[56] Nick Heath, *Student Mobility within the Province of Ontario: Supplement to the Report on the Pan-Canadian Survey of Student Mobility* (Windsor, Ontario: Pan-Canadian Consortium on Admissions and Transfer, 2012b).

[57] Sean Junor and Alex Usher, *Student Mobility and Credit Transfer a National and Global Survey* (Educational Policy Institute, 2008).

[58] Higher Education Strategy Associates, *Changing Times, Changing Places: The Global Evolution of the Bachelor's Degree and the Implications for Ontario* (Toronto, Ontario: Higher Education Quality Council of Ontario, 2012). 15.

[59] See: http://www.acat.gov.ab.ca/new_format_include/new_related_sites.asp

[60] See: http://bccat.ca/

[61] See: http://www.oncat.ca/

[62] See: http://nbcat.ca/

[63] Heath, *Ontario*: 29.

Recognising the value in national conversations in this matter, in 2011 the CATs created a platform to discuss issues of inter-provincial transfers through the Pan-Canadian Council for Accreditation and Transfer (PCCAT). PCCAT is not intended to develop a common framework for interprovincial transfer, but instead designed to provide a platform for discussion and an opportunity to collaborate.[64]

IV. Learning outcomes in the Ontario system

In order to understand how competency-based education is taking root in Canada it is best to examine one province as an in depth example. The following section outlines activities in Ontario's governance, quality assurance and credit transfer in order to demonstrate how one province is slowly shifting towards incorporating learning outcomes and developing competency-based education.

Based on historic design and redesigns, the Ontario PSE system has a complex set of parameters that shape distinct sectors of college and university governance and quality assurance. A significant element is the binary system of the college and universities, intended to serve distinct purposes. It follows that there are separate quality assurance mechanisms in Ontario for public college, public university, and private sectors. Each has its own criteria, accountability frameworks, language, expectations and documentation.

In fact, there are seven different sets of binding accountability and quality assurance mechanisms managed by five different bodies, as well as two other agencies involved in different aspects of policy and research. Figure 1, below, illustrates the primary bodies in the Ontario quality assurance system. This is followed by a short discussion of the specific purpose, sphere of influence and competency-based education activities of each organisation. Note the differences in the content and presentation of the competencies/learning outcomes from the various agencies. Aligning the different frameworks is challenging, there is little coordination and limited formal paths of communication between the agencies (though there are informal conversations). These factors confound straightforward understanding and comparison of programming.[65]

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[64] Similarly, a regional group WestCat has been developed to support inter-provincial mobility in the western provinces (British Columbia, Alberta, Saskatchewan, and Manitoba).

[65] Lennon, *Tuning*.; Skolnik, *Accommodate Differences*.

Ontario Ministry of Training, Colleges and Universities
- Established Ontario Qualifications Framework

Post-Secondary Education Quality Assurance Board
- Confers consent to non-Ontario public university degrees
  - i.e. College-provided Bachelor's degrees, private degree providers, out-of-province degree providers

Ontario University Council on Quality Assurance
- Established Undergraduate and Graduate Degree Level Expectations
- Conducts Quality Audits in Universities

Ontario Council on Articulation and Transfer
- Develops college and university transfer arrangements

Higher Education Quality Council of Ontario
- Conducts and supports system design research

College Program Standards
- Established system-wide college 'employability skills'
- Established program specific learning outcomes

Private Career College Branch
- Ensure providers comply with Private Career College Act

Ontario College Quality Assurance Service
- Conducts Credit Validation and Program Audits

Legend:

☐ Government Quality Assurance   ☐ Member organisations Quality Assurance   ☐ Government-funded agencies supporting system activities

Figure 1

Ontario Quality Assurance System Actors and Roles

The Ontario Ministry of Training, Colleges and Universities (MTCU) is responsible for all postsecondary education including colleges, universities, apprenticeship and training, in both public and private institutions.[66] It funds the institutions, establishes system design, and has accountability agreements with each individual institution. It has a different relationship with the colleges and universities, but maintains overall control of the system. For the most part, the government is not involved in day to day operations, and primarily funds the institutions through block funding, with some pockets of money reserved for particular initiatives, such as online-learning, supporting under-represented groups, etc.

MTCU developed the Ontario Qualifications Framework (OQF) in 2002. The OQF set out credential-level expectations for all levels of post-secondary education,[67] intended to "set the standard for each credential that can be used to assess the quality of particular programmes at that credential level, and […] facilitate international recognition of credentials, credit transfer and graduate mobility'.[68] All institutions are expected to comply with the OQF in the accountability agreement reporting.

Having an OQF follows the OCED's advice on good practice in educational policy,[69] and it was hoped that the framework would be utilized as a quality assurance tool[70] by a) helping institutions to study how well their programmes are meeting expectations; b) assisting them in putting into place a quality assurance system; c) adding to the credibility of the qualifications within the framework, and; d) making it easier for students to compare similar programmes at different levels.[71] Table 1, below, provides the example of the Qualifications Standards for Depth and Breadth of Knowledge (one of six descriptors).

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[66] Note all degree providers in Ontario are public institutions, though there are nearly 600 private colleges providing certificate and diplomas (managed by PCCAT).

[67] "Ontario Qualifications."

[68] Virginia Hatchette, "The Value of Learning Outcomes: The Canadian Perspective," in *Measuring the Value of a Postsecondary Education*, eds., Ken Norrie and Mary Catharine Lennon (Kingston-Montreal: McGill-Queen's University Press, 2012).

[69] Organisation for Economic Co-operation and Development, ed., *Tertiary Education for the Knowledge Society*, (Paris: OECD, 2008).

[70] Hatchette, *The Canadian Perspective*.

[71] "Ontario Qualifications Framework: Questions and Answers," Ontario Government, accessed January 26, 2014, http://www.tcu.gov.on.ca/pepg/programs/oqf/QsAsOQF.html.

Table 1
OQF Descriptors for Depth and Breadth of Knowledge[72]

Descriptor	Diploma I	Advanced Diploma	Baccalaureate/Bachelor's Degree	Baccalaureate/Bachelor's Degree: Honours	Master's Degree
Depth and Breadth of Knowledge	The skill and knowledge requirements for successful performance in a complex occupational setting.	a) The skill and knowledge requirements for successful performance of a specialized range of activities, most of which would be complex or non-routine in an occupational setting; b) At least some breadth beyond the vocational field, with exposure to at least one discipline outside the main field of study within the themes of: arts in society; civic life; social and cultural understanding; personal understanding; and science and technology, to increase awareness of the society and culture in which they live and work	a) A general knowledge and understanding of many key concepts, methodologies, theoretical approaches and assumptions in a discipline, b) A broad understanding of some of the major fields in a discipline, including, where appropriate, from an interdisciplinary perspective, and how the fields may intersect with fields in related disciplines; c) An ability to gather, review, evaluate and interpret information relevant to one or more of the major fields in a discipline; d) Some detailed knowledge in an area of the discipline; e) Critical thinking and analytical skills inside and outside the discipline; f) The ability to apply learning from one or more areas.	a) A developed knowledge and critical understanding of the key concepts, methodologies, current advances, theoretical approaches and assumptions in a discipline overall, as well as in a specialized area of a discipline; b) A developed understanding of many of the major fields in a discipline, including, where appropriate, from an interdisciplinary perspective, and how the fields may intersect with fields in related disciplines; c) A developed ability to: i. gather, review, evaluate and interpret information; ii. compare the merits of alternate hypotheses or creative options, relevant to one or more of the major fields in a discipline; d) A developed, detailed knowledge of and experience in research in an area of the discipline; e) Developed critical thinking and analytical skills inside and outside the discipline; f) The ability to apply learning from one or more areas outside the discipline.	A systematic understanding of knowledge, including, where appropriate relevant knowledge outside the field and/ or discipline, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of their academic discipline, field of study or area of professional practice

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[72] Modified from "Ontario Qualifications".

1. *Public College System*

In the 1960's Ontario developed the Colleges of Applied Arts and Technology to provide technical and practical education, which was seen as an important aspect of labour market development. The college system is tightly operated and regulated by the government. Beyond complying with the general government accountability framework (ensuring they receive government funding), colleges are required to provide Key Performance Indicator (KPI's) including graduate satisfaction, employer satisfaction, and employment rate[73] (which are not required for universities). The government is responsible for overseeing publicly funded programmes through the College Programme Standards Act, which outlines explicit content, curriculum and learning outcomes.[74] Typical of other technical education systems,[75] Ontario's college sector is more advanced in learning outcomes-based education.

The province established the 'Essential Employability Skills' (EES) which are common expectations of standards across all college programs. The EES sets out 5 skill categories (such as 'Numeracy') and 11 broad learning outcomes (such as 'execute mathematical operations accurately').[76] See Table 2 for an example of a competency (termed 'Skill category') of 'Critical thinking and problem solving', associated 'skills' and 'learning outcomes'.

Table 2
Essential Employability Skill for Critical Thinking and Problem Solving[77]

SKILL CATEGORY	DEFINING SKILLS: Skill areas to be demonstrated by graduates:	LEARNING OUTCOMES: The levels of achievement required by graduates. The graduate has reliably demonstrated the ability to:
CRITICAL THINKING & PROBLEM SOLVING	• Analysing • Synthesising • Evaluating • Decision making • Creative and innovative thinking	• apply a systematic approach to solve problems. • use a variety of thinking skills to anticipate and solve problems.

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[73] "Key Performance Indicators," Colleges Ontario, accessed January 26, 2014, http://www.collegesontario.org/outcomes/key-performance-indicators.html.

[74] For examples see: http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/.

[75] Mulder, "Concept of Competence".

[76] "Essential Employability Skills," Ministry of Training, Colleges and Universities, accessed January 26, 2014. http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/essential.html.

[77] "Essential Employability Skills", Ontario Government, accessed May 14, 2014. http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/essential.html.

These generic competencies are complimented by very specific programme learning outcomes,[78] which are to be embedded on programs across the province. Table 3 below shows an example of one of 10 'learning outcomes' for a 2 year diploma in public relations.

Table 3

An example of a learning outcome from the Public Relations program standard[79]

The Vocational Learning Outcomes
1. The graduate has reliably demonstrated the ability to participate in the planning of public relations activities, including the development of clear, measurable communication objectives and project budgets and selection of strategies, tactics, tools and resources to support a range of stakeholder* relationships and organizational objectives.
Elements of the Performance • Identify key stakeholders* and relationship management needs of a range of organizations in various sectors (e.g., commercial, not-for-profit, government, etc.) and industries • Distinguish between goals, objectives, strategies and tactics • Select strategies, tactics, tools and resources appropriate for different public relations functions (e.g., media relations, community relations, government relations, internal/corporate communications, investor/donor relations, reputation/crisis/issues management, special events, fundraising, sponsorship, etc), sectors (e.g., commercial, not-for-profit, agency, government, etc.) and industries • Participate in the selection of strategies and development of tactical plans to achieve objectives and guide public relations activities • Research and compile lists for a range of public relations functions, strategies and tactics (e.g., media lists, communication distribution lists, influencer lists, event invitation lists, lists of relevant social media platforms and Websites, potential donor lists, etc.) • Assist in needs analysis of target audiences to support the development of communications objectives • Draft communication objectives that are specific, measurable, attainable, realistic, time-sensitive (SMART), and aligned with organizational objectives • Accurately record project instructions, resources and constraints to support the planning process and guide evaluation of project success • Suggest creative approaches to public relations activity planning and problem solving

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[78] For example, see http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/aa/Journalism.pdf.

[79] "Public Relations (Ontario College Diploma) Program Standard", Ontario government, accessed May 14, 2014. http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/aa/50243.pdf.

Table 3

An example of a learning outcome from
the Public Relations program standard (continued)

- Participate in the development of project budgets that balance expenses with resources within known constraints
- Apply public relations theories and practices to support the planning of public relations activities
- Use project management tools to support the planning of public relations activities (e.g., work plans, critical paths, Gantt charts, etc.)
- Participate in a strengths, weaknesses, opportunities and threats (SWOT) or similar analysis to support the planning of communications and public10 II — Vocational Standard relations activities
- Identify and respond to the specific needs of journalists and news media in the planning of communication strategies and tactics for media relations
- Source suppliers and follow principles, guidelines and relevant purchasing policies to obtain estimates for required products and services
- Monitor, report and suggest responses to issues and trends that may impact the public relations activity planning process
- Actively participate as a member of project planning teams, fostering collaboration and completing tasks

The programmes must demonstrate compliance with the both the EES and programme standards through the Ontario College Quality Assurance Service (OCQAS). This arms-length peer-review quality assurance agency for Ontario's colleges is mandated by the government to provide quality assurance of college programmes through Credential Validation Services (which approves new programmes), and through the Programme Quality Assurance Process Audit (PQAPA) (which conducts academic audits).

Each programme complies with the EES as well as the OQF, but are not aligned with university programming, so it is very difficult to have credits recognised for a degree, making transfer to universities nearly impossible.[80] Also, the very specific program learning outcomes make it difficult to recognise the transferability to other college programs.

Ontario colleges are seeking external quality monitoring. In late 2013, OCQAS was granted permission from its governing board (made up of college presidents) to become an accreditation agency.[81] Unprecedented in Canada, the accreditation agency is expected to help validate the quality of

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[80] Heath, *Ontario*.

[81] Ontario College Quality Assurance Agency, *Colleges Moving to an Accreditation Process. New Model Starts 2015* (Toronto, Ontario: Ontario College Quality Assurance Agency, 2013).

the colleges. The development of the accreditation body is currently underway, and is expected to be operational by 2015. It will be extremely interesting to watch the development of this organisation, and see if, and how, they incorporate learning outcomes into the accreditation model.

2. *Public University system*

Quality assurance in the university system is a self-monitoring activity, where the institutions are responsible for their internal quality assurance process and report to the membership association the Council of Ontario Universities (COU).[82] COU has a specific quality assessment arm, the Ontario Universities Council on Quality Assurance (OUCQA) that reviews institutional quality assurance procedures on a seven year cycle.[83] The peer-review process examines the structure, curriculum and activities compared to the stated activities and missions of the programme. This collegial activity is a means to ensure compatibility and quality in programming across the province. These activities are of the 'enhancement model' suggested by Stensaker et al[84] seeking to provide improvement rather than control on the programmes being evaluated.

In 2005 COU developed a list of Undergraduate Degree Level Expectations (UDLEs) for 3-year, 4-year and 4-year Honour's Bachelor's degrees, and Graduate Degree Level Expectations (GDLEs) for Masters and Doctoral degrees, based loosely on the OQF. These frameworks intended to clarify the expectations of the competencies programs would impart to students with the intention for institutions and programmes to develop their own expectations based on the frameworks.[85] Despite using a similar format the UDLEs and GDLE's do not explicitly correspond as each have unique competency areas.[86] See Table 4 for an example of one of the competency areas used for both UDLEs and GDLEs.

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[82] Ian Clark et al., *Academic Transformation: The Forces Reshaping Higher Education in Ontario* (Kingston, ON: McGill-Queen's University Press, 2009): 122.

[83] Hatchette, *Canadian Perspective*.

[84] Bjorn Stensaker et al., "An in-Depth Study on the Impact of External Quality Assurance," *Assessment & Evaluation in Higher Education* 36, no. 4 (2011).

[85] "Quality Assurance in Ontario," Ontario Universities Council on Quality Assurance, accessed February 26, 2014 http://oucqa.ca/framework/1-2-quality-assurance-in-ontario/.

[86] UDLEs set out: Depth and breadth of knowledge, Knowledge of methodologies, Application of knowledge, Communication skills, Awareness of limits of knowledge and, Autonomy and professional capacity. GDLEs set out: Depth and breadth of knowledge, Research and scholarship, Level of application of knowledge, Professional capacity/autonomy, Level of communications skills, Awareness of limits of knowledge.

Table 4
UDLEs and GDLEs Depth and Breadth of Knowledge[87]

	Baccalaureate/bachelor's degree This degree is awarded to students who have demonstrated the following:	*Baccalaureate/bachelor's degree: honours* This degree is awarded to students who have demonstrated the following:	*Master's degree* This degree is awarded to students who have demonstrated the following:	*Doctoral degree* This degree extends the skills associated with the Master's degree and is awarded to students who have demonstrated the following:
Depth and breadth of knowledge	a) General knowledge and understanding of many key concepts, methodologies, theoretical approaches and assumptions in a discipline b) Broad understanding of some of the major fields in a discipline, including, where appropriate, from an interdisciplinary perspective, and how the fields may intersect with fields in related disciplines c) Ability to gather, review, evaluate and interpret information relevant to one or more of the major fields in a discipline d) Some detailed knowledge in an area of the discipline e) Critical thinking and analytical skills inside and outside the discipline f) Ability to apply learning from one or more areas outside the discipline	a) Developed knowledge and critical understanding of the key concepts, methodologies, current advances, theoretical approaches and assumptions in a discipline overall, as well as in a specialized area of a discipline b) Developed understanding of many of the major fields in a discipline, including, where appropriate, from an interdisciplinary perspective, and how the fields may intersect with fields in related disciplines c) Developed ability to: i) gather, review, evaluate and interpret information; and ii) compare the merits of alternate hypotheses or creative options, relevant to one or more of the major fields in a discipline d) Developed, detailed knowledge of and experience in research in an area of the discipline e) Developed critical thinking and analytical skills inside and outside the discipline f) Ability to apply learning from one or more areas outside the discipline	A systematic understanding of knowledge, including, where appropriate, relevant knowledge outside the field and/or discipline, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of their academic discipline, field of study, or area of professional practice;	A thorough understanding of a substantial body of knowledge that is at the forefront of their academic discipline or area of professional practice including, where appropriate, relevant knowledge outside the field and/or discipline.

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[87] *"Quality Assurance Framework"*.

Though intended to provide flexibility, programmes were challenged in demonstrating achievement of these rather broad generic expectations when undertaking either internal or external cyclical reviews. It was a challenge to take the traditional programme outlines and missions and align them into the broad categories in a meaningful way. The reaction from Ontario universities was to ask for more help in demonstrating that they are successfully providing students with the competencies. While intended to ensure compatibility and quality in programming across the province there is no evaluation of whether programs have embedded, assessed or measured student learning outcomes, or if programmatic or student-level expectations have been achieved[88]. While a small move towards supporting competency-based education, it must be considered that prior to this work there was little established agreement as to the expectations of student learning outcomes across the university sector or programmes.

3. *Alternate providers*

The Private Career Colleges Branch of the Ontario government is governed by the Private Career Colleges Act of 2005. The private colleges must register with the Government and "meet certain standards for the programmes they offer, as well as advertising, refund policies, and instructor qualifications". The Ministry of Training Colleges and Universities is responsible for ensuring institutions comply with the Act, and non-compliance punishments usually come in the form of financial penalties. The guidelines are primarily operational, and there is no curriculum — or learning outcomes — established by the government. The government does not conduct quality audits of programming, and the sector generally operates under 'caveat emptor' rules.

When the government opened PSE to new providers in the early 2000's, it simultaneously created the Postsecondary Education Quality Assessment Board (PEQAB) to monitor them. PEQAB is responsible for approving degree programmes in private and out of province providers, as well as degrees in Ontario's public colleges. By conferring consent to programs/institutions, PEQAB acts as a de facto accreditation agency for a small number of programmes.[89] PEQAB was intended to bridge a gap because the new programmes were outside of the purview of both the college and university quality assurance mechanisms. Hence, the programmes are directly, and heavily, monitored by the government through detailed quality standards.

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[88] Lennon and Frank, "Assessments".
[89] Clark, *Transformation:* 122.

Though there is some reference to learning outcomes (as PEQAB applied the Ontario Qualifications Framework when considering the applicability and quality of the programme), the majority of the standards relate to processes.

4. *Government arms-length agencies*

The Higher Education Quality Council of Ontario (HEQCO) is an arms-length government organisation developed in 2005 tasked with providing the Ontario Government with research-based policy advice on all aspects of post-secondary education. Having conducted significant research into international activities in 'quality initiatives', HEQCO set out a learning outcomes research agenda in 2011.[90]

Two activities revolved around the assessment of learning outcomes and competencies. The Collegiate Learning Assessment (a tool that measures the generic skills students gain during a programme) was piloted in 8 institutions in the province.[91] At the request of government, HEQCO also implemented the Organisation for Economic Cooperation and Development's (OECD) Assessment of Higher Education Learning Outcomes (AHELO) Feasibility Study. AHELO sought to determine and assess internationally common learning outcomes in generic skills, economics and engineering.[92] Both of these activities were valuable in demonstrating the potential of system-wide tests of learning outcomes and competencies, as well as highlighting some of the challenges including resistance to large-scale assessments, student recruitment and administration issues, as well as overall fit for purpose. They also provided insight into the importance of assessing learning outcomes.

Another significant activity was a 'Tuning project'[93] which aimed to establish provincially common learning outcomes. Given the existing work in the province, HEQCO did not duplicate or reshape the existing OQF, EES or UDLEs and GDLEs. Instead, it intended to create explicit, measurable expectations across credentials at the sector levels of physical science, life and health science and social science. With similar intentions as the European Sectoral Qualifications Framework, the purpose was to bridge detailed program

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[90] Higher Education Quality Council of Ontario, *Annual Report 2010/2011* (Toronto, Ontario: Higher Education Quality Council of Ontario, 2010).

[91] Mary Catharine Lennon, *Piloting the CLA in Ontario* (Toronto, Ontario: Higher Education Quality Council of Ontario, 2014).

[92] Mary Catharine Lennon and Linda Jonker, *AHELO: The Ontario Experience* (Toronto, Ontario: Higher Education Quality Council of Ontario, 2014).

[93] Though not directly part of the European Commission funded Tuning projects, close links were maintained with though the HEQCO Tuning Advisory Board.

expectations with the broader competencies.[94] Furthermore, the intention was to work within these discipline groupings as the majority of transfers occur within discipline sectors (i.e. from one health sciences program to another), suggesting that the core competencies and learning outcomes would be similar. The learning outcomes were also intended to be specific enough that they would provide guidance for quality assurance, programme design, students and employers, to support an understanding of the 'essence of the sector'.[95]

Another action the Tuning project took was to work across credential levels (2-year, 3-year, 4 year honour's bachelor's degree and master's degree), in order to aid credit transfer and mobility conversations. Despite structural differences in the systems, it was found that the core of the sectoral knowledge and competencies remained intact across the various credential types.

The sector groups designed a set of five common competency areas,[96] sub-competencies and learning outcomes, with one competency area that was considered to be unique to each sector (practice and methods). The learning outcomes presented are more descriptive than what is set out in the qualifications framework and other quality assurance models. See, for example, Table 5, which provides the Knowledge competency's subcompetencies and associated learning outcomes.

Table 5

Tuning Learning Outcomes Knowledge Competency[97]

Subcompetency	Two-year diploma	3-year diploma	Bachelor's degree	Master's degree
Theory and Concepts	Describe and apply the major concepts, theories and practices in the discipline	Describe and apply major theories, principles and practices in the discipline	Drawing on fundamental principles, describe, apply and integrate major theories and practices in the discipline	Drawing on fundamental principles, describe, apply and integrate the major theories, research methods and approaches to inquiry and/or schools of practice in the field of study

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[94] Wagenaar, "Sectoral Profiles."

[95] Lennon, *Tuning*.

[96] Common competencies include: Knowledge, Critical and Creative Thinking, Communication, Personal and Interpersonal Capacities. The Sector specific competency is Practice and Methods.

[97] Modified from Lennon, *Tuning*.

Table 5

Tuning Learning Outcomes Knowledge Competency (continued)

Subcompetency	Two-year diploma	3-year diploma	Bachelor's degree	Master's degree
Numeracy	Interpret quantitative information, apply quantitative reasoning and perform appropriate calculations to draw conclusions	Interpret quantitative information, apply quantitative reasoning and perform appropriate calculations to draw conclusions	Interpret quantitative information, apply quantitative reasoning and perform appropriate calculations to draw conclusions	Interpret quantitative information, apply quantitative reasoning and perform appropriate calculations to draw conclusions
Limits of Knowledge and Qualification	Describe limitations of personal knowledge and tasks for which they are qualified	Describe limitations of personal knowledge and tasks for which they are qualified	Describe the limits to their own knowledge and how uncertainty and ambiguity influence their analyses and interpretations	Delineate the current limits of theory, knowledge and/ or practice in the field and how uncertainty and ambiguity influence analyses and interpretations
Multidisciplinarity	Apply prescribed principles from related disciplines to their field of study	Identify and apply principles from related disciplines to their field of study	Identify and integrate principles from related disciplines to their field of study	Identify and integrate principles of other fields of study in independent research
Breadth of Knowledge	Describe and apply basic concepts theories and practices from across the sectors	Describe and apply basic concepts theories and practices from across the sectors	Describe and apply basic concepts theories and practices from across the sectors	Describe and apply basic concepts theories and practices from across the sectors

As part of the second half of the Tuning exercise, the groups turned their attention towards how learning outcomes can be integrated into programmes, and how they can be used to show compliance with existing regulations. As noted previously, one of the comments from the university sector was the difficulty in demonstrating compliance with the extremely broad competency

areas in the OQF, UDLEs and GDLEs. The Tuning project mapped how learning outcomes can be used in quality assurance processes, integrated in to program design, course planning and student assignments.[98]

The HEQCO Tuning learning outcomes are a non-binding contribution to the learning outcome conversation in Ontario. Given the existence of formal quality assurance processes the work intended to support institutions in both demonstrating compliance and integrating learning outcomes into programming. For the most part, this will not require a significant redesign of programmes, rather should make explicit what is already occurring in the classroom, programme and across the institutions. Ultimately, the Tuning learning outcomes attempt to provide a framework for competency-based education in the province. Part of this work was demonstrating how the quality assurance frameworks of the government, university and college sector were aligned with the Tuning learning outcomes and therefore aligned with each other.

The Ontario Council for Articulation and Transfer (ONCAT) is a government agency designed to support credit transfer and mobility of Ontario students. Developed in 2011, it has a 5-year mandate to improve student mobility in Ontario's public institutions.[99] Complementing HEQCO's work on the sectors, ONCAT has established discipline working groups of college and university faculty members to plot credit transfer and block transfer agreements. As of July 2013, 9 projects had gone through the process of examining course by course expectations seeking commonalities and establishing credit worth.[100]

The organisation has not yet moved towards developing a student workload based credit transfer system. It has been argued that the challenges and boundaries of the existing system are insurmountable and full system overhaul doesn't make it feasible at this time.[101] Hence, working within the system rather than against it, ONCAT was working methodically through course-by course credit equivalencies using the established credit hour model.

Though potentially successful in programme transfers in the short term, it was recognised that this way of working lacked an overarching format: the

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[98] Lennon, *Tuning*.

[99] Ontario Council on Articulation and Transfer, *Credit Transfer Saves Ontario's Postsecondary Students Time and Money* (Toronto, Ontario: Ontario Council on Articulation and Transfer, 2013).

[100] Ontario Council on Articulation and Transfer, *ONCAT Project Status Report: Diploma to Degree System Transfer Pathways* (Toronto, Ontario: Ontario Council on Articulation and Transfer, 2013).

[101] Mitchel, *Transfer*.

groups were not guided by explicit learning outcomes or competency-expectations. In fall 2013, ONCAT established a work plan to develop a common framework for developing discipline based learning outcomes,[102] and, at the time of writing, the expectation is that the HEQCO Tuning learning outcomes will be used as the framework to guide further discipline specific activities.

V. **Summary and Conclusion**

The complex system of Canadian actors and authorities responsible for accountability, quality assurance and credit transfer has created a number of haphazard policies, compliance frameworks, and quality assurance mechanisms. Most notably, the provincial systems are unable to work together in a formal way.[103] Hence, most provinces are focused on the very practical and pressing issues of improving student mobility within the existing framework rather than thinking critically about how the current framework can be reshaped to enhance the overall system.

Despite the fractured landscape of power and control in system design and quality assurance across the country and within the province of Ontario, there is a growing recognition that competency-based education and articulated learning outcomes are a means to improve and support a strong post-secondary education system. Though it will require significant efforts, the reimagining of this system is critical to serving the purpose of the students and the national system.

Ontario is striving to develop a competency-based PSE system by incorporating learning outcomes into the existing system. Given the patchwork set of organisations involved in various aspects of system design and quality assurance it is necessarily a slow process of developing common understanding, and working towards mutual goals. Having crossed the first barrier of gaining general acceptance on the value and potential of learning outcomes, the stage of implementing them in to quality assurance processes and supporting their integration into programming has now been reached.

Lacking a significant policy shift, the expectation is that within the next several years the conversations will continue and the collaborative efforts will reap changes. There is conceptual agreement that competency-based education

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[102] Ontario Council on Articulation and Transfer, *Forging New Pathways to Improve Student Mobility in the Province of Ontario* (Toronto, Ontario: Ontario Council on Articulation and Transfer, 2013).

[103] Haskel, "Where there's a Will," 318.

is sound andragogy. Ontario has passed the first hurdle of accepting the potential value of establishing learning outcomes and is currently in the early stages of working towards clear competency expectations and usable learning outcomes that are appropriate for programme development within each sector. The first step of which has been to shift to a more outcomes based system by clearly articulating the expected outcomes of programs and credentials, as well as exploring system-wide measures of student achievement.

There are two major hurdles Ontario will have to face in the coming years. The first is coming to consensus on how to coordinate the various quality assurance learning outcomes, and perhaps adopt a common framework. Until the jurisdiction has internal agreement it will remain impossible to coordinate with other provinces or internationally.

The second hurdle is one faced by countries, quality assurance agencies and institutions around the world: finding suitable assessment mechanisms to provide appropriate demonstrations of achievement by students, and realistic measures of programme quality in institutions. This move towards assessments of learning outcomes and incorporating them into quality assurance mechanisms is a critical element, and is the next step in Ontario's path to a competency-based higher education system.

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Lifelong Learning principles and higher education policies

Carlos Vargas Tamez

Abstract: The role of higher education in promoting economic growth and social cohesion has been recognised in multiple international documents, programmes and strategies. Likewise, a number of countries and higher education institutions worldwide have introduced policies that aim at fostering learners' employability, active citizenship, personal development, knowledge base, competences and capabilities. However, not all these policies have successfully addressed current global trends like the economic downturn, demographic change, the changing nature of the labour market, and pressing social needs. This paper posits that introducing lifelong learning principles to the formulation and implementation of higher education policies may provide more inclusive and comprehensive frameworks for meeting the needs and aspirations of the multiple stakeholders of higher education.

Keywords: Higher education; learners; education policy; lifelong learning; learning organisations.

I. Introduction

At the turn of the twenty-first century, different governments, academic institutions, non-governmental organisations and international agencies have produced a vast array of studies on the kind of higher education required to address current and future social, economic, cultural, and environmental challenges. International organisations have been particularly keen to explore and suggest initiatives by means of international summits (e.g. UNESCO), reform agendas (e.g. World Bank), the assessment of learning outcomes (e.g. the OECD), and the construction of comparable, compatible, and coherent higher education systems (e.g. the European Higher Education Area, and the Bologna Process championed by the European Commission). These initiatives reveal that the challenges which higher education must confront are pervasive and pressing, and compounded by an increasingly unfavourable economic environment. They come from international organisations which are vastly different and whose proposals range from the privatisation, deregulation, and marketization of higher education, to seeing the latter as a public good and a human right. However different their conceptualisations of HE might be, they all agree that HE is the responsibility

of all stakeholders, and that greater funding and efficiency is needed to promote equity and quality in and through HE.

In the economic domain, HE must face a paradigm shift: the transition from industrial capitalism, in which economic growth was based on trade, to knowledge-based economies in which innovation is considered the key to economic and social development. HE, thus, plays an increasingly important role in the development of learning societies, and in addressing the transformations undergone by both the economic system and the social order. In order to respond to current economic and social imperatives, higher education systems must simultaneously develop competencies for employment, innovation and entrepreneurship (economically valuable skills), and capabilities for democracy, active citizenship, and personal development aiming at promoting social cohesion and more just and egalitarian societies.

In today's global society, the effectiveness of HE systems to develop such complex competencies has been questioned. The traditional higher education model, rooted in academic tradition and coined for industrial societies -and often driven by teaching and testing rather than learning- has arguably produced limited results in the provision of quality HE for all population groups. Indeed, there is strong evidence to suggest that HE actually widens and reproduces socioeconomic inequalities and leads to skills mismatches.[1] It has been argued that HE has not been successful enough in catching-up with the emergence of new competencies, attitudes and values that are currently rendered as fundamental capabilities of individuals and society at large.

It is likely that HE systems will continue to be a key for the accomplishment and satisfaction of individual and collective needs as they carry out a duty that no other institution can currently replicate. It therefore becomes imperative to explore paths towards the innovation and reform of such systems. Reform efforts have been undertaken in most countries, and many good examples can be drawn from the diverse contexts, intentions, rationalities and structures. For

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[1] *Cf*. Patrick Clancy and Gaële Goastellec, "Exploring access and equity in higher education: Policy and performance in comparative perspective," *Higher Education Quarterly* 61, nº 2 (2007): 136-154; Peter Frederiksson, "Economic Incentives and the Demand for Higher Education," *The Scandinavian Journal of Economics* 99, 1 (1997): 129-142; Gaële Goastellec, *Understanding inequalities in, through and by higher education* (Rotterdam: Sense Publishers, 2010); Tritan McCowan, "Expansion without Equity: An Analysis of Current Policy on Access to Higher Education in Brazil," *Higher Education* 53, nº 5 (2007): 579-598; Carlos Alberto Torres and Daniel Schugurensky, "The Political Economy of Higher Education in the era of Neoliberal Globalization: Latin America in Comparative Perspective," *Higher Education* 43 (2002): 429-455.

example, recent research on the internationalisation of HE; its outcomes and effects on social mobility; the triple helix; the access to, and efficiency of HE, has shed some light on fruitful areas of analysis. These include higher education policy, pedagogy, curriculum, assessment, infrastructure, teacher training and development, funding and financing, social inclusion, and stakeholder participation. Despite this great variety of issues, this paper argues that, in pursuing greater relevance, HE policy could benefit from a wider frame for analysis — that of lifelong learning- and from the lessons derived from reforms and innovations taking place worldwide. Thus, it is suggested that HEIs become learning — and not only teaching- organisations.

II. **Lifelong Learning and HE**

Lifelong Learning (LLL) is not a new phenomenon. It has been present in education history for almost a century. Its roots can be traced back to the 1920s and 30s when LLL was only about education and training opportunities for adults, particularly for workers. Half a century later, the concept of *education permanent* reconfigured the idea of LLL and introduced a few more features into its definition: that learning takes place throughout life, that it includes diverse sectors and social groups, that it takes place in different settings (i.e. formal, non-formal and informal), and that it aims at fulfilling a great variety of social, economic, and cultural purposes.

Since then, LLL has become an important part of educational discourse throughout the world, an emerging field of study and practice, and a flagship for the formulation of education policy worldwide. Just like it has been the case with HE, different international organizations (e.g. UNESCO, OCDE, World Bank, European Commission) have stressed the role of LLL as prerequisite for economic growth and social cohesion. Such emphasis, and the level of influence these agencies have upon global education policy, has contributed to the visibility and thrust of LLL in educational debates.

These transnational organizations also present different definitions of LLL; however, they all agree that it is an approach that contributes towards the adaptation to and participation of individuals to knowledge societies. There seems to be an economic rationale behind this conceptualization of LLL, that of the transition from industrial capitalism (based on the production and exchange of goods and services) to a new form of capitalism based on innovation and knowledge intensive economies. In this order of things, education and learning, and specially LLL, play a fundamental role inasmuch as they foster knowledge production and promote creativity as necessary supports for innovation and, hence, economic life.

However strong this conceptualisation of LLL might be, there are other views that question and are critical of the economic impetus conferred to LLL. These alternative views assert that LLL must go beyond economic preoccupations and that education and learning must contemplate other, equally important, social and cultural purposes such as building -and living together in- more egalitarian societies, and developing critical thinking to transform social reality.

In any case, and despite these differences in their conceptualization of LLL, international organizations and academic developments converge in a few distinctive features of LLL: that LLL is about placing learners, their needs, aspirations, and demands, at the centre of educational methods, programmes and policies, and that LLL must prepare individuals and societies to face a world that is constantly changing; to adapt to it and/or to transform it. These are some of the characteristics of LLL that may help inform HE policies if they are to have a positive impact upon learners and societies.

HE as part of LLL must address a great variety of educational topics that concern an equally varied number of audiences and target groups. In order to do so, HE might benefit from the adoption of LLL as an organising principle. This entails embracing a number of characteristics; namely, that there is a multiplicity of settings and environments in which learning occurs; the autonomy and agency of learners; and universal participation.

The first characteristic is the acknowledgement that HE might benefit from expanding its traditional settings and environments by recognizing that, besides schooling and formal training, individuals develop skills, knowledge and values in their everyday lives and through the use of other educational supports, like the family, neighbourhood, work, leisure, the media, libraries, etc. Not only could HEI benefit from the learning taking place in informal and non-formal settings, but could make use of these environments to carry out teaching, learning, and outreach activities that might enhance the relevance and outcomes of HE. This implies also recognizing, validating and accrediting the skills and knowledge that learners have acquired elsewhere, and which are valuable for the purpose of HE programmes.

The second characteristic concerns respecting and enhancing the autonomy and agency of learners. This includes on the one hand, placing learners' needs and concerns at the centre of curriculum, delivery and assessment methods, and making students responsible for their own learning. Lifelong learners are not defined by the kind of education or training in which they take part, but rather by personal traits that drive them to partake in learning opportunities. According to Nesbit, Dunlop, and

Gibson,[2] the individuals who are prone to participate in either formal or informal learning processes throughout life share a few traits among which are: the right attitude and skills for learning; the confidence to learn and to keep learning, including a sense of commitment towards education and learning; and the will and motivation to learn.

Although education and training, and especially HE, may result in economic benefits for learners, research has demonstrated that economic incentives alone might not be enough to motivate individuals to get involved in education.[3] A number of barriers -motivational, economic, and otherwise- must be indentified and addressed so that some individuals who don't usually participate in education may be able to do so. Some of these obstacles are economic and can thus be surmounted by means of financial assistance, but other dissuasive factors are social, cultural and personal in nature. That is the case of the so-called non-traditional students in HE; learners whose age, background, social and cultural capitals, and the social construction and stigmas behind being a non-traditional student, might inhibit them from taking part in HE. The relevance of HE provision is also an issue that concerns individual motivation, or lack thereof, to enroll a given HE programme. Identifying the obstacles faced by different social groups to enter and benefit from HE is the first step towards universal participation.

The third characteristic is precisely that of universal participation; that is, the possibility that all social groups regardless of their ethnic, socioeconomic, cultural, religious, sexual, physical, age, or gender conditions may be able to participate in HE. Likewise, a HEI that welcomes and promotes participation from diverse groups should be able to cover the social, economic, and personal goals that these groups attach to HE.

The massification of HE, and the response that HE systems have chosen to give to this phenomenon, based on competition dynamics, have meant the systematic exclusion of society's most disadvantaged groups from HE. These include adults but also youth from low-income families, people with disabilities, racial minorities, indigenous groups, immigrants, and women.

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[2] Tom Nesbit, Catherine Dunlop, and Lorraine Gibson, "Lifelong Learning in Institutions of Higher Education," *Canadian Journal of University Continuing Education* 33, nº 1 (2007): 35-60.

[3] *Cf.* Bradley M. Allan, and Roland G. Fryer, "The Power and Pitfalls of Education Incentives" (*Discussion Paper 2011-07,* Washington DC, Brookings, 2011); Lisa Barrow, and Cecilia E. Rouse, "Financial Incentives and Educational Investment: The Impact of Performance-Based Scholarships on Student Time Use" (*Working Paper No. 19351,* Cambridge, MA, National Bureau of Economic Research, 2013); Peter Frederiksson, "Economic Incentives and the Demand for Higher Education," *The Scandinavian Journal of Economics* 99, nº 1 (1997): 129-142.

Whereas there are measures to monitor the progress of HEI regarding their quality and excellence (e.g. rankings, and performance indicators), these have not yet been developed to assess the efforts that HEI undergo in order to provide fairer and more inclusive access and progression to underserved societal groups. As explained by Usher:

> It is difficult to understand what kind of progress is being made internationally in this quest for 'fairness' or 'equity' in participation, for the simple reason that there is not an international standard for measuring it and difference countries have chosen to try to capture the issue in very different ways. In America, the unit of measurement for equality of participation is usually race, though family income is used as well. In the UK, measures of 'class' predominate. In much of Europe, there are concerns about the participation rates of recent immigrants, but administrative or survey data that can measure participation rates of these groups is quite limited. About a decade ago, however, the Eurostudent project began publishing a comparison of equality based on parental education levels — a measure which was later dubbed the 'Education Equity Index' and brought into use in comparisons involving non-European OECD countries. This data is somewhat patchy (no data is available in many countries) and cannot — as yet — tell us anything about changes over time as it has not been collected for very long. It can, however, show some basic differences in equality of access across different systems.[4]

In short, applying the principles of LLL to HE policy encompasses:

- Awareness of the fact that valuable learning takes place beyond HEI, and of the ample possibilities these other environments offer for HE;

- Understanding learning as a continuous need of individuals throughout their lives, and of the contributions HE can make in this respect;

- Acknowledging that contemporary societies need more than formal education to deal with constant local and global changes;

- Recognising that a learning society — and a learning organisation — are better alternatives to deal with such changes; and

- Admitting that both individuals and their communities need to be involved in determining learning needs and goals, and that they should do so throughout life.

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[4] Alex Usher, "Ten Years Back and Ten Years Forward: Development and Trends in Higher Education in Europe" (paper presented at the UNESCO Forum on Higher Education in the Europe Region: Access, Values, Quality and Competitiveness, Bucharest, Romania, May 21-24, 2009): 7.

Evidently, these principles beg for profound transformations in the way HE has traditionally been organized and structured, and the relationships of HEI with other stakeholders of HE. Among other factors, recruitment, admission, accreditation and recognition of prior learning, curricula, delivery methods and environments, assessment, quality assurance, and funding must be revised in order to orientate HE towards LLL. Perhaps the most challenging transformations have to do with how HE is conceived either as a public good or a private gain, and whose purposes HEI must seek to fulfil, those of the economy, individuals, or society at large.

III. **The LLL University**

Throughout the world, different initiatives that aim at promoting LLL among and within HEIs have been undertaken. Examples of this can be found in the Mumbai Statement on Lifelong Learning, Active Citizenship and the Reform of Higher Education (1998), which draws from the work begun at Fifth International Conference on Adult Education (CONFINTEA V, 1997) in which a working group on Adult Education and Universities was put together. The Mumbai Statement was meant as a call for action for the delegates to the 1998 UNESCO World Conference on Higher Education, and was signed by HE and LLL experts and practitioners who proposed opening universities to adult learners and transforming HEI into LLL institutions. According to the statement, this requires a holistic approach which:

> a) supports institutions to become LLL communities; b) integrates academic, financial and administrative elements; c) provides structures which are responsible for organizational, staff, student and curriculum development and community engagement; and d) aligns the various supportive structures such as academic information systems, library provision and learning technologies to the new mission of universities in learning societies.[5]

The signatories' main preoccupations were the societal challenges taking place due to economic globalisation, the rapid development of science, technology, and knowledge based societies that have given rise to unprecedented unemployment and inequality among nations and between countries, and tensions between social groups. Thus, the Statement recalls democratic citizenship as a key purpose of LLL and recognises that

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[5] "Mumbai Statement on Lifelong Learning, Active Citizenship and the Reform of Higher Education," in *Adult Education and Development 55*, ed. DVV International (Bonn, 1998): 2.

…democratic citizenship depends on such factors as effective economic development, attention to the demands of the least powerful in our societies, and on the impact of industrial processes on the caring capacity of our common home…The notion of citizenship is important in terms of connecting individuals and groups to the structures of social, political and economic activity in both local and global contexts. Democratic citizenship highlights the importance of women and men as agents of history in all aspects of their lives.[6]

While the World Conference on Higher Education (UNESCO, 1998), echoed some of the concerns posed by the Mumbai Statement; namely those regarding access and equity, and, to a lesser extent, LLL and the promotion of active citizenship, it not provide guidelines (rather a Declaration for HE in the XXI Century) that could assist HE stakeholders in pursuing the transformations of HE.

A couple of years later, the participants to a Conference on Lifelong Learning, Higher Education, and Active Citizenship held in Cape Town, South Africa, in 2000 (some of which had taken part in CONFINTEA V, The Mumbai Statement, and UNESCO's 1998 World Conference on Higher Education), issued the Cape Town Statement on the Characteristic Elements of a Lifelong Learning Higher Education Institution (2001) as "an organisational tool to be developed further in local contexts".[7]

The Cape Town Statement recollected many of the concerns developed in the preceding international fora but with a view to developing "an instrument to assist transformation within HEIs". The Statement elaborates on six characteristic elements:[8]

- **Overarching Frameworks**, including regulatory, financial, and socio-cultural supports upon and within which to build a LLL culture in and through HEIs

- **Strategic Partnerships and Linkages**, including international partnerships, cross-sectoral collaboration between institutions and stakeholders, and partnerships within HEIs (e.g. shared decision making, policies and strategies)

- **Research** across disciplines, traditions, and institutions. This involves collaborative research, the recognition of a plurality of research paradigms and of the legitimacy of LLL as an area of study and practice.

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[6] Mumbai Statement, 3.

[7] UNESCO Institute of Education, *The Cape Town Statement on Characteristic Elements of a Lifelong Learning Higher Education institution* (UIE, Cape Town: 2001), 2.

[8] UNESCO, *The Cape Town Statement*, 4-7.

- **The Teaching and Learning Process** by which educators encourage self-directed learning, engage with the different forms of knowledge, interests, and life situations which learners bring to their education, and promote autonomous and experiential learning approaches and opportunities.

- **Administration Policies and Mechanisms** which put learners and their learning processes at the centre of all processes. This includes, for example, prior learning recognition and accreditation, and the flexibility of programmes, courses and formats that may enable learners to choose, to move between offers, and to build their own learning paths.

- **Student Support Systems and Services**, including those supporting learning, and enabling conditions for learning (e.g. costs, financial aid, childcare, transport, accessibility)

Although some 95 people from 19 different countries attended and subscribed the Cape Town Statement, and despite the fact that it was supported and published by the then UNESCO Institute of Education, it is not clear to what extent it has been used in reforming HEI or systems around the globe. Documented cases include the University of the Western Cape, South Africa (host to the Conference that gave birth to the Statement) which developed LLL strategies, including an on-going policy for the recognition of prior learning; the University of Missouri (USA) whose collaboration with the latter included the ideation of measurable performance indicators for the characteristic elements of a LLL HEI; and Chulalongkorn University in Thailand which adopted lifelong education as an institutional paradigm.[9]

At a regional level, a more recent example can be seen in the European Universities' Charter on Lifelong Learning (EUA, 2008). Derived from a seminar on LLL held in Paris, and by invitation of the then French Prime Minister, the EUA developed a set of commitments that both universities and governments need to subscribe if they are to transform HEI into lifelong learning institutions. The commitments made by universities entail promoting and embedding LLL as an organising principle of HE; providing education and learning to a diversified student population; adapt study programmes to widen participation and attract adult learners; providing guidance and counselling services; recognising prior learning; developing internal quality

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[9] Hohn Henschke, "Common Elements for Re-Orienting Higher education Institutions in Various Countries toward Lifelong Learning: Research and Implications for Practice" (paper presented at the Midwest Research-to-Practice Conference in Adult, Continuing, Extension, and Community Education. St. Louis, Missouri, October 4-6, 2006).

culture; strengthening the relationships between research, teaching, and innovation in a LLL perspective; consolidating reforms to promote flexible and creative environments for all learners; developing partnerships at all levels to increase the relevance of HE; and becoming LLL role models for inside and outside stakeholders.[10]

While it acknowledges the role of HEI in promoting LLL, the Charter recognises that these transformations demand actions from governments and other partners in order to secure the necessary funding and appropriate legal and institutional frameworks. Among these are: "recognising the university contribution to lifelong learning as major benefit to individuals and societies; promoting social equity and inclusive learning in society; supporting guidance and counselling services".[11] The Charter also states that governments need to play a leading role in mainstreaming LLL in the systems and agencies in charge of quality assurance, recognition, validation and accreditation of prior learning, and should remove legal obstacles and constraints that potential learners face in order to access LLL and HE. University autonomy in terms of admission requirements, for example, and incentives to LLL provision in HEIs is also a responsibility governments should bear according to the Charter. Finally, encouraging partnerships with local authorities, employers, and other social organisations, and informing and encouraging citizens to participate in LLL opportunities provided by HEIs is also a role governments need to perform. Like universities, governments can act as role models thus championing LLL in public policy and extending LLL opportunities for public sector employees.[12]

IV. **Universities as Learning Organisations**

This paper argues that, in order to comply with the above mentioned characteristics of LLL institutions, and to fully promote LLL, universities must become learning organisations. In addition to the social considerations explained up to this point, there are financial reasons for this transformation. Given the fact that there are numerous stakeholders in HE (e.g. learners, governments, enterprises), and that they present a multiplicity of needs, HEI may transform themselves into providers of learning opportunities and research outcomes that aim at solving problems and satisfying the personal,

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[10] European University Association, *European University Charter on Lifelong Learning* (Brussels: EUA, 2008), 5-7.

[11] EUA, *European University Charter,* 8.

[12] EUA, *European University Charter*, 9-10.

social, and professional demands for education and training presented by different sectors, thus diversifying their sources of funding.

According to some authors[13] the university's mission to produce and organise advanced knowledge has been challenged by the knowledge economy, and newer demands have emerged from government, industry, and other stakeholders. Likewise, these authors recognise that the production and organisation of knowledge, and its use in addressing public and private concerns escapes the sole academic spectrum. Every time more, the university is presented with opportunities to partner with other sectors in order to undertake research and training. This way, industry, for example, can seek to address the learning needs of employees (e.g. up-skilling, re-tooling) via university LLL courses and modules, or to research education and learning solutions to private strategies together with HEIs. Likewise, the public sector may find university offers of continuous learning as a means to promote active citizenship, social inclusion, or even leisure, cultural and personal development.

This cooperation between three sectors which once acted separately (i.e. university, government and industry) has been called the 'Triple Helix'. This approach was developed by Etzkowitz[14] and Leydesdorff[15] as a model to promote innovation. The approach is based in the perspective of the university as a leader of the relationship with industry and government to generate new knowledge, innovation, and economic development. Innovation is understood as resulting from a complex and dynamic process of experiences and relations between science, technology, research, and development among the three sectors in a spiral of endless transitions.

This approach necessarily involves learning processes for all the stakeholders engaged in the innovation process. On the one hand, the university needs to enhance its third mission (apart from teaching and research), and needs to learn different analytical frameworks to approach problems; those traditionally applied by government and industry. On the other hand, the university needs to learn how to bridge the gap between public, private, and academic concerns in order for the cross-fertilisation of ideas to work.

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[13] *Cf*. Henry Etzkowitz, *The Triple Helix: University-Industry-Government Innovation In Action* (London: Routledge, 2008); Loet Leydesdorff, "The Triple Helix of University-Industry-Government Relations," in *Encyclopedia of Creativity, Innovation, and Entrepreneurship*, ed. Elias Carayannis and David Campbell (New York: Springer, 2013): 1844-1951; Tom Nesbit, Catherine Dunlop, and Lorraine Gibson, "Lifelong Learning in Institutions of Higher Education," *Canadian Journal of University Continuing Education* 33, nº 1 (2007): 35-60.

[14] Etzkowitz, *The Triple Helix*.

[15] Leydesdorf, "The Triple Helix".

The role in innovation that HEIs are called to fulfil does not substitute their more traditional mission in educating and empowering learners, rather it provides a great opportunity for HEIs "to reassess their academic and professional beliefs, values, attitudes, and practices",[16] and to expand the latter to a range of new actors including workers and non-traditional students. This expansion, as has been mentioned, necessitates the reformulation and modification of HE systems and practices, and this is where HEIs can learn from other stakeholders. For instance by examining how learning takes place in the workplace, in informal settings, and in NGOs, or by looking at how research outcomes are utilised in the public and private sectors.

Looked at it this way, "lifelong learning can represent a set of guiding principles for development, rather than an additional problem for institutions of higher education".[17] According to Nesbit and colleagues:

> Several studies of lifelong learning in different countries have examined how systems of higher education are changing to meet learners' needs and, in doing so, are impacting various aspects of university governance, funding, resources, planning, and community relations…these studies indicate the extent to which the environment of higher education is changing and how such changes are redefining the character and role of institutions of higher education.[18]

The same authors claim that these transformations in HE are also responses to changes in public policy since "for governments, what is taught, investigated, and promoted [in HEIs] influences knowledge, attitudes, and values in many areas of society".[19]

V. **Implications for public policy**

Following these arguments, it can be deduced that LLL policies in HEIs would need to look at the research and teaching that is carried out by universities, government, and industry, and identify how these institutions cross-over, and the knowledge and the lessons that have been learned in the process of attending to a particular phenomenon should be systematised. This practice of policy learning is made easier "if clear structures and procedures are put in place so that institutional modes of 'knowing what

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[16] Nesbit et al., "Lifelong Learning", 39.
[17] Nesbit et al., "Lifelong Learning", 49.
[18] Nesbit et al., "Lifelong Learning", 38.
[19] Nesbit et al., "Lifelong Learning", 38.

works' and 'learning' can be extracted, stored, reviewed and communicated". This concerns the "…issue of how the making of public policy can be a process of organisational and public learning".[20]

One challenge of evidence based policy making is that it is not related to the actual amount of evidence out there, but rather to its usage or lack thereof. Many authors have discussed that research findings are underutilised when it comes to decision making.[21] For example Schön would argue that there is no shortage of evidence, information or data; rather, he maintains, the deficit has less to do with an information gap, than with our capacity for public and private learning. As put forth by Parsons:

> Schön focuses on the issue of learning rather than the idea of knowing: on the learning rather than the information or evidence gap, and the gap between institutions and problems […] what follows from this is that we have to understand government and policy making as a process of learning. For Schön the answer to the question of improving government as a learning system involved radically rethinking and redesigning the policy process of increasingly more complex information societies.[22]

Reshaping the policy process involves the redesign of public institutions too. According to Schön "we must become adept at learning, we must be able not only to transform our institutions in response to changing situations and requirements; we must invent and develop institutions which are 'learning systems' that is to say capable of bringing about their own continuing transformation".[23]

From this standpoint, public policy, and HE is no exception, is really the study of how societies learn (or fail to learn) about those problems they define as being public and how they seek to solve (or fail to solve) them. This is particularly true of public institutions and governments which "… should lay less stress on the dubious and doubtful claim to know what is best for a particular organisation…and should place more emphasis on organisations making the best use of local knowledge and their learning experiences".[24]

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[20] Wayne Parsons, "From Muddling Through to Muddling Up- Evidence Based Policy Making and the Modernisation of British Government," *Public Policy and Administration* 17, nº 3 (2002): 47.

[21] *Cf.* Carlos Vargas, "Acerca de las posibilidades de incidencia de la investigación educativa en las políticas públicas: el caso de la educación básica con personas jóvenes y adultas en México," *Sinéctica*, 33 (2009).

[22] Cited in Parsons, "From Muddling Through," 47.

[23] Cited in Parsons, "From Muddling Through," 49.

[24] Parsons, "From Muddling Through," 48.

VI. **Conclusion**

The same way that governments should learn from their surrounding institutions, including HEIs, these in turn should learn from their stakeholders, including non-traditional learners. This means that HEIs must be transformed into learning organisations so that they may be able to systematise their learning, the knowledge they produce, and share it as an important element to bring about change or the solutions needed by a particular policy object.

Becoming a learning organisation means being subjected to continuous transformation and development processes, and being able to systematise and assess these transformational experiences. But most importantly, becoming a LLL organisation, means that HEIs governance structures become more horizontal, as every person is a learner within and outside the organisation. It also means the acknowledgement that HEIs can learn from other stakeholders and from their own practice, can produce knowledge together, and can put this knowledge to use for the improvement and prosperity of the societies in which they operate.

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Competence-based multiple learning paths:
on the road of implementation

María Dolores de Prada and Julia González

Abstract: This article presents the results of an action-research implementation project based on a system that weaves together five different routes to facilitate the development of competences through the use of multiple learning paths for primary and secondary teachers. The first and initial results that the article deals with relate to the experience of math teachers for ages 11 to 14. Other levels and other fields are in the process of being developed. The article deals briefly with the justification, the background and the fundamental principles that underpin the research methodology and introduces a number of elements such as the method followed by the research, the resources and the materials used as well as the results obtained at the end of the second year of this experience. It also justifies the model chosen and the criteria and strategies selected for its reliability and verification. In addition, it provides significant elements of reflection about a number of burning issues: The development of a new profile of the "teacher" in a student-centred system and the implementation system to be followed, the importance of multiple but integrated learning paths and the relevance as well as the reflection on real cases of competence evaluation.

Keywords: Learning paths; teachers; competence-based learning; action – research; personalised learning; multiple intelligences; cooperative learning.

I. The context and justification

Teaching is a challenge and an art in itself. Being able to fully engage the students, stretching their capacities and their motivation, is a task that requires from teachers ongoing learning and reflection. The attempt to search for quality is the first justification for engaging in action –research projects. Nevertheless, there are others.

According to Eurostat,[1] Spain, where this research takes place, occupies the first place in the ranking of 4 years old in education in the whole of EU. However, this position is reversed when looking at the performance of the age group at the end of school period at 18 years old. Only Portugal and Malta were below in 2012. By 2014, despite the fact that Spain has made some progress in

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[1] European Commission, "Eurostat," http:epp.eurostat.ec.europa.eu/cache/ITY-SDDS/en/educ_esms.htm

improving its school dropout rate, nearly one in four young Spaniards are still dropping out of school at an early age. This is the highest rate in the European Union. In 2013, 23.5 percent of people aged 18 to 24 in the country had left the education system before completing compulsory education. While this is Spain's best result on record, it is still double the EU rate of 11.9 percent. From 2007 the school dropout rate in Spain has come down from 31 percent in 2007. But in the meantime, Portugal and Malta, have made more substantial progress.

Further, according to the Organisation for Economic Co-operation and Development (OCDE) Program for International Student Assessment (PISA), the performance of Spain is below country performance average by 30 points in mathematics[2] and it is average in the case of students with weak results and four points below also in the percentages of students with high performance. It occupies the 31 and 36th place without much improvement since 2003. Besides, according to the same source, there is an 85% of variation in mathematics that relates to socioeconomic differences. In this context the search for an improvement in the teaching of competences in mathematics is a real need.

There are diverse causes that can contribute to make the problem more critical (social and educational policies, context of marginalization, low investment in education, situation of the teachers). However, what can be done from the perspective of the teaching experience, by the teachers themselves to avoid early school leaving and drop out? What can the teacher do so that every student reaches the level of excellence attainable to him or her? And, even more, what elements can be brought into the education of teachers, into their profile that can act as an enhancing element?

The value of competence-based learning is broadly considered as a way forward in the development of learning of high significance. A student-centred approach is complementary since the competences look at the student and his or her profile as the point of reference. The methodology for designing profiles and meta-profiles has now being developed by the Tuning Project[3] in several Higher Education Regions in the four Continents. The contribution of this article is that it offers an experience of implementation.

The Castroverde-IEPS Foundation is leading the project which involves 26 researchers from ESCUNI (Teachers Training center ascribed to University Complutense of Madrid), Center Virgen de Europa (University of Cadiz) and the Department of Education of Universidad de Burgos, as well

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[2] Organisation for Economic Co-operation and Development (OCDE), "PISA 2012 Technical report" (PISA 2012), Tables I.2.1a, I.2.1b, I.2.3a), http://www.oecd.org/pisa/pisaproducts/pisa2012technicalreport.htm.

[3] Julia González and Robert Wagenaar, eds, *Tuning Educational Structures in Europe. Universities´Contribution to the Bologna Process*, 2nd ed. (Bilbao: University of Deusto, 2008).

as mathematics primary teachers in seven centers in Madrid, Cordoba, La Linea de la Concepción and Burgos involved in the implementation of a holistic methodology to enhance the development of sets of competences through multiple learning paths according to the possibilities and interests of the students. The study has completed the second year and it includes the detailed follow up of a population of 384 students. The fact that the experience is not only being designed but also implemented and the results compared and contrasted in a set of very different schools: private and public, in well-established residential zones and in very deprived areas of the same and different cities- allow for significant conclusions and reflections.

There are, therefore, three groups of learners in this context: the students who are at the core of the experience and the teachers who act some as the designers of the process and others as the persons who implement the process. One of the roles is the designer of the process and the other is that of the implementer. Looking at the competences selected for Tuning Higher Education in Europe in 2008[4] two clusters of competences correspond to the different roles of this project and are made to reflect and consider the capacity of the training and the experience to develop them.

Cluster A. It relates, in the project, to the group named researchers and their role is one of designing and therefore it refers to the ability to make operational educational changes. The cluster of competences, selected from the Tuning Project, for them to develop relates to **the ability to***:*

- Understand and apply educational theories and methodology as a basis for activities.
- Do appropriate educational research in different contexts.
- Manage educational/developmental projects.
- Manage and evaluate educational programs, activities and materials.
- Lead or coordinate a multidisciplinary educational team.
- Understand trends in education and be able to recognize their potential implications.
- Adjust the curriculum and educational materials to a specific educational context.

Cluster B. It relates, in the project, to the group of teachers who is in charge of making operational the new system in the class. The cluster of competences, selected from the Tuning Project, for them to develop relates to **the ability to***:*

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[4] Julia González and Robert Wagenaar, eds., *Tuning Higher Education Structures in Europe. Reference Points for the Design and Delivery of Degree Programmes in Education* (Bilbao: University of Deusto, 2009), 42.

- Recognize and respond to the diversity of learners and complexities of learning process.
- Understand processes of development and change in the community.
- Have competences in a number of teaching and learning strategies.
- Create a climate conducive to learning, improving the teaching / learning environment.
- Make use of e-learning and to integrate it into the learning environment.
- Design and implement varied strategies, based on specific criteria to evaluate learning.
- Design and implement education which integrates people with specific needs.
- To have commitment to learners' progress and achievement.

II. **Purpose and Project steps**

The purpose of the project is to go beyond the design to the implementation and validation of a holistic methodology for the development of basic competences through the enhancement of multiple intelligences and the use of multiple learning paths. It has in the core the student-centred approach and, what is more innovative, a new type of class management involving a new teacher´s profile and role. The project uses a qualitative approach, with interpretative patterns derived from the characteristics of educational data, but it also uses quantitative techniques in order to measure the impact of the achievement. It looks at the processes where the student is at the centre and hence, his or her interests/capacities and inclinations are at the starting point of the approach and guide the openings of learning paths. In this context the project emphasizes and enlightens two critical roles for the teacher: s/he is the mediator who knows the students paths and possibilities and opens new roads, new approaches, new alleyways for the student to explore, his or her role is to explain, to back, to encourage and accompany in the exploration, creating balances between personal exploration and group search.

The proposal is to transform a traditional system of teaching into one of multiple learning paths to serve the student process. It is a personalized education which begins with the strengths of the student, of his or her learning styles which are the pragmatic manifestations of the multiple intelligences according to Amstrong[5] and which develops all the capacities of the learner in

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[5] Thomas Amstrong, *Multiple Intelligences in the Classroom*, 3rd ed. (Alexandria: ASCD Publications, 2009).

terms of knowledge and understanding of the topics, as well as attitudes, abilities and behavior, giving the tools and the techniques to the teacher to facilitate the learning from the balanced development of all his or her strengths.

The project envisions the following steps:

(1) **Elaboration**: Development of the theoretical framework, design of the learning outcomes, competence levels, learning paths, environments and experiences, as well as experimental materials: guides and tools and other educational resources to use in the experimental phase. 26 researchers from three Universities have taken part in this step.

(2) **Experimentation**: The second step is the experimental phase and an important achievement is the training of the teachers who experiment this methodology. There are 12 teachers from 7 schools from areas related to the universities where this approach is being tested from a variety of backgrounds and three regions of Spain: Madrid, Castilla and León (centre - north) and Andalucía (far-south). The experimentation has taken place in mathematics with Primary Teachers. There has been a pilot study followed by two years of experimentation and further comparison of the results is being carried out.

(3) **Analysis**: The Analysis is being carried out by groups of students and by schools, with a follow up of the individual student cases. The results are very consistent and are being discussed by the teachers research-team (the 26 researchers) as well as by the teachers (12) who do the experimentation. It is a two-layer process.

III. **Theoretical Framework**

Five educational trends are behind this approach:

- The discoveries of brain functioning by neuroscience and the theory of multiple intelligences of H. Gardner.
- The principles of the personalized learning revisited.
- The guidelines of the Universal Design of Learning.
- The contribution of the new technologies in the learning process.
- Cooperative Learning and self -regulation.

All these trends have a characteristic in common: the valuing of the student as a person who develops and is at the centre of all the system and the techniques, the understanding of teaching as a holistic task and the possibility

of integration in the development of competences. These elements are complementary in the pedagogical, scientific, anthropological and social approaches.

1. *The discoveries of the brain functioning by neuroscience and the theory of multiple intelligences of H. Gardner*

For several years now, the development of neuroscience and the application of technological research in brain exploration have made a significant contribution allowing us to understand better the processes of how students learn and how we learn. This is of capital importance for the teaching experience. These technological advances have confirmed well-known theories such as the importance of early experiences in the development of intellectual capacity development of Piaget,[6] or significant learning of Ausubel[7] or different styles and rhythms of learning of personalised education; or the significance of social interactions, a fundamental mechanism for the construction of knowledge.[8] For Vygotsky, the act of learning awakens a series of developmental processes capable of operating when the learner is in interaction with people in different environments and when he/she is cooperating with another person.

More recent advances are proving that there are significant connections between emotions –feelings and likes- and rational thought and, in this context, it is the emotions that govern the decisions that people make during their own life. In the words of Ignacio Morgado,[9] (2003) learning basically means to acquire new neuronal representations of information and establish functional relationships within them and those existing in the brain. This is possible when the learning is significant. According to Ausubel, in significant learning new connections are created – synapses. These come to strengthen others that were present, or could even replace already existing ones.

Joaquin Fuster,[10] from his research in neuroscience, also considers that the cognitive cycle of "action-perception" is parallel to the cycle of the emotions and interacting in parts of the brain, intervening strongly in decision-making.

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[6] Jean Piaget, *The Psychology of the Intelligence*, 2nd ed. (Oxon: Routledge, 2001).

[7] D.P. Ausubel, , J. Joseph D. Novak, and H. Hanesian *Psicologia educativa. Un punto de vista conoscitivo*, (Mexico: Editorial Trillas, 1987).

[8] James V. Wertsch, *Vygotsky and the social formation of mind* (Cambridge, MA: Harvard University Press, 1985).

[9] Ignacio Morgado, "Claves Neurocientíficas de la Enseñanza y el Aprendizaje," *Participación Educativa. Revista del Consejo Escolar del Estado*. Vol 1, nº 1 (2012), 15.

[10] Joaquin M. Fuster, *Cortex and Mind: Unifying Cognition* (Oxford: Oxford University Press, 2003).

This is why it is so important to take into consideration the emotional intelligence in the process of learning, because it is the emotions that allow the knowledge and the skills to be transferred to the outside world into real decisions. This brings the attention to a field that is not new but needs to be revisited: the importance of weight of motivation in the learning process. This also emphasises one of the critical roles of the teacher, particularly in the new paradigm: the teacher as capable of creating motivation, interest and passion in the learner and his or her capacity to create experiences in accordance with capacities, curiosity and type of learning the student can develop and enjoy. In a system where the learner is at the centre, the capacity to provoke his or her alertness and active attitude could never be emphasised enough.

Already in 1983, the developmental psychologist Howard Gardner[11] launched the well known theory of multiple intelligences based on the belief that learning takes place in a different manner in each person due to his or her type of intelligence: musical / rhythmic, visual / spatial, verbal / linguistic, logical / mathematical, bodily / kinesthetic, interpersonal, intrapersonal, and naturalistic, suggesting later that the existential and moral intelligence may also be worthy of inclusion. His vision was not to limit the learner to a specific type of intelligence and mode of learning but rather to open the exploration of different paths and encourage the development of the unique blend possible in each person. If every person has a variety of possibility of learning styles it would be the mastery of the teacher to help to discover, to facilitate its use, to stimulate and stretch to the maximum potential its capacity and development. Considering that intelligence is a capacity and can be developed and also contextualised, the burning need is to give the context and the experiences where it can open, unfold and enrich itself in the contact with people, environments, books, cultures and all type of resources.

2. *The principles of personalised learning revisited*

The student-centred learning approach needs to revisit the principles of the personalised learning[12] in order to benefit from the sources of generations of

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[11] Howard Gardner, *Frames of Mind: The Theory of Multiple Intelligences* (New York: Basic books, 1993); Howard Gardner, *Multiple intelligences: The theory in practice* (New York: New York Basic Books, 1983).

[12] In the 1970s and 1980s the Fundación Castroverde IEPS was at the forefront of the development and implementation of the personalized learning with development of its principles in hundreds of guides for the implementation in the different sectors of knowledge: Mathematics, natural sciences, music and the arts, social sciences, languages…this article inherits the essence of this movement which suffered different conversions and developments

educational scientists. Starting with Parkhurst[13] and the Dalton Plan in 1914, in which she defended the importance that each student could program his or her curriculum in order to meet his or her needs, interests and abilities; to promote both independence and dependability; and to enhance the student's social skills and sense of responsibility toward others. Following a significant number of educators that defended this approach, many consider personalised learning to be one of the four primary pillars of systems-level reform that are linked with the acquisition of what has been described as 21st Century Skills.

From personalised learning, the project incorporates the following principles: activity, individualisation, sociability, freedom and creativity which, in the context of student-centred learning, acquire stronger relevance. *Activity:* in the sense that it must be the student himself or herself who builds their own learning, because given the importance of the interaction between the emotional world and the opening to new knowledge it provokes, the activities that the teacher presents need to connect with his or her interests and motivations. In this context, the analysis of errors is of great relevance since these are sources of inspiration to the teacher and give clues on the learning that has not been properly integrated. *Individualisation:* this relates to the interests, characteristics and learning rhythms and the awareness of strengths to trace the development through them. *Sociability*: this principle is based on the pillars of one´s own dignity and that of others and on competences of communication and relationships as well as the starting point for the responsibility of citizen´s rights and duties. It is mainly through cooperative learning that social abilities will be attained. The *freedom* principle refers to the exercise of his or her freedom to accept the consequences of one´s own decisions and develop autonomy, personal initiative and critical thinking. Finally, *creativity* is linked with initiative and entrepreneurial spirit.

3. *The guidelines of the Universal Design for Learning[14]*

Structured around three leading principles, the Universal Design for learning is particularly used in one of the important elements to consider: the development of educational materials. Since learners differ in the ways that they perceive and comprehend information presented to them, it is important

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[13] Helen Parkhurst, *Education on the Dalton Plan* (University Digital Library, 1922).

[14] These principles are lengthily explain in publications such as *Teaching Every Student in the Digital Age* (Rose and Meyer, ASCD, 2002), *The Universally Designed Classroom* (Rose, Meyer, and Hitchcock, eds., Harvard Education Press, 2005), and *A Practical Reader in Universal Design for Learning* (Rose and Meyer, eds., Harvard Education Press, 2006).

to provide them with multiple ways of representation, because this will facilitate the connections within and between concepts.

As learners differ in the ways that they can relate to a learning environment and express what they know, it is necessary to provide them with multiple means of action and expression. Finally, because learners differ significantly in the ways in which they can be engaged or motivated to learn, activities, environments and materials should provide them with multiple means of engagement.

The research team has elaborated alternative elements for students to interact with the materials as well as different options they can use for expressing and communicating ideas, situations and relationships. There are activities designed to motivate and stimulate managing functions; and others that support the initiative, capacity to choose and the development of autonomy with free option plans, peer tutorial, assessment and self-assessment.

4. *The contribution of the New Technologies, Cooperative Learning and Self-regulation*

The use of New Technologies does not necessarily lead to a methodology of multiple learning paths; it does so when they favor interaction, collaborative learning and foster learning by discovery and incorporates emerging technologies in this respect. All these elements[15] need to be taken into consideration in the design and the experimentation and have been transformed into the following: computer programs, interactive games, electronic materials, web quest, glogster, web pages, digital platforms, moodle, etc.

In the project, cooperative learning is used in the broadest sense as a resource to develop social and civil abilities and meta-cognitive skills, enhancing interpersonal competences. Meta-cognitive skills, such as planning and organisation of tasks, decision-making abilities, and negotiation are much related with the cooperative interaction. All this allows for the construction of shared knowledge and contrast in different perspectives in relation to a particular task. This mobilises the existing intellectual structures and compels to restructure them. Positive interdependence favours the establishments of more personal relationships based on respect and valorisation, and fosters attitudes and values of self-esteem, resilience , mutual respect and co-responsibility. Self-regulation, on the other hand,

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[15] Eloísa Montero Pascual, ed., *Aprendiendo con Videojuegos. Jugar es pensar dos veces* (Madrid: Narcea, 2010).

means that the student builds a personal system of learning and acquires in this way the greatest autonomy possible in his or her learning. This may mean to revise objectives, to change initial perceptions on the objective of the tasks, change some of the options needed to carry it through or the conditions of realisation. Self-regulation is planned to support the development of three major competences: (1) to be able to mentally represent the actions that the student needs to carry out successfully the tasks that are proposed; (2) to be able to recognise and make one's own the evaluation criteria; and (3) to manage the difficulties and errors occurring in the learning process, since these are relevant for advancement.

IV. **The methodology**

The *objective* sought by the project is the transformation of a traditional class into one of multiple learning paths, from a personalised approach that fosters all the capacities of the student, giving tools and techniques to the teacher to facilitate the student development of the set of competences, seeking to develop all of his/her strengths.

From the *perspective* of student-centred learning, the approach is of guided discovery where the student is active in his/her own learning and the concept of the teacher is revisited. In this context, a number of roles are suggested for the teacher: that of (i) guiding the process, (ii) opening diverse paths, (iii) supporting the student search, and (iv) helping them to build on strengths. The teacher would be the mediator between the interests of the student and the programmed curricula and would offer a number of experiences that can lead students to the achievement of the designed learning outcomes and eventually competences through multiple learning paths, motivating the student and fostering his or her strengths to reach the best results. The approach gives a fundamental place to the *diagnosis* of the different styles of learning. It counts on the tools to measure the level of advancement in the learning path (the pre-text and the post-text) which allow a close follow-up of the development and facilitate the possibility of integration of the different logics: that of the student, that of the teacher, and that of the designed curricula.

Learning activities, experiences, and environment need to be presented and required in *different formats* and using *diverse materials* and *resources* to enhance the strengths. The need to plan the process is one of the clearest elements present in every experience of student-centred learning. In this project, it becomes critical to program the working units, the activities, experiences and context for their engagement. The research group has also prepared guides for the teachers on how to use the experience in a collaborative

manner. They have also developed guides for multimedia resources, guides for students self- regulation, multi-level resources and provisions for the evaluation of the experience for both students and teachers.

The *evaluation methods*, *techniques and instruments* are developed in accordance with the final outcome - the designed competences - but also in agreement with personalised learning, going beyond learning to integrate the different dimensions of the competences required. In a system based on multiple learning paths, evaluation needs to adapt to the students´ itineraries of learning as well as in their dominant strengths, motivations, interests, curiosity, initiative, etc. The methods are many: observation of the teacher, participation, portfolio, conceptual maps, rubrics, written answers, oral presentations, forms for the self- regulation, etc. In fact when talking about pre-test and post-test we refer here to a period, not to a single form of evaluating learning. In fact, the competences of learning how to learn and entrepreneurial spirit are evaluated with the self-regulation methodology, with the portfolio and the participation in collaborative groups. The digital competence is assessed in the exercises in class and the advances of intrapersonal and interpersonal elements in collaborative work.

The *class is conceived* as a neuralgic point of the learning experience, because it is a qualified moment when the teacher can be aware of the student's capacities, can present the outcome learning expected, the educational resources available, activities and paths are selected by the student and guidance can be given by the teacher. It is there that the student can follow spaces of personal work as well as work in a cooperative group. It is where discoveries are shared, debates and discussion take place, methodology is explained and a portfolio is prepared.

An important element of the methodology refers to the *development of the teachers* who are to experiment with the different units and to take part in the experience. This is done through blended learning. There are also practical experiences that are done online. The follow up is also carried out online, mainly to share about experiences and difficulties, the use of different types of materials and their experienced impact on the students. The materials also offer an important platform for evaluation of the experience while suggesting ways for improvement.

In terms of the *validation* of the action-research methodology, fourteen validated instruments are presented for their implementation. It also uses a number of criteria: Internal and external validation, reliability and neutrality systematized in a number of techniques used such as triangulation prolonged work, contrast with participants, detailed descriptions, standard protocols, and external observers.

V. **Obtained results**

An analysis of the data obtained throws light on several issues. A number of questions can be asked in order to analyse the results. The ***first question*** that can be asked is whether the data show evidence of students' overall improvement in the set of competences that were selected to be developed. Each of the modules has a period of six to eight weeks for implementation and evaluation. Figure 1 gives the total improvement measuring the 384 students belonging to the seven schools involved in the experience.
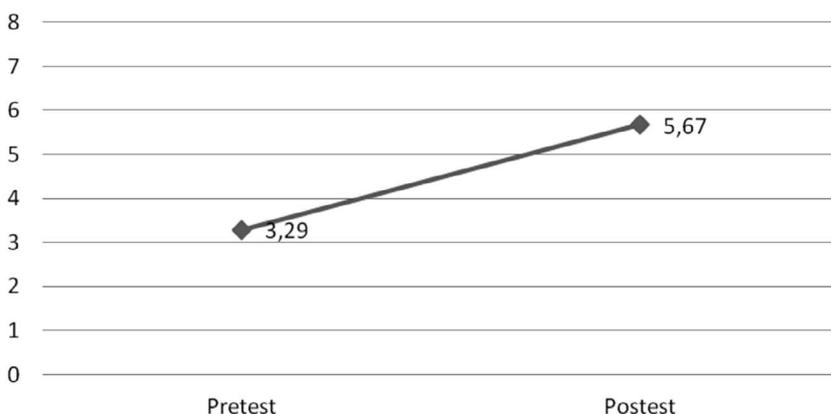

Figure 1
Means of the punctuations of the groups of all the schools,
the 384 students who have made the experience

Vertical: scale of mean punctuations of the total of students who took part in the experience. The scale is up to 8 because there is no highest number than 8 as mean.

According to the data, the improvement in the total population of students was very significant; it was a mean increase of 2,38 - high for such a short period.

The ***second question*** to be asked is if all the schools improved or if the location of the school and, consequently, the socio-economic background of the students played a role in this improvement. Graph 2 shows, in an integrated manner, the mean growth for each of the seven schools as it compares with the total figure. The conclusion is clear: there is a substantial improvement in each and every one of the schools and there is a message that this type of research is quite balanced in the cost-benefit turnover because of the positive impact it has on teacher training.
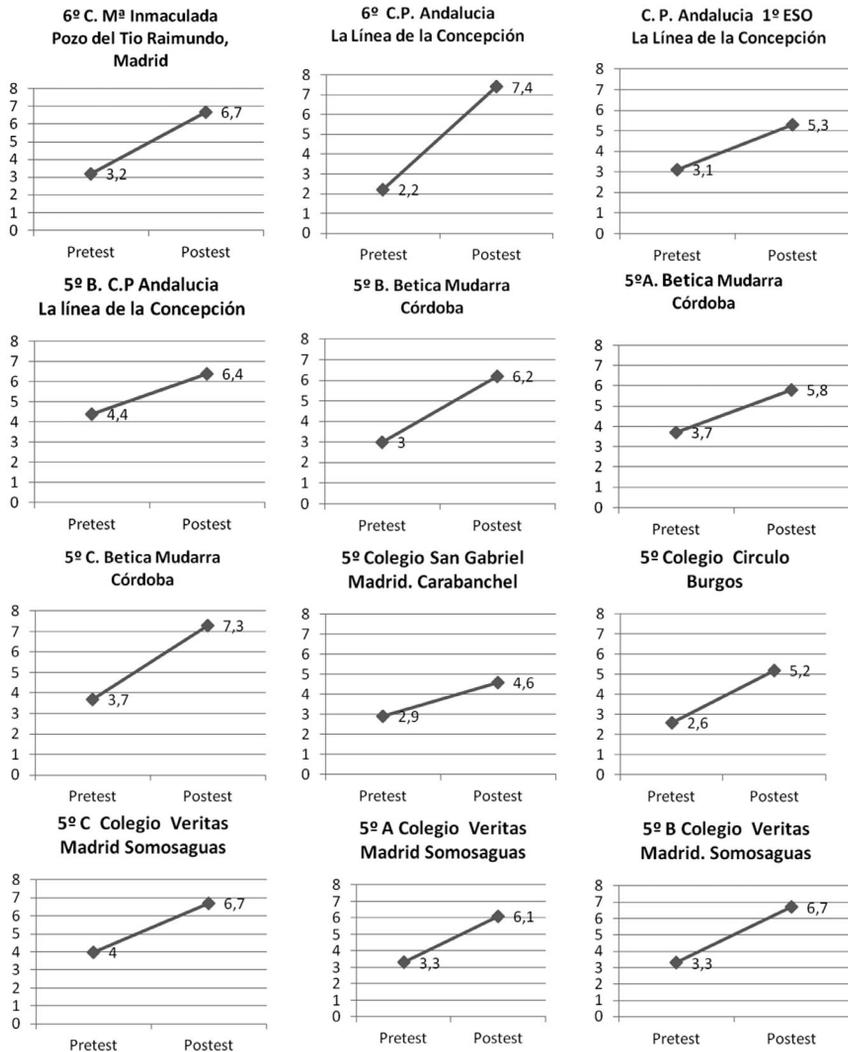
Figure 2

Means of each Group and School

Vertical: Scale of Mean punctuations per group.
Horizontal: Results of the Pre-test and those reached after a period of experience-Post-test.

The conclusion is that all the schools register a marked improvement. This is particularly high in the case of the schools located in very deprived

areas (Pozo del Tio Raimundo, Carabanchel in Madrid or CP Andalucía in Linea de la Concepción). This level of achievement takes place in all the educational centres and is significant with the probability of 99% by the T-student for small populations. It is also relevant to note that not all the schools start at the same level, but all register an important growth in the deprived zones as well as those located in residential areas. The first analysis shows that there are other elements, such as teacher and students motivation, that can have a strong impact.

The ***third question*** is actually a set of questions that () relate to the learning of the students: do all the students learn or only some do? What is the tendency in this respect? Is the class moving to integration or to dispersion? Does learning in such a personalised way foster integration or dispersion? Figures 3, 4 and 5 give three examples of the trend, which is repeated, in all the participating schools. The growth in competences relate to all and practically to every student in the group.

CPR Andalucia 5º course per student

■ Pretest   ■ Postest
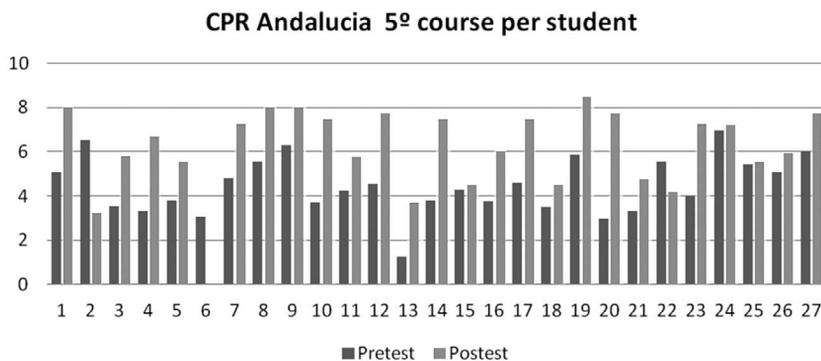
Figure 3

Vertical: Total of punctuations of each student in pre and post-test.
Horizontal: number of students in the class by enrolment number.

In CPR pre-test 4 students are above 6 and in the post-test 15 students are above 6.

Figure 4 shows that in Circulo School in Burgos all students, except nº 14, show a significant improvement, in the pre-test only one student had reached a 6 as mean. In the post-test nine students reach 6 and three get a mean of over 8.

At the Veritas Institute, it would be important to study the performance of student nº17, who was one of the three best in the pre-test and improved only slightly, but all the others improve. The improvement here is important.

Comparativa Pretest-Postest. 5º B

Pretest ■ **Postest**
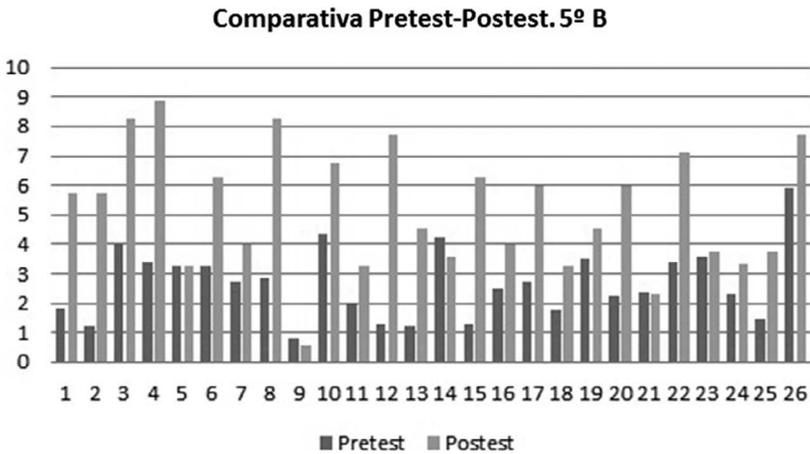
Figure 4

School Círculo in Burgos: Performance per student

Vertical: Total of punctuations of each student in pre and post-test.
Horizontal: number of students in the class by enrolment number.

Comparative pretest-postest - 5ºB
I. Veritas


Postest ■ **pretest**
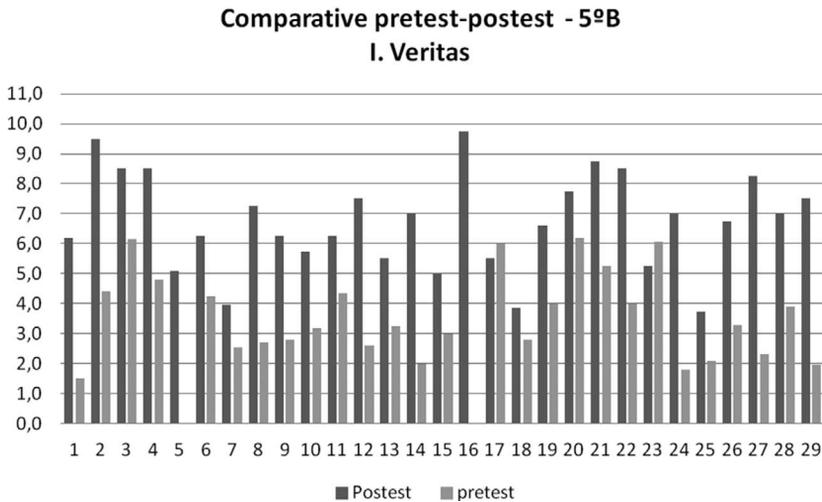
**Figure 5**

Instituto Veritas- Madrid

Vertical: Total of punctuations of each student in pre and post-test.
Horizontal: number of students in the class by enrolment number.

21 students are beyond 6, with 14 reaching a 7 or higher. 7 received a grade above 8 and 2 receive 9 and higher.

The ***fourth question*** relates to the evidences regarding the competences which are best achieved and to (what is) the variation according to the schools. Table 1 presents the keys to the competences and their relationship with the corresponding multiple intelligences, while figures 6, 7 and, 8 give different groups performances according to the pre-test and the post-test.

Table 1

Explanation of the type of competence
and its relationship in the project with a type of intelligence

Questions – Competences and Multiple Intelligences		
Qs	Designed Competence	Multiple Inteligences
1	CL, CM,	Ling, Mat, Vis-Es,
2	Cl,CM,CSC,CEC	Ling, Log-Mat, Vis-Es
3	Cl,CM,	Ling, Vis-Esp
4	CL, CM, CEC,	Ling,Log-Mat,Natur,Vis.-esp,
5	CM,	Log-Mat,Vis-esp
6	Cl, CM,	Log-Mat,Vis-esp
7	Cl. CM.	Ling. Log-Mat
8	CM, Inic	Ling, Log-Mat, Vis-esp
9	CM, CL,	Ling, Log-Mat,Vis-Esp,
10	CM,CAA,CL	Ling, Log-Mat,Vis-Esp,intrap
11	CM,	Ling,Log-Mat, Kineste
12	CM, Inic, CEC	Ling, Log-Mat, Inter, Intra

Keys	
Designed Competences	Multiple Intelligences
CL = Linguistic Communication CM = Math, basic sciences and Technology CD = Digital Competence CAA = Learn how to learn CSC = Social and civic Competences IEP = Initiative and entrepreneurial spirit CEC = Awareness and understanding of cultural expressions	Linguistic = Ling Logic-Mathematics = Log-Mat Visual-Spatial = Vis-esp Kinestésica-Corporal = Kineste Naturalist = Nat Intrapersonal = Intrap Interpersonal = Interps

It must be said that the pre-test and the post-test are important elements of the project. They are designed to measure the student learning during the experience that extends between these two moments. The competences of learning how to learn and entrepreneurial spirit are evaluated with the self-regulation methodology, with a portfolio and by participation in groups. The digital competence is assessed through classroom exercises and the advances of the intrapersonal and interpersonal elements through collaborative work.

Looking at the performance of the pre-test and pos-test, we can see the development of three very different schools. Figure 6 shows CPR of Andalucia which has a significant performance in most of the competences.

CPR Andalucia - 6ºA- Group performance per Q
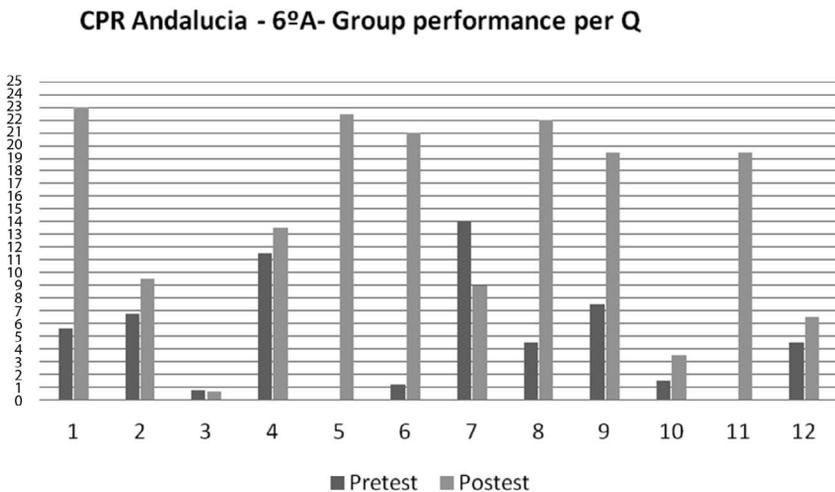
Figure 6

Group performance in the different
issues presented in the Pre and Post-test

Vertical: Sum of all the punctuations of each student in all the issues of the Pre and Post-test.
Horizontal: Number of students in the class by enrolment number.

The impact is quite remarkable in numbers 1,2,5,6 and then 8, 9, 10 11 and 12. It is important to see that number 7 is below the pre-test.

Totals 5º A Course. I.Veritas
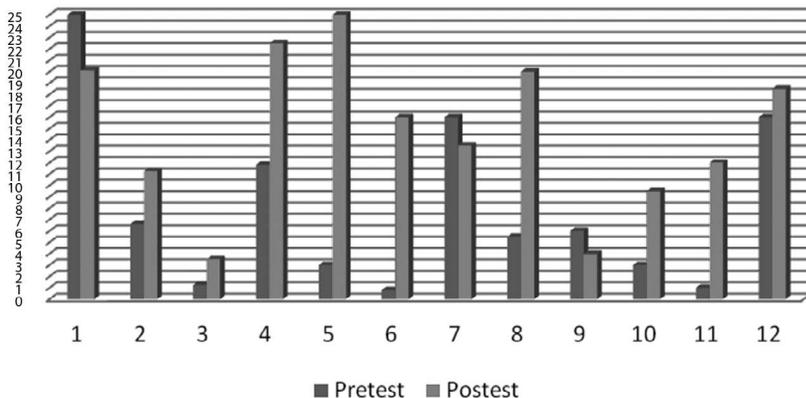
Figure 7

Group performance in the different
issues presented in the Pre and Post-test

Vertical: Sum of all the punctuations of each student in all the issues of the Pre and Post-test.
Horizontal: Number of students in the class by enrolment number.

Totals 5º BCourse. School Circulo- Burgos
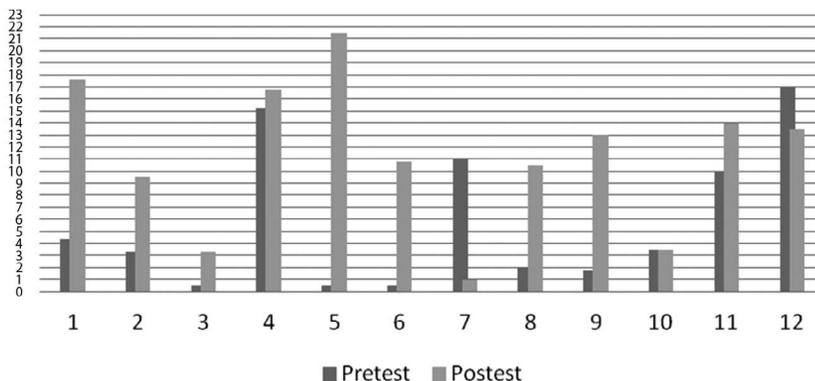
Figure 8

Group performance in the different
issues presented in the Pre and Post-test

Vertical: Sum of all the punctuations of each student in all the issues of the Pre and Post-test.
Horizontal: Number of students in the class by enrolment number.

Again in the case of Veritas Institute, the competences which do not seem to have had any development is number 7 again, and ,to a certain extent, number 12. In this case, the growth is quite harmonious in 1, 2, 3, 4, 5, 6, and very considerable in 8, 9 and 11.

Figure 8 shows how at the Circulo School in Burgos there is a similar pattern developing in terms of competences 7 and 12; these are not improving and, on the contrary, they seem to be decreasing.

There is a marked consistency in the trends registered in the schools which, in completely different settings, have major coincidences in their learning achieved. The differences and the explanations are detailed in the very thorough reports which accompany every school and which deals with what the students have learned. Besides, they offer an analysis of the statistics, a summary of the student opinions on the experience and the opinions of the teachers on the experience as well as any errors which should be analysed. Thus, there are settings, activities and context that () are very conducive to growth.

Three further lines of analysis were introduced. The first was designed to answer the question of whether this system of learning helped with the integration of the class or favoured dispersion. An homogeneity index was developed through a coefficient of variation which shows a higher level of homogeneity in the class between the pre-test and the post-test. This demonstrates that the system facilitates advancement of the students but in an integrated manner. There is improvement for all.

The second line related to the difference between genders and on how they perform. In reality, it was not possible to conclude anything on this issue () given that there was a significant variety in relation to the schools and the specific competences. Finally, there is an index of continuity or steadiness that is related to the way students answer the questions, the effort made and the interest shown. Further studies will probably throw light on these two issues.

Conclusions and Further Reflections

A number of conclusions could be drawn from this project. These lead to further reflections on a number of issues which are critical for the implementation: what lies behind the development of competences, the impact of modes of teaching and learning, the profile of the new teacher.

The first conclusion is that after two years of experience of an approach based on clearly designed learning outcomes and competences and the use of multiple learning paths, evidence seems quite solid to show that **there are**

remarkable improvements in the performance of students when this approach is implemented. Between the pre-test and the post-test the students improve their achievement by 2 or 3 points on the mean performance during the period of 6 to 8 weeks.

The important advancement in the development of learning highlights the **relevance in the approaches of teaching and learning** as a way of making significant steps in the development of the agreed competences. This is in line with the conclusion of research by Ginés Mora[16] according to whom some teaching and learning modes are effective in developing competencies and others are not, following that traditional modes in teaching and learning contribute little, if any, to develop competencies and innovation.

The second conclusion is that **students with specific difficulties** produced by lack of interest or low level of achievement **get more integrated into the classes** with this system of learning. The quantitative study of the results of this learning shows that the students who have a higher level of improvement are those who were in the lower tail of the achievement curve. This suggests a path to integration with the benefit of all and a path to advance in the goal of equal opportunities to learn.

Following the teachers' questionnaires, the third conclusion can be drawn: **students have participated "much" and "quite a lot" in class** in an active, adequate, interested, rigorous and collaborative manner and they have worked with a large variety of tools and materials. The variety of methodologies and the flexible approaches can adjust better to different needs and possibilities because every student is different and has diverse needs and capacities and not a single approach can fit all.

The reports include also the opinion of the students. The conclusion to be drawn from their opinions is that **they are greatly in favour of the experience;** their evaluation includes reflections on the methodology, where they have found the difficulties and where do they find the major interest in this form of working. They particularly emphasise the importance of collaborative work, they feel that they learn more within a group; they consider that they also learn responsibility; they remark the role of argumentation in the group, and of "drawing out" what they have inside. A further conclusion is that the fact that awareness of the learning process can

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[16] Jose Guinés-Mora, "Are Graduates equipped to succeed in the Global World of the future?" (a presentation made at the university-business forum on "Universities, Businesses & Co.: Together We Can. Strategic Inter-sectorial Partnerships for Economic Growth and Social Change and Growth"Rome (Italy), 2 October 2014: http://www.ubcforum-italy.com/our-crew-1/).

be provoked and speeded up with specific activities. **Being able to recognise where the learning took place and where the difficulties occurred** is an important step for being able to manage one's own learning process, which is at the core of student-centred learning.

A theme that runs throughout the study is **motivation**. The research team has reached the conclusion that there is a direct relation between the motivation of the teachers and their capacity of provoking motivation in the students. The ability to develop diverse contexts and activities, as to create a reaction of participation and engagement needs to be considered. It is a key element in the profile of the teacher who needs to develop student-centred learning. It is the learning experience which both (student and teacher) share that needs the passion to encourage risking to go beyond and to motivate while keeping one's own motivation.

In the new paradigm, a number of concepts need to be revisited. One of them is the place for **collaborative groups,** which tend to be necessary and fruitful at all levels both for the students and for the teachers. The impact and the contrast require these types of structures in order to handle the amount of knowledge and possibilities for information and diversity paths. Another is the **concept of implementation**. There are stages in the process and the project here refers to initial champions who are able to initiate the innovation trend that others can follow. The role of pilot projects is quite essential in the work of implementation.

Another concept is the **concept of the class**. Contrary to the idea that the class loses meaning with the student-centred learning, in this project it becomes a rather central point. It is there that the core of learning occurs, it is there that the learning experience between the teacher and the student is more intense, it is there that the getting together takes place and the debate of the work done, the methodology followed is discussed and it is there that peer learning tends to be more intense. It is in the class that the teacher needs to make a synthesis of the learning achieved and that which is pending. It is the context where students could recapitulate in their portfolio, where the necessities to complement or catch up find a place and where students present their collaborative work and their findings.

Finally, there is the concept of **the teacher**. In the project there were two roles for teachers: the designers of activities and the environments where learning took place and the implementers. Nevertheless, the role of the teacher is more complex but not less important. His or her role is less to impart knowledge and more to open roads, less to dictate lessons and more to draw attention to the essentials, do less teaching and more facilitating, advising, guiding, motivating, being less of a dominant power and more of an inspiring presence.

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Ideological trends in initial teacher education curricula: the case of East African universities

Proscovia Namubiru Ssentamu

Abstract: This paper reviews the ideological trends in initial teacher education curricula in East African universities during the post-independent and contemporary times. From the mid-1960s and mid-1980s, initial teacher education curricula were integrated and harmonised with support from the East African Community whose efforts were coordinated by the Inter-University Council for East Africa. With the breakup of the Community in 1977, each independent state pursued its own educational strategy. However, underfunding of the public sector by governments, introduction of market-friendly reforms under the World Bank Structural Adjustment Programme in 1987 and the de-regularisation policies led to the liberalisation of public services, including education. Liberalisation affected among others, the quality of the initial teacher education curricula. Consequently, national councils and commissions for higher education were established to control standards in higher education, and the Inter-University Council for East Africa was revived to standardise and harmonise educational standards at regional level. The review shows that over the past five decades, the structure and organisation of initial teacher education curricula has continuously adjusted itself and been adjusted to a hybrid culture blending classical humanism, utilitarianism, social re-constructionism, market and global ideologies. Comparable ideological inclinations at socio-economic and political levels have influenced this trend in the region. The paper highlights the implications of such trends on the future of initial teacher education in the region.

Keywords: Ideology; post-independent; liberalisation; initial teacher education; higher education; curriculum; East African Community.

I. Introduction

The three traditional East African countries i.e. Kenya, Tanzania and Uganda that were formally British colonies constitute the geographical scope of this paper. Although with the revivification of the East African Community, Rwanda and Burundi joined in 2007, since these were formally French colonies, and therefore have a different historical background, they are beyond the scope of the current review. The paper restricts itself to the undergraduate teacher education curriculum, also commonly referred to as pre-service or initial teacher education. The term 'curriculum' is defined

variously, however, in this paper; focus is on the initial teacher education structure and organisation.

It is true that teacher preparation has become a controversial issue, perhaps more than ever before, especially regarding how much formal teacher preparation is required and how it should be delivered.[1] However, because of various contextual challenges, there are more questions posed in Sub-Saharan Africa than perhaps elsewhere regarding the quality of education at various levels. As Stuart and Tatto[2] posit, it is important to understand the historical, socio-economic and cultural contexts in which initial teacher education programmes emerge, and the political and epistemological tensions that may arise.

The development of education in East Africa has been continually shaped by its history as a former British colony[3], but also by motivational forces at domestic, continental and global levels. This review aims to reflect on current thinking about initial teacher education by reviewing the historical and contemporary ideologies informing initial teacher education curricula within the East African universities. For ease of the review, the post-independent period runs between the mid-1960s and mid-1980s, while the contemporary period starts from the mid-1980s to date.

The post-independent period describes the struggles East Africa experienced as she transitioned from political dependence to sovereignty. The mid 1980s to date are contemporary years in which East Africa has continually endeavoured to adjust to domestic, continental and global forces. These two eras are characterised by diversity in the structure and organisation of initial teacher education curricula. The aim of the paper is to review the ideological trends in the initial teacher education curricula in the East African universities in order to interrogate the implications of such trends in the development of future initial teacher education curricula within the region. Specifically, the review focuses on two major questions, that is:

a) What was the structure and organisation of initial teacher education in East Africa during the post-independent period (mid 1960s and mid 1980s)?

b) What is the structure and organisation of initial teacher education in East Africa in contemporary times (mid 1980s to date)?

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[1] John Schwille and Martial Dembélé, *Global perspectives on teacher learning: Improving policy and practice* (Paris: UNESCO International Institute for Educational Planning, 2007).

[2] Janet S. Stuart and Maria Teresa Tatto, "Designs for initial teacher preparation programs: An international review," *International Journal of Educational Research* 33 (2000): 493.

[3] Refer also to Damtew Teferra and Philip, G. Altbach, *Higher Education* (2014), 24.

The first half of the paper describes the methodology used to sample, collect and analyse the literature. Thereafter, ideologies in education and the historical development of formal higher education in East Africa are briefly reviewed. In the final half of the paper, the structure and organisation of initial teacher education in East Africa during the two periods are reviewed reflecting the challenges and opportunities presented. A conclusion and implications with regard to the study findings are made.

II. **Methodology**

Reviews of various literature[4] formed the bulk of this paper, i.e. reports and literature from the national councils or commissions for higher education in Kenya, Tanzania and Uganda, the Inter-University Council of East Africa (IUCEA), purposely sampled literature from within and beyond the region, UNESCO reports on teacher quality, and dissertations. Findings from the reviewed literature were categorised, analysed and discussed based on the study's key research questions. Patterns and relationships in the information were identified to appreciate unique cases and draw generalisations regarding initial teacher education developments within the region in light of the wider social context.

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[4] Literature reviewed included: Yoweri K. Bamanyaki, Unpublished M.Ed. Dissertation of Makerere University, (1979); Sorobea N. Bongoko, *A history of modern education in Kenya* (1895-1991), (1992); Friedrich Buchberger, Campos, P. Bártolo, Daniel Kallos, and John Stephenson, Eds., Green paper on teacher education in Europe: High quality teacher education for high quality education and training, (Thematic Network for Teacher Education in Europe (2000); Bonny Busingye, Unpublished M.Ed. Dissertation of Makerere University (1989), Eastern & South African Universities Research Program, University capacity in Eastern and Southern African Countries (1987); Inter-University Council for East Africa, Jumuiya ya Afrika Mashariki, East African Business Council, Regional higher education qualifications gaps versus the region's human resources needs: Finding EAC Higher Education Competence Sweet Spot, Situation composite EAC Report, Unpublished, Vol. II, (2014); Abel G.M. Ishumi, *Africa Education Review*, (10(1): 89-116, 2014); Festus Kaberia, Joyce M. Mutinda, Margaret K. Kobia, *Higher Education: Cross-border higher education: regulation, quality assurance and impact*, (International Institute for Educational Planning, Vol. II, UNESCO, 2007); Xiaoyan Liang, *Uganda Tertiary Education Sector, Africa Region Human Resource Development*, (Working Paper Series, World Bank: Africa Region, 2004); Samuel E. Lugumba and John C. Ssekamwa, A History of Education in East Africa (1900-1973); Makerere University College of Education and External Studies Strategic Plan (2011/12-2018/19) (2011); Daniel W. Nabudere, *Southern African Review of Education, A Journal of Comparative Education and History of Education*, (13(2) 125-138, 2007); Uganda National Council for Higher Education Reports (2004, 2006, 2007, 2012); University of Dar es Salaam Undergraduate programs and administration procedure, (2007) and Prospectus (1990); Uganda Government, White Paper on Education (1992); 'and references therein'.

III. **Ideologies and Education**

Ideology as a system of belief, generalisations and social practices is related to what it does in naturalising certain attitudes and ways of thinking, and in legitimising existing power relations. The existing powers legitimise these ideologies as policy directing an education system. Consequently, policy statements are translated into the curriculum and eventually into society. This genre of official documents and policy statements has a shaping effect on practices within institutions and the wider society as manifest in guidelines, standards, social expectations and cultural values.[5]

Classical humanism as a value system focuses on the transmission of knowledge and cultural values from generation to generation. Indeed, values were passed on from the colonial to the post-colonial era. Post-colonialism refers to the political and theoretical struggles of countries as they transition from external political dependence to sovereignty. In the case of East Africa, post-colonialism was the period after the national liberation struggles in the early 1960s that led to political independence. In relation to colonial and post-colonial history, classical humanism endorses academic rationalism,[6] since it concerns itself with students' intellectual development and acquisition of knowledge associated with the established academic disciplines. Therefore, the role of a university is to transmit, create and classify knowledge through teaching, research and publication.

A theory closely related to classical humanism is essentialism, which suggests that certain basic ideas, disciplines and skills essential to culture should be taught to all students using certain time-tested methods. The goals of education are primarily cognitive and intellectual, aimed to preserve and transmit cultural heritage in the various subject disciplines. Therefore, an academic teacher education curriculum focuses on cultivating high levels of academic knowledge, skills and values among students. The best student is one who correctly reproduces the transmitted knowledge, skills and values. Like essentialists, classical humanists seek to preserve the ideals of society and adjust the populace to fit into their thinking.

Utilitarianism or social and economic efficiency is another ideology influencing education. With its generally economic undertone and pragmatic view, the role of educational institutions is to prepare prospective teachers with the competences they will require for their working lives in schools, and satisfy societal needs. Although utilitarianism has ethical connotations under

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[5] Judy Woon Ye Ho, *Language and Education* (2002).
[6] Paul Morris (1995) cited in Judy, Woon, Ye Ho, *Language and Education* (2002).

the *'the greatest happiness of the greatest number'*[7] description, which foretell inclusion and equity in accessibility of services, it is criticised for its emphasis on quantity relegating value concerns. This ideology also emphasises the power of an individual and his or her potential for the consumption of goods and services.

A related value system sharing the maximisation of good consequences is social re-constructionism, which holds that in promoting what is educationally desirable in a given context, educational institutions are powerful instruments in developing prospective teachers' abilities to improve and cause social and cultural change. In this value system, equality, tolerance and acceptance of diversity are treasured democratic ideals.[8] It is no surprise then that in post-independent countries, education was considered a powerful tool in reconstructing society through nation building and national integration. In order to address concerns such as nation building and national integration, curricula and pedagogy has to be tailored to respond to the immediate needs and aspirations of a given society. Unlike classicists and essentialists, social re-constructionists seek to change society and adjust it to contemporary conditions, implying a flexible and multidisciplinary curriculum. In this instance, faculties or schools of education and teacher educators are principal agencies and agents of change, respectively.

This review also acknowledges the influence of market and global ideologies on initial teacher education. There are two types of markets considered in this review; i.e. the academic study market, which provides a range of differentiated study programmes from which students make a choice, and the labour market, which absorbs graduate teachers. In both markets, quality, quantity and competition are important words. Due to its liberal nature, the labour market ideology emphasises individual rights and equality of opportunities. Since the market is vibrant, there is a continual adjustment of existing values and social practices for the good of society. With the advent of globalisation, the market extended its frontiers from the national to regional and finally to global boundaries. However, sometimes the sequence did not matter. Consequently, universities had to address issues emerging from general macro socio-economic policy reforms; that is, competitive policy reforms, financing policy reforms and equity policy reforms.[9] These reforms are reflected in the utilitarian and social re-constructionist ideologies.

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[7] Webster *3rd New International Dictionary of the English Language*, 2525.

[8] Paul Morris (1995) cited in Judy Won Ye Ho, *Language and Education* (2002).

[9] Martin Carnoy cited in DIES 111 3rd Dialogue on Innovative Higher Education Strategies (2003, 38).

The ideologies highlighted above move along a continuum; i.e. from the academic model (selectively individualistic) to social democratic models, which are in part a consequence of liberalisation. However, as evident here and elsewhere, these models are not exclusively independent of each other. Noted elsewhere, it is quite unlikely that in a rapidly changing and increasingly global society, these educational purposes can be adopted to the exclusion of others.[10] An emerging postmodern synthesis in which varieties of ideologies are united around the ideas of cosmopolitan theory has further been articulated.[11] In this paper, these ideologies serve as a basis to reflect on the structure and organisation of initial teacher education curricula in East Africa.

1. *A historical review of the development of formal higher education in East Africa*

The development of education in East Africa is indissolubly linked to missionary work, which started at the Kenyan coast as early as 1844 where the Church Missionary Society set up its first school.[12] From then onwards, there was an influx of various missionary societies into the interior. The need for teachers and formalised teacher training arose immediately western education was established. Missionaries started teacher-training centres with the aim of having a critical mass of teachers who would foster the transformation of the socio-economic life of Africans by teaching them how to read and write, and practical skills. Underlying missionary education was the development of moral and character training, which paved way for British colonial interest and eventual administration of East Africa.

Through recommendations from a series of commissions during the colonial period e.g. the Phelps-Stokes Commission on education in East Africa (1924) and the British Government White Paper on Education in Tropical Africa (1925), a more formalised initial teacher education programme in higher education took shape. In 1925, Makerere College started administering a three-year in-service teacher-training programme for upper primary teachers. The College was later transformed into the sole inter-territorial higher education institution training secondary school teachers; and became the University College of East Africa in 1949 when it was affiliated to the University of London. This led to the establishment of a

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[10] Judy Woon Ye Ho, *Language and Education* (2002).
[11] Chris Yates, *UNESCO* (2007), 3.
[12] John C. Ssekamwa, *History and Development of Education in Uganda* (1997).

Faculty of Education, which awarded postgraduate diplomas and teaching certificates. The Royal Technical College of Nairobi and the Dar es Salaam Technical College obtained similar status and relation with the University of London between 1958 and 1961. Although in 1962, Makerere introduced the Bachelor of Education degree course, which was felt would salvage teacher shortage in the region as independence was approaching, there seemed to be a more desperate need in Kenya for graduate teachers than Makerere alone could supply. As a result, a Department of Education was set up at Nairobi University College to provide undergraduate courses in Arts and Science with Education.

In a bid to respond to the needs of independent East Africa, affiliation to the University of London was dissolved in 1963. From 1964 onwards, Makerere University College, the University College of Nairobi and the University College of Dar es Salaam constituted the University of East Africa, with the mandate to examine and approve proposals for new faculties, departments, courses and subjects of study submitted to it by the constituent colleges.[13] This move was among the precursors for cooperation, which culminated in the formation of the East African Community in 1967.

During the colonial period, the East African countries had a harmonised education system through established regional organisations and institutions. The East African National Examination Council ensured standardisation and quality assurance of education.[14] Despite this joint effort, each independent state was desperately concerned with the need to train quality high-level manpower urgently needed for political and socio-economic development. Higher education was the viable solution to this problem. Dissatisfaction with the current training situation led to the dissolution of the University of East Africa in 1970. Each of the three university colleges became an independent national university of its respective republican government offering undergraduate and postgraduate courses leading to their own awards. However, in order to oversee and ensure systematic progress of the universities and further maintain academic cooperation among the universities, an Interim University Committee for East Africa was established.[15] With the collapse of the East African Community in 1977, further regional cooperation was discontinued, an indication that regional arrangements have not been successful in the past because political and other nationalistic considerations have reigned supreme over regionalism. It is

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[13] John C. Ssekamwa, *History and Development of Education in Uganda* (1997).

[14] Inter-University Council for East Africa, "Regional higher education qualifications gaps versus the region's human resources needs" (June, 2014, 32, Unpublished).

[15] University of Dar es Salaam *Prospectus* (1990/91), 9.

upon this background that the author seeks to review the structure and organisation of initial teacher education in the post- independent and contemporary East African universities.

IV. **Findings from the review**

1. *Initial teacher education curricula and the ideologies embodied in the post-independent East universities*

Post-independent East Africa (mid-1960s to the mid-1980s) is characterised by expansion of initial teacher education programmes to meet teacher demand in secondary and post-secondary institutions. The University of East Africa (1963-1970) groomed two types of prospective teachers, namely holders of a non-graduate diploma and postgraduate diploma in education. The second lot had studied for a three-year degree in their respective academic disciplines followed by a one-year postgraduate diploma in education taught in the Faculty of Education. After 1965, the Faculty of Education (1952 and later School of Education, 1986), Makerere University College prepared teachers through two initial teacher education pathways, namely; the Bachelor of Education Degree (B.Ed.) and the Postgraduate Diploma in Education. Although the curriculum developed then was a little more adapted to the needs of East Africa than hitherto,[16] Makerere's initial teacher education programme, which was modelled on the University of London model, was replicated in Kenyatta University College and at the University College of Dar es Salaam.

With the dissolution of the University of East Africa, the post-70s indicate further diversifications among universities offering initial teacher education. For instance, from 1983, in addition to preparing holders of the Postgraduate Diploma in Education, the concurrent Bachelor of Arts Degree with Education and Bachelor of Science Degree with Education programmes replaced the Bachelor of Education degree programme. Similarly, in 1989, the Faculty of Education at Dar es Salaam University offered a three and a half-year Bachelor of Arts with Education degree leading to a concurrent academic and professional certification. The half a year was dedicated to intensive practical work in schools. Despite political turmoil in Uganda, continuous strikes by university students in Kenya and the gradual adjustment to democratic governance in Tanzania, diversification of initial teacher education programmes in the then three public universities registered progressive increase in student enrolment.

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[16] DIES 111 3rd Dialogue on Innovative Higher Education Strategies (2003), 19.

However, Kenya's higher education is noted to have expanded faster than her counterparts due to her free enterprise economy and the unlimited expansion of secondary education.[17] In 1985, the Kenyan government abandoned the then English 7-4-2-3 education system in East Africa i.e. seven years of primary education, four years of ordinary level education, two years of advanced level secondary education and three years of university education. Kenya adopted the 8-4-4 system of primary, secondary and higher education, respectively. Consequently, Kenyatta University started offering a fulltime four-year Bachelor of Education programme. This shift rendered Kenya's education system considerably different from that of Uganda and Tanzania, and has to date implications to the harmonisation of initial teacher education curricula within the East African Community.

Despite such divergences, the initial teacher education curricula in East African universities were quite similar. Ideologically, university role was redefined from elitism to social inclusiveness. It is noted that African political leaders and academicians wanted universities to apply "their energies directly to the practical solutions to social, economic, and political problems of their nations…actively participate in ideo-cultural regeneration, social transformation, economic modernisation …"[18]

Therefore, there was demand to not only embrace modernisation, but also decolonise society and restore African identity. This was evident in the courses that were introduced in education faculties, e.g. African History, Oral and African Literature. Despite this shift, there was a blend of 'ivory tower mentality', utilitarianism and social re-constructionist ideologies, which was intended for academic advancement and national development. University knowledge then ceased to be knowledge for its own sake, but knowledge with an application purpose. Demand for manpower led to a qualitative and quantitative expansion of university education, in terms of programmes offered and student enrolment. An upward trend in the number of graduates justified the existence of universities.[19]

Following the Makerere University model, each education faculty had on average five departments teaching methods courses, adult education, history and philosophy of education, curriculum studies, economics of education and administration, educational technology, psychology and sociology.[20] Consequently, this led to duplication rather than specialisation of courses,

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[17] Sorobea N. Bongoko, *A history of modern education in Kenya (1895-1991)*, (1992), 143.

[18] Sorobea N. Bongoko, *A history of modern education in Kenya (1895-1991)*, 146.

[19] Sorobea N. Bongoko, *A history of modern education in Kenya (1895-1991)*, 143.

[20] ESAURP — Eastern and South African Universities Research Program, *University capacity in Eastern and Southern African Countries* (1987).

and rendered inter-territorial exchange of students and staff of no consequence. Another structural similarity was inter-faculty involvement in the preparation of prospective teachers. Those who enrolled for a three-year degree course were taught from two faculties, i.e. the faculty of education and either, the Faculty of Arts, Social Sciences or Sciences. In the former, prospective teachers undertook professional studies and subject methods courses, while in the latter they had detailed scientific exposure in their respective teaching subjects. For sound academic and professional grounding, all subjects offered were essential. In the fourth term of their second and third year university studies, prospective teachers undertook school practice in secondary schools for a specified number of weeks; quite often determined by resources. Following the classical humanism ideology, academic exposure during training was intended to equip prospective teachers with relevant theories and attitudes as basic prerequisites for practical training.

The Bachelor of Education, the Bachelor of Arts and Bachelor of Science with a concurrent Diploma in Education programmes were hoped to instil professionalism among the prospective teachers. However, teacher preparation from a variety of departments and faculties compromised the holistic professional growth of prospective teacher. Lecturers from the other faculties did not have a teaching qualification, making it difficult for them to organise and teach content relevant in teacher preparation. Similarly, in these and earlier structural arrangements, teacher educators had no practical experience at the lower levels of education such as secondary schools[21]. Nonetheless, even where several disciplines were merged under one department within the Faculty of Education itself, the boundary between them was maintained.[22] Such a curriculum is termed as a 'collection code' where disciplines are made up of a discrete study of segregated elements.[23] Characteristic of such a curriculum is that the teacher educator has clear control over the selection, pacing and organisation of knowledge, which Bernstein refers to as framing. When the framing is strong, the teacher controls the knowledge transmitted, and when weak, students control the content. In the case of the two initial teacher education programmes, framing was strong, which encouraged the use of teacher-centred pedagogy. By 1987 Makerere University had the most unfavourable teacher-student ratios

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[21] Yoweri K. Bamanyaki, "Teacher education programmes and teacher effectiveness in Uganda" (Unpublished M.Ed. Dissertation, Makerere University, Kampala, 1979).

[22] Bonny Busingye, "Teacher education in the School of Education at Makerere University" (Unpublished M.Ed. Dissertation, University of Manchester, 1989).

[23] Basil Bernstein (1971) cited in *Initial teacher training and the role of the school* by John V. Furlong, Paul H. Hirst, Keith Pocklington and Johnstone S. Miles (1988):123-124.

among the universities in the region, i.e. a ratio of 1:60 compared to 1:16, the average ratio in the region;[24] a further justification for a strong curriculum framing. Such ratio provided the basis for a teacher-centred pedagogy, which had strong reference to the then pedagogical ideology pervading university teaching.

The three-year Bachelor of Arts and Bachelor of Science with a concurrent Diploma in Education programme was further criticised for overloading prospective teachers, since these studied for two qualifications i.e. a degree and diploma in education. Consequently, the graduates used their degree qualifications to acquire jobs elsewhere,[25] a move that did not salvage lack of qualified teachers for secondary and post-secondary institutions. Following the misallocation and under-utilisation of those trained, a concurrent Bachelor of Arts and Bachelor of Science with Education degree course was introduced at Makerere University in 1982. This programme has withstood the test of time despite criticism that it is over-stretched in content and organisation. On the other hand, Kenya and Tanzania have continued with the Bachelor of Education degree programme, although Tanzania also runs the Bachelor of Arts and Bachelor of Science with Education degree programme at the same time. The Bachelor of Education equally continued to be offered at Makerere University to students following the distance education mode, as well as by Kyambogo University.

Based on the above review, there seemed to be dissatisfaction with the post-independent initial teacher education system in East Africa. The education system was generally described as:

> …a foreign thing wrenched from a European environment and erected in a society to which it is not related. The programmes it offers are bookish and are geared to preparing pupils for higher education which still remains the prize goal of a small number of pupils.[26]

Characteristic of bookish education is student exposure to an array of summative examinations, which further stifles initiative and innovation in learning. Such a system discourages the preparation of students for life in society, but promotes search for white-collar jobs in urban centres after graduation. Due to the selective nature of the summative examinations, such a system cannot fulfil the *'greatest happiness for the greatest number'*

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[24] ESAURP — Eastern & South African Universities Research Program, *University capacity in Eastern and Southern African Countries*.

[25] Bonny Busingye, "Teacher education in the School of Education at Makerere University" (Unpublished M.Ed. Dissertation, University of Manchester, 1989).

[26] Samuel Lugumba & John C. Ssekamwa, *A History of Education in East Africa (1900-1973)* (1973).

advocated by utilitarianism. Higher education in general and initial teacher education in particular continued to be exclusively fashioned for a small minority group; mainly sons and daughters of kings, chiefs and affluent Africans serving in colonial and post-independent governments. According to a report from University of Dar es Salaam, post-independent [higher] education had an 'ivory tower' mentality because it was hardly accessible by ordinary people and hardly obliged to reach out to the rest of the community in relation to the mundane matters of everyday life. The report adds:

> Under this guise, institutions of higher learning — not least universities particularly of the first generation in their own country of location — were feared, yet revered for their isolationist stance from public life: perceived as "sacrosanct" for the "exclusive knowledge" they produced; untouchable and unquestionable even in the face of some obvious criticism that could possibly be raised against them.[27]

Despite effort to Africanise education, the above image reflected an education not only elitist, but also repulsive. Indeed, in the process of nation building, African universities were expected to develop and modernise their countries along western lines.[28] Coupled with the above were nationalistic ideologies in which the desire to produce adequate quality labour was urgent and sentiments to indigenise education were strong. Such an education system can be described as a hybrid of cultural ideologies, which reflected and were in turn reflected in the socio-economic and political spaces in which these universities were located. Therefore, post-independent East African initial teacher education curricula blended neo-colonialism, indigenisation and a dose of globalisation. This historical setting played a significant role in shaping the character of contemporary initial teacher education curricula in East African universities, to which the author now turns.

2. *The structure and organisation of initial teacher education in the contemporary East African Universities*

The contemporary period started in the mid-1980s to date, a period within which various policy reforms in East Africa targeted initial teacher in education and quality. Indeed, in the words of the Uganda Government

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[27] University of Dar es Salaam, "Undergraduate programs and administration procedure" (Office of the Deputy Vice Chancellor for Academic, Research and Consultancy, 2007).

[28] Daniel W. Nabudere, *Southern African Review of Education, A Journal of Comparative Education and History of Education* (2007), 126.

White Paper on Education, it is the quality of teachers, which ultimately determines the lot of the nation.[29] Similar arguments regarding teachers being at the epicentre in the realisation of a quality education process are echoed elsewhere.[30] Although East African governments acknowledged the importance of teacher quality, they could not single-handedly meet their respective country's educational demands. The decline in state funding and the formulation of market-friendly reforms initiated under the World Bank Structural Adjustment Programmes created an encouraging environment for the emergency of the private higher education sector in Africa,[31] which is to-date fast growing.

Through the Kamunge Report (1988) that recommended cost sharing in education and the establishment of private and *Harambee* institutions, and with support of World Bank policies, Kenya became one of the first African countries where public and private universities peacefully co-existed.[32] In the mid-1990s, the private sector establishment in Uganda and Tanzania followed suit. To date, there is registered expansion of private programmes at public universities and private higher education institutions; and progressive increase in the gross enrolment ratios from for instance below 1,0 in 1980 to 3,0 in 2000 in Kenya and Uganda.[33] Citing Uganda, Liang[34] posits that "...the demand for tertiary education will continue to grow as the success of the UPE [Universal Primary Education] campaign works its way through the education system and as the target tertiary age expands."

On a similar note, in the State of Higher Education Report,[35] the private sector owned 73% of the 187 higher education institutions in Uganda by 2011, representing a 4% growth in private ownership of higher education institutions and no absolute growth in government ownership of institutions. Elsewhere, private higher education has been noted to be one of the most

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[29] Uganda Government, *White Paper on Education* (1992), 152.

[30] Chris Yates, "Teacher education policy: International development discourse and the development of teacher education," 3; Martin Carnoy, "Lessons from the past two decades: investment choices for education and growth"; John Schwille and Martial Dembélé, "Global perspectives on teacher learning: Improving policy and practice," 5-26.

[31] Varghese N. V., *Private Higher Education in Africa*, 4; Festus Kaberia, Joyce M. Mutinda, and Margaret K. Kobia, "Regulation and quality assurance mechanisms for transnational (Commercial) providers of higher education in Kenya".

[32] Varghese N.V., *Private Higher Education in Africa*.

[33] UIS — UNESCO Institute of Statistics, "Database Website", 2003.

[34] Xiaoyan Liang, *Uganda Tertiary Education Sector*, *Africa Region Human Resource Development* (World Bank, Africa Region, 2004, 15).

[35] National Council for Higher Education, "The State of Higher Education Report" (2012).

dynamic and fastest growing segments of post-secondary education at the turn of the 21st century.[36]

From one university in 1970, Kenya now boasts of 39, Uganda has 34 while Tanzania has 52.[37] Majority of the universities within the region are private, and majority have faculties of education. However, there is a misconception that education faculties need limited investment in infrastructure and equipment, and are therefore cheap to set up and manage. Nonetheless, this is an indicator of a fast growing higher education sector within the region. In Uganda, the Makerere University Private Entry Scheme is referred to as the 'quiet revolution',[38] because of its profound effects on the management of universities.[39]

Demand and privatisation of East Africa's higher education sector has gradually diminished the ivory tower mentality inherent during the colonial and post-independent periods. Focus is shifting from a select and exclusive population and its pursuit for abstract ideas to universalisation. Strong links between society and university are becoming more evident, extending, diversifying and making universities socially inclusive. A vivid example is the establishment of Public-Private-Partnerships (PPPs). Consequently, initial teacher education aims have shifted from only targeting the local to embracing a regional and global market.[40] According to Goodwin, globalisation "*introduces new factors that demand consideration in any discussion about quality teachers, and promises to change fundamentally the very nature of teacher preparation.*"[41] Reviewing various education faculty vision and mission statements, universities aim at becoming leading centres of excellence in scholarly and professional fields; world-class universities responsive to national, regional and global development agendas, and bringing about equitable and sustainable socio-economic development within and beyond their respective countries. For

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[36] Philip G. Altbach, "Comparative Perspectives on Private higher education," in *Private Prometheus: Private Higher Education and Development in the 21st Century*, ed. Phillip G. Altbach (West Port, Greenword Press, 1999).

[37] Inter-University Council for East Africa, "Regional higher education qualifications gaps versus the region's human resources needs," 46.

[38] "Report of the Visitation Committee to Public Universities" (Unpublished, 2007).

[39] Bidemi Carrol, "Harnessing private monies to fuel university growth," *Southern African Review of Education, A Journal of Comparative Education and History of Education* 13, no. 2 (2007): 77-92.

[40] Also refer to NCHE — National Council for Higher Education, Quality Assurance Framework for Universities and the Licensing Procedure for Higher Education Institutions, Kampala: NCHE, 2008).

[41] Lin A. Goodwin, *Teaching Education* (2010), 20.

instance, the mission of the College of Education and External Studies (CEES), Makerere University is:

> To excel in the preparation of teachers, other education practitioners, adult education providers, community workers and providers of open, distance and e learning; to excel in research and in knowledge transfer and partnership relevant to CEES and responsive to national and global needs.[42]

Further, common in institutional objectives is accomplishing and applying research, bridging theory and practice, lifelong-learning and sustainable individual and societal development. Society is expected to receive teachers, lecturers, education managers and administrators competent to adapt to present and emerging demand for skills, knowledge and practices relevant to educational research and services, to support national, regional, and international development.[43]

From the foregone review, two forces have simultaneously influenced the current structure and organisation of higher education in general. As Varghese[44] notes, the birth of a market ideology has provided a smooth transition of the economy to a process of globalisation, with a knowledge economy, which depends on information technology as one of the most sought-after sector in this process. Since national competitiveness in the knowledge economy depends on the availability of highly educated persons, university education has become a centre of focus. The second force that has increased demand and access to higher education at domestic level is the desire for social upward mobility and the equating of higher education with better jobs and social status[45]. From the utilitarian and social re-constructionist outlooks, higher education is directly linked to the development of individuals and society as it supplies the labour market with the needed skilled manpower, contributes to poverty alleviation, and empowers society with skills to produce goods and services needed for better living. Therefore, initial teacher education curricula from both public and private universities play a complementary role in meeting academic and market demands, an example of a mixture of public and private ideologies, which were rare prior to the mid-1980s.

Evident in institutional literature on initial teacher education is the emergency of new market-oriented vocabulary such as 'clientele', 'client-

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[42] Makerere University College of Education and External Studies Strategic Plan (2011/12-2018/19) (2011, 4).

[43] Makerere University College of Education and External Studies Strategic Plan (2011/12-2018/19) (2011, 1).

[44] Varghese N.V., *Private Higher Education in Africa*.

[45] NCHE — National Council for Higher Education, "Strategic Plan" (2007), 1.

driven curriculum,' 'customer satisfaction,' 'customer care', and the 'customer is king.' Stated differently, Brennan[46] describes higher education as reflecting:

> …contemporary management theory as developed in manufacturing and service industries. It is a language which can turn students into customers, academic staff into producers/providers, universities into businesses and their departments into profit centres.

Brennan's description shows the extent to which market ideology and terminology has permeated higher education in general. Moving from being a public service, education has become a commodity sold and bought on the open market. According to the National Council for Higher Education,[47] education has ceased to be the privilege of the elite and become a product where education institutions are the merchants with products to sell and students the customers ready to buy these products.[48] However, beneath such vocabulary, are undertones of educational inequality and de-professionalisation in the face of a competitive environment. For example, private initial teacher education curricula targets prospective teachers who can pay tuition and other university levies. Since these students are from middle and high-income backgrounds, higher education, and consequently, the employment market either maintains or improves their social status, which according to Varghese[49] widens the intergenerational inequalities. This brings to question the role of the private sector in reconstructing society.

Market-friendly vocabulary is influenced and in turn influences universities to internationalise initial teacher education curricula to meet the needs of student, staff and programme mobility. For instance, in Uganda, the number of international students increased by 7% (7,735) in 2005 to 9.4% (12,930) in 2006 to 16,244 in 2010 and to 17,156 in 2011, making education the fourth highest external earner.[50] Such transnational or borderless tertiary education is a response to globalisation, which requires universities to align their courses to international standards. Consequently, current effort within the East African Community (EAC) is to:

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[46] Timothy Brennan (1997, cited in DIES 111 — 3rd Dialogue on Innovative Higher Education Strategies, 2003, 36).

[47] NCHE — National Council for Higher Education, "The State of Higher Education" (2012), 2.

[48] See also Ronald G. Sultana, *Studying Teacher Education* (2005), 226.

[49] Varghese N.V., *Private Higher Education in Africa*, 24.

[50] NCHE — National Council for Higher Education, Quality Assurance Framework for Uganda Universities, (NCHE: Kampala, 6, 2006); NCHE — National Council for Higher Education, The State of Higher Education (2012, 2).

> …introduce a Regional Higher Education Qualifications Framework (RHEQF), as part of a strategy to achieve region-wide skills development and employment goals, and as a measure of comparability, internationalization of qualifications, and fulfillment of the tenets of the Treaty Establishing the East African Community.[51]

As a major education reform instrument, the qualifications framework if well conceptualised and implemented by partner states will strengthen the relevance and flexibility of education and training programmes, ease recognition of prior learning, enhance lifelong learning, improve the transparency of qualification systems, create possibilities for credit accumulation and transfer, and support the development of quality assurance systems.[52]

Another example is the approval and certification of education institutions and programmes by the Kenya Bureau of Standards on behalf of the International Organisation for Standardisation (ISO). The aim is to internationalise and avoid duplication of programmes. In this case, we refer to ISO Certified graduate teachers 'Made in Kenya', who with this trademark can teach anywhere in the world. Such moves further strengthen the argument of a paradigm shift of initial teacher education curricula from a professional to a market-driven sub sector, where competences and value for money are major foci.

Internationalisation of initial teacher education has encouraged education faculties to diversify their curricula in order to attract a variety of students. Apart from the direct entry scheme for high school students, universities have devised entry schemes for mature age entrants, for holders of relevant diplomas, postgraduate degree, and other professional qualifications. Further, in addition to conventional initial teacher education degree programmes, universities have introduced Open Distance and eLearning programmes with a bid to surmount geographical barriers to access to education and training. A further contemporary development is the establishment of outreach centres or university branches in the communities under the slogan 'bringing services closer to the communities.' Through these flexi-programmes, more students can study anywhere in the evenings, weekends, or during holidays. The internationalisation and diversification of initial teacher education sustains the social re-constructionist values of equity, tolerance and

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[51] Inter-University Council for East Africa, Jumuiya ya Afrika Mashariki, East African Business Council, Regional higher education qualifications gaps versus the region's human resources needs (2014).

[52] Inter-University Council for East Africa, Jumuiya ya Afrika Mashariki, East African Business Council (2014).

democracy. However, students who are admitted to train as teachers are not top-achievers at high school compared to their counterparts admitted for engineering law and medicine.[53] In the Kenyan Ministry of Education, Science & Technology Report[54] the following observation was made: *'the quality of the teaching force is also affected by the fact that many teachers take their teaching career as a last and only available option.'* Similar trend is noted in some Latin American universities where teaching is considered second choice.[55] This jeopardises the quality of teaching and learning both during and long after graduation.

The integration of thematic areas such as ICT, HIV/AIDS, entrepreneurship, environmental protection, gender and education, human rights, peace and ethics, food and nutrition, and local/international languages in current initial teacher education curricula is a further pointer to content diversification. For instance, Moi University runs a university-wide course in Human Resource Development aimed at empowering prospective teachers to find employment beyond the teaching profession within and outside Kenya.[56] Similarly, Mbarara University of Science and Technology in Uganda designed a course in Development Studies for all science students, and Makerere University introduced a Computer Applications Skills course for all undergraduate programmes.[57] These career-field oriented courses add value to academic programmes by providing students with a broad-based contemporary outlook to the world of work after graduation.

Unfortunately, fast changes in the knowledge economy have not been matched with appropriate changes in initial teacher education curricula, which can be described as slow and in some cases barely discernible. The structure and organisation of initial teacher education is still predominantly the same as the one in the post-independent period. Universities in East Africa generally follow a two-phased model, where theoretical training is first accomplished at university followed by practicum in schools. Amid concerns of curriculum overload, theoretical studies take the greater portion of formal initial teacher preparation i.e. over three-quarters. Although the schools and faculties of education oversee both training phases, the practicum

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[53] Also refer to Abel G. M. Ishumi, *Africa Education Review* (2013, 98).

[54] Republic of Kenya, Development of Education in Kenya, (Ministry of Education, Science & Technology, Nairobi, Kenya, 2004, 20).

[55] Beatrice Avalos, Teacher education in the Latin American region: an unfinished business, *Southern African Review of Education, A Journal of Comparative Education and History of Education*, Vol. 14, Nos. 1-2; 9-27, (2008).

[56] Ruth N. Otunga, "A comparative study of Makerere University and Moi University Schools of Education (An unpublished study, 2005).

[57] Makerere University, College of Education and External Studies Strategic Plan (2011).

is given less time, and the theory-practice dichotomy has not been given adequate attention.[58]

During university preparation, subject matter content is taught separately from pedagogical and professional studies. The faculties of Social Sciences/ Social Cultural and Development Studies, Arts and Science have since the introduction of university initial teacher education been mandated to teach subject matter content while the education faculties teach the professional and pedagogical aspects. In such arrangement, teacher educators are likely to have limited authority regarding subject matter content and its delivery. Subject matter content specialists in the other faculties are in the least concerned about the professional and pedagogical values informing those disciplines in light of teacher preparation. The subjects specialists will teach the way they were taught unless there are formal interventions to support them achieve the goal of teacher preparation. Elsewhere, lack of teacher educators trained in teaching methodologies, cooperation and learning appropriate for adult learners has been cited as one of the most challenging tasks facing educators today.[59]

In some universities, the question of ownership of students has led to near conflict between faculties. Consequently, graduate teachers have to integrate what the university has failed to integrate. In cases where education faculties have attempted to 'domesticate' the initial teacher education programme tailored to the needs of school curricula, faculty mandates and other clandestine motives have blocked such move. This is especially so in public universities such as Makerere University offering parallel private initial teacher education programmes. A future threat is the transformation of education faculties into servicing units in universities.[60] This form of institutionalised separation is common in the concurrent initial teacher education model still predominant in the preparation of secondary school teachers in East Africa. However, similar separation has been noted in consecutive models, for instance in Germany where teacher training is described as lacking in coordination between the two phases, and among the university departments responsible for teacher training leading to a separation between academic and professional subjects.[61] Such arrangement that

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[58] Proscovia Namubiru Ssentamu, *Bayreuth African Studies* (2006).

[59] OECD International Seminar on Teacher Education Diversity, (2010); Friedrich Buchberger, Bártolo P. Campos, Daniel Kallos, and John Stenvenson, Eds., "Thematic Network for Teacher Education in Europe (TNTEE)" (Umea University, Sweden, 2000), 56.

[60] Bidemi Carrol, "Harnessing private monies to fuel university growth," *Southern African Review of Education, A Journal of Comparative Education and History of Education* 13, no. 2 (2007): 86.

[61] Proscovia Namubiru Ssentamu, *Bayreuth African Studies* (2006); Ulrich Herrmann, *Pädagogische Rundschau Heft* (2001).

separates university studies from school-based training and detaches faculties and departments responsible for initial teacher education from each other makes holistic teacher development reforms difficult to design, implement and evaluate.

Unlike in East Africa, in the US and in England, universities through both government and institutional initiatives are much more vigilantly involved in school. According to Schwille & Dembélé,[62] this close link is through consultancies and participation in various aspects of initial teacher education and school life in areas such as needs assessment, advisory panels, and collaborative projects. Although such collaborative opportunities may be present between initial teacher education institutions and schools in some universities in East Africa, not much is documented in this area, an indicator that much of what happens is still informal and on small scale. However, one danger of such casualness is that universities become unaware of the opportunities and challenges pertaining to schools and their effect on initial teacher education curricula, leading to a weakening of subject content matter, pedagogical content and school reality.

Related to the above structure is the differentiation of initial teacher education degree programmes. While for instance Moi University (Kenya) and University of Dar es Salaam (Tanzania) award six various B.Ed. degree programmes,[63] Makerere's College of Education and External Studies still conforms to the post-independent Bachelor of Education, Bachelor of Arts with Education and Bachelor of Science with Education Degree programmes, which are rigid in structure. Yet, Makerere University still provides the benchmark for other public and private universities offering initial teacher education, especially in Uganda.

The number of departments within the education faculty nomenclature was yet another structural legacy passed on during the post-independent period. To date, there are six distinct departments in the faculties of education offering initial teacher education at Makerere University and seven in the University of Dar es Salaam and at Kenyatta University. The time-honoured departments common in these universities are the professional departments, i.e. the Department of Educational Foundations and Management, Department of Curriculum, Teaching and Media, and Department of Educational Psychology, and the School/Teaching Practice Unit. These resonate with the key quality indicators in a typical initial teacher education programme,

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[62] John Schwille and Martial Dembélé, "Global perspectives on teacher learning: Improving policy and practice."

[63] Ruth N. Otunga, "A comparative study of Makerere University and Moi University Schools of Education"; UDSM, "Undergraduate programs and administration procedure."

which are content knowledge, foundation courses, pedagogical courses and teaching practice.[64]

However, in England and Wales, professional studies are highly contestable as they are claimed to promote intellectualism, thereby calling for a movement 'back to the schools.'[65] In the East African education faculties, foundational disciplines, i.e. educational psychology, foundations of education and curriculum studies were and still are a rich source of classical humanism and essentialism in which tradition is established and beliefs and practices are endorsed as basic requirement for prospective teachers. According to Ho[66] a distinctive aim of this tradition is to maintain the cohesiveness and orderly development of institutions and of the myths and rituals engendered by these institutions. Therefore, induction into institutions means acceptance of defined values and standards and articulated modes of thought and action.[67] Another reason for the gradual transformation in course content is that the departmental structures are still rigid restraining the promotion of multi-disciplinary and contemporary studies and research. Departments have consequently provided good breeding ground for duplication of course content even within the same teacher education faculties.

Initial teacher education curricula is hitherto defined as subject- and teacher-centered, and heavily reliant on examinations. Elsewhere, the following was noted: "In British tradition, assessment of undergraduate work has tended to place a heavy emphasis on a formal and comprehensive final examination, whereas the North American approach tends to stress continuous assessment."[68]

Although the survey adds that many third world universities after following one of these forms of assessment, found neither system perfect on its own, and have therefore tended to adopt features from both systems; there is still heavy emphasis on written summative examinations targeting the recognition of competencies based on formal education rather than competencies required for the workplace and for life-long learning.[69] In

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[64] Friedrich Buchberger, Bártolo P. Campos, Daniel Kallos, and John Stenvenson, eds., "Thematic Network for Teacher Education in Europe (TNTEE)."

[65] Michael Eraut (1994), cited in Moira Hulme and Ian Mentor, "Learning to teach in post-devolution UK: A technical or an ethical process."

[66] Judy Woon Ye Ho, *Language and Education*, 287.

[67] Malcolm Skilbeck (1982 cited in Judy Woon Ye Ho, *Language and Education*).

[68] ESAURP — Eastern and South African Universities Research Program, "University capacity in Eastern and Southern African Countries," 93.

[69] Inter-University Council for East Africa, "Regional higher education qualifications gaps versus the region's human resources needs".

addition, school practice is generally undertaken at the end of year two and year three for less than two months, rather than having it running concurrently during university education. This situation is further exacerbated by constraints on the resources of education providers, poor resource prioritisation,[70] the hesitancy of employers to invest in training,[71] and political interference as has been cited in Tanzania and Uganda.[72]

There is a proposal for a regionally-based assessment reform to introduce the credit accumulation and transfer (CAT) system, which is aimed to permit student mobility from one institution or programme to another, thereby removing related barriers. Although the CAT system has not yet materialised, with the move towards a regional qualifications framework, the development of the CAT system is likely to lead to an over-concentration by students on grades in a bid to join better regional universities. Although such move responds to the utilitarian purpose of education, it defeats the social re-constructionist purposes since it promotes competition and exclusion. Further, majority of East African universities are implementing assessments based on competences or learning outcomes, an imposition on teacher educators by the business community, the respective higher education councils or commissions, and the national governments. Because teacher education institutions ought to be performance-based, competences facilitate quality control procedures. By the end of an initial teacher education programme, prospective teachers should have acquired a number of centrally-defined competences corresponding to sets of knowledge, skills and attitudes. Related observations are made regarding initial teacher education in England and Wales.[73] However, the competence-based model has been criticised for fostering apprenticeship approaches in initial teacher education to the detriment of professionalism, and critical and reflective thinking skills.[74]

Despite the many reforms taking place in East African education faculties and schools, there has not been adequate emphasis on the quality of teaching. Most of the teacher educators are former students in their respective initial teacher education institutions, with only a few having experience teaching at tertiary, secondary and primary school levels. The minimum

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[70] Damtew Teferra and Philip, G. Altbach, *Higher Education*, 26.

[71] Inter-University Council for East Africa, Jumuiya ya Afrika Mashariki, East African Business Council (2014, 106).

[72] Abel G. M. Ishumi, *Africa Education Review*, 98.

[73] Moira Hulme and Ian Mentor, "Learning to teach in post-devolution UK: A technical or an ethical process".

[74] Proscovia Namubiru Ssentamu, *Bayreuth African Studies* (2006); Friedrich Buchberger, Bártolo P. Campos, Daniel Kallos, & John Stenvenson, eds., "Thematic Network for Teacher Education in Europe (TNTEE)," Umea University, Sweden, 2000.

qualification for university teachers is a first class or upper second-class honours degree. This Bachelor's teacher-training-a-Bachelor's student scenario leads to recycling of content, pedagogies and assessment procedures in initial teacher education, which eventually has a trickle-down effect on the other levels of education. As cited in a report from the Republic of Kenya, *'teacher trainers at the university are not professional teachers and yet they are charged with the responsibility of preparing teachers to be professionals'*[75]. Similar examples are cited in Uganda and Tanzania where fresh graduates from faculties of education immediately take up teaching posts in the faculty with no teaching experience. Apart from their teaching responsibilities, these beginning teachers-cum-teacher educators supervise student teachers during school practice. In essence, they learn on the job as they role model their professors. Elsewhere, the pedagogy of the pre-service programme in the United States mirrors the pedagogy of higher education where lectures, discussions, and seat-based learning are coins of the realm[76]. In England and Wales, 50% of the Post-Graduate Certificate of Education programme is school-based.[77]

Further, teacher educators do not practice what they preach, i.e. *"do what I say, but not what I do,"* making classes either too abstract to challenge deeply held beliefs or too superficial to foster deep understanding. Such inconsistency between what is taught and how it is taught is added confirmation of the lack of professional training of teacher educators within the East African Universities.

V. **Conclusion**

There are consistent findings from the current study regarding the development of initial teacher education in East African universities. This consistency is explained by propinquity and similarity in colonial history and culture these countries share. Colonial roots continue to shape the future of initial teacher education within the region. The author acknowledges changes such as the shift from term to semester system, and diversification in the Bachelor of Education programmes in education faculties in Kenya and Tanzania. However, due to lack of national initial teacher education frameworks

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[75] Republic of Kenya (2004), 20.

[76] Sharon Feiman-Nemser, *Teachers' College Records*, 1020.

[77] Janet S. Stuart and Maria Teresa Tatto, "Designs for initial teacher preparation programs: An international review," 493; Proscovia Namubiru Ssentamu, *Bayreuth African Studies* (2006).

to guide curricula in the individual states, much is still the same in terms of structure and organisation. It is hoped that the situation will change with the rejuvenation of the East African Community and the continued role of the Inter-University Council for East Africa in the harmonisation of curricula, examination, certification and accreditation of education and training institutions in the partner states through regional qualifications framework and the joint action of the respective national councils and commissions of higher education.

Similar patterns of convergence and divergence are cited in the Green Paper on Teacher Education in Europe.[78] The paper stresses the unique combination of distinctiveness and commonality between the systems of initial teacher education which exist in Europe, with variations at cross-border, national and institutional levels, and with several initial teacher education models cohabiting within a single member state.[79] However, it is further argued that these differences are mainly structural ones, but that the principles and curricula of initial teacher education in the various member states do not necessarily differ very much given that most institutions across Europe are 'influenced by similar traditions and hidden curricula.'[80] Further, similar to the European Higher Education area, the East African national councils or commissions for Higher Education in collaboration with the Inter-University Council for East Africa are mandated to advance and secure student mobility, promote regional quality standards, and competitiveness in the labour market.

Alongside the colonial legacy are market ideologies, which play an upper hand in the struggle of education faculties to survive in a globally competitive market. However, due to high student gross enrolment rates and lack of a strong resource base, quality has taken a secondary seat. This has also affected equity in higher education in that students from poor social-economic backgrounds have not been able to access higher education, even when they qualify. From an institutional perspective, equity also addresses itself to teacher educator quality, assessment and testing procedures, instructional materials, equipment, and infrastructure among others, which are disproportionate to the gross enrolment rates. Closely following this observation, although there is a definite shift from the behaviourist to constructivist and social constructivist ideologies of initial teacher education curricula in several East African universities using learning outcomes and

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[78] Friedrich Buchberger, Bártolo P. Campos, Daniel Kallos, and John Stenvenson, eds., "Thematic Network for Teacher Education in Europe (TNTEE)."

[79] Friedrich Buchberger et al, "Thematic Network for Teacher Education in Europe (TNTEE)."

[80] Friedrich Buchberger et al, "Thematic Network for Teacher Education in Europe (TNTEE)."

competences, the delivery and assessment strategies are still behaviourist in nature. This is due to among others lack of capacity of teaching staff to use competence-based approaches, teaching of course units or subjects independent of each other, infrastructure unmatched with student enrolment, and the generally examination-oriented culture. According to Goodwin, teacher education continues to operate according to the 'banking approach' to knowledge, operating an undifferentiated curriculum with discreet subjects.[81] Consequently, a well-designed and accredited competence-based programme remains on paper. This scenario relates well with that presented by Stuart and Tatto depicting cases in Mexico and South Africa where the roles expected of the trained teachers are inconsistent with the epistemological assumptions. More specifically, although the initial teacher education curriculum in these countries is transformative, the means available to deliver it are strongly influenced by a culture of transmission.[82]

As argued elsewhere, although initial teacher education in England and Wales has undergone massive changes over time and been replaced by models of modern competences,[83] the East African initial teacher education area still has strong traces of the old English model five decades after independence.[84] Among such changes in initial teacher education is the move to either abolish or minimise the role of pre-service initial teacher education institutions, in England and in the US.[85] Among the reasons advanced for such move is that pre-service teacher education programmes cannot develop capabilities needed for teaching to people who lack the necessary prerequisite strengths and general education and intellectual ability.[86] It is also argued that pre-service teacher education programmes are not a cost-effective investment and therefore one could opt for very short pre-service programmes.[87] It is no surprise that the Postgraduate Certificate in Education in England and Wales is more popular than the undergraduate initial teacher education degree

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[81] Lin A. Goodwin, *Teaching Education*, 28.

[82] Janet S. Stuart and Maria Teresa Tatto, Designs for initial teacher preparation programs: An international review," 33 (2000): 500.

[83] Roy Gardner (1995).

[84] Damtew Teferra and Philip, G. Altbach, *Higher Education*, 24; Proscovia Namubiru Ssentamu, "A comparison of Ugandan, English and German teacher education models."

[85] Moira Hulme and Ian Mentor, "Learning to teach in post-devolution UK: A technical or an ethical process"; Derek Sankey, "The problematic of pre-service teacher education and its possible resolution at Hong-Kong Institute of Education".

[86] John Schwille and Martial Dembélé, "Global perspectives on teacher learning: Improving policy and practice".

[87] John Schwille and Martial Dembélé, "Global perspectives on teacher learning: Improving policy and practice".

programme. On the contrary, the role of schools and faculties of education in the provision of initial teacher education degree programmes is growing faster and stronger within the East African universities.

VI. **Implications**

As education faculties in East African universities attempt to advance societal transformation, they should continually reflect on and address the values of access, equity and quality initial teacher education. The tension between quality and quantity indicates a tension between utilitarian and re-constructionist ideologies on the one hand, and market and global ideologies on the other. The practical question then is how education faculties can address both the public and private good functions of education, without the private good function of education superimposing itself over and above the public good. The education faculties could address themselves to the question posed by advocates of utilitarianism, i.e. *"what is the role of educational institutions in preparing students for future employment and satisfying societal needs?"* The faculties could also consider addressing the question social re-constructionists pose, i.e. *"do educational institutions develop students' ability to improve and change society?"* These two ideologies perceive learning as construction, which involves not only making meaning out of knowledge and experience, but, being able to negotiate meaning as opposed to transmitting and appropriating information to be recalled and applied in examinations.[88]

The current review has demonstrated the existence of a hybridism in ideology in East African education faculties in which the post-colonial and the contemporary, the public and private, the academic and market-oriented, the social and economic, the domestic and global are blended; making current educational discourse impossible to separate the ideologies shaping current initial teacher education. Education faculties have not let go of the old, but also in order to survive, have to find solutions regarding the existing pressures caused by internal and external forces, which are not static. In this impure combination, education faculties have responded by equipping prospective teachers with the knowledge and skills they need first as graduates, and secondly as professional teachers preparing to offer a public good function of education.[89] However, the second option still leaves a lot to

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[88] Chris Yates, "Teacher education policy: International development discourse and the development of teacher education," 3.

[89] Christopher Lubienski, "Instrumentalist perspectives on the 'Public' in Public Education: Incentives and purposes."

be desired, since it is a costly venture for public universities, which are under-funded, and for private universities, which are for-profit and less focussed on the professional development of prospective teachers. Consequently, universities are bogged down in a predicament of simultaneously meeting professional, academic and market demands. These impure combinations conflicting with each other necessitate further interrogation and intervention.

The East African States should cascade the regional qualifications framework once it is approved taking into consideration country-specific needs, as well as develop national initial teacher education frameworks to guide the development and review of initial teacher education curricula. Underlying this development is the need to repackage existing initial teacher education curricula to embrace holistic practice-based competences where content is integrated with formative assessment and school-based training is blended with university-based training as the case is in South Africa and in England and Wales.[90] More specifically, teacher education faculties could consider a number of characteristics in the development of their curricula which include futuristic nature of teacher education programmes, well-defined set of professional standards, carefully designed rigorous curriculum, strong relationships and partnerships with local schools, comprehensive and continuous assessment of learning outcomes, theory coupled with practice, rigorous entrance process for the students, problem-based methods of learning, appropriately extended field experiences, alignment with the structure and organisation of the school system, collaboration with all important stakeholders, deliberate and thoughtful conceptual framework, and continuous professional development and support for faculty members.[91] The 21st Century skills such as critical and analytical thinking, problem-solving, creativity, effective communication, leadership, ITC literacy, environmental and conservation literacy, global and multicultural literacy, economic literacy and health and wellness literacy should be integrated into the initial teacher education curricula.

Further, in their staff development policies, universities could consider developing and rolling-out mandatory competence-based pedagogical courses for all teaching staff aimed at improving the quality of delivery of initial teacher education curricula.

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[90] Janet S. Stuart and Maria Teresa Tatto, "Designs for initial teacher preparation programs: An international review," 33.

[91] Muhammad Dilshad and Hafiz M. Iqbal, ""Quality indicators in teacher education programmes," 404, citing National Association for State Boards of Education (2000); Scannell (2002); Sultana (2007).

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Collaborative meta-profile development to harmonise mechanical engineering education in Africa

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Abstract: This paper describes the contribution of the Tuning Methodology toward harmonisation of undergraduate mechanical engineering programmes in Africa. This methodology is an interactive process in which academics develop high quality curricula and learning standards for students through the identification of generic and subject specific competences in consultation with employers, students, graduates, peers and other stakeholders involved in Mechanical Engineering higher education. The current Tuning process involves academics in 11 universities drawn from across Africa. The aim is to collaboratively contribute to revitalizing and reforming Mechanical Engineering higher education in Africa to make it more responsive to Africa's developmental needs. The results so far show that such a project is not only highly feasible but also holds promise for establishing compatible academic structures and reference standards across Africa, which would facilitate student and staff mobility as well as enhance cooperation not only among African academic institutions, but also between African institutions and those in the rest of the world. Eighteen generic competences and nineteen mechanical engineering-specific competences are developed, analysed and synergised to form a meta-profile that will inform the next phase of the project, which is the actual curriculum development. This activity is part of "Tuning Africa" project, which is funded through European Union-African Union collaboration.

Keywords: Tuning methodology; mechanical engineering; higher education; competences; meta-profile development.

I. Introduction

The African Higher Education system is undergoing a tremendous transformation process. This includes a number of initiatives among which are the Nyerere Mobility Scheme, the African Higher Education Harmonisation and Quality Assurance programme, and the Pan African University. However, at the institutional level, reforms are underway, even as socio-economic development issues emerge as a fundamental policy driver among many African countries. Traditionally, African countries have failed to exploit

opportunities for increased intra-African trade, although organizations such as Economic Community of West African States (ECOWAS), South African Development Community (SADC) and others exist to strengthen regional cooperation in development. It is envisaged that key future development projects such as expanding transport networks and shared infrastructure will require cooperation amongst engineers from different African countries.

At the present time rapid developments from the international scene in the area of curriculum development are impacting African higher education in several ways many engineering higher education curriculum development studies reported in the literature[1] have focussed on the globalisation dimension of engineering education. Others studies[2] have discussed the achievability of standards set by accreditation bodies, observing that unrealistic requirements could raise legitimate questions as to whether these skills can be effectively imparted and evaluated. Still others[3] have discussed various relevant issues including teaching, learning, and curriculum design methodologies. A few more[4] studies researchers have analysed the impact of engineering curriculum reform on economic growth and sustainability while a handful others[5] have focused mainly on industry's perspective and its demands on the engineering graduate. Some researchers have restricted themselves to tracking the progress of specific engineering disciplines in specific countries or regions of the world such as Industrial Engineering in Peru,[6] and its relationship to current major trends in Europe and North America. In all these works, it is commonly recognized that the formation of engineers through education requires not only the acquisition and strengthening of technical knowledge,

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[1] Jackson, H., Tarhini, K., Zapalska, A., and Zelmanowitz, S., "Strategies to Infuse Global Perspectives and Industrial Collaboration in Engineering Education*" (40th ASEE/IEEE Frontiers in Education Conference, Washington, DC, October, 2010).

[2] *"The ABET* "Professional Skills" — Can They Be Taught? Can They Be Assessed?" *Journal of Engineering Education* 94, no. 1 (2005): 41-56.

[3] Strobel, J., Wang, J., Weber, N.R., Dyehouse, M., "The role of authencity in design-based learning environments: The case of engineering education," *Computers & Education* 64 (May 2013):143-152.

[4] Kumar, V., Karl R. Haapala, Julio L. Rivera, Margot J. Hutchins, William J. Endres, John K. Gershenson, Donna J. Michalek, John W. Sutherland, "Infusing sustainability principles into manufacturing/mechanical engineering curricula," *Journal of Manufacturing Systems* 24, no. 3 (2005): 215-225.

[5] Markes, I., "A review of literature on employability skills needs in engineering," *European Journal of Engineering Education* 31, no. 6 (2006): 637-650.

[6] Martín P., Ignacio de los R., Dante G., *Higher Education in Industrial Engineering in Peru: Towards a New Model Based on Skills*. *Procedia — Social and Behavioral Sciences* 46, no. 2 (2012): 1570-1580 (paper originally presented at the 4th World Conference on Educational Sciences, WCES-2012, Barcelona, Spain, February 2-5, 2012).

but also the development of the competences that are required by both employers and other recipients of the benefits of engineering, i.e. society.

In Africa, recent intra-African technology development initiatives such as Satellite Technology programme, the Square Kilometre Array (SKA) Programme, the African Laser Centre, regional hydropower building programmes etc., have brought to the fore the need for harmonisation of engineering programmes across Africa, and the development of curricula that address the specific technological needs of the continent.[7]

The requirements of technology transfer, adaptation and assimilation further underline the need for harmonisation of engineering curricula across Africa. Such harmonisation will enhance intra-African human resource mobility at various levels, namely: high-level research in areas of specialization which necessitate judicious use of scarce and expensive resources, postgraduate programmes in specialist areas, and joint engineering programmes based on intra-African meta-profiles.

II. **Tuning Methodology**

1. *The place of Tuning*

One transformation initiative which links institutional, national, regional, continental and international endeavours is the African Higher Education Harmonisation and Tuning Project (Tuning Africa), which is part of an AU-EU strategic partnership initiative.[8] The importance of the Tuning methodology as an instrument for systematic Higher Education reform and quality enhancement has been highlighted in the literature.[9] Specific success cases such as those relating to using the methodology to determine student workload and degree profiles in Latin America have also been discussed in the literature.[10] The Tuning methodology itself is an interactive process in

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[7] Galal Abdel-Hamid Abdellah et. al., "Recent developments in Egyptian engineering education through competitive projects," 2008 (paper presented at the Third African Regional Conference on Engineering Education (ARCEE), courtesy the African Engineering Education Association (AEEA), Pretoria, South Africa, September 26- 27, 2006).

[8] Tuning Africa Project, www.tuningafrica.org.

[9] Karola Hahn and Dantew Teferra, "Tuning as instrument of systematic Higher Education reform and quality enhancement: the African experience," *Tuning Journal for Higher Education*, no. 1 (2013): 128.

[10] Francisco Alarcon, Pablo Beneitone, Roberto de Armas, Sergio Kieling, Leticia Sune, and Diana Veneros, "Student Workload and Degree Profiles: the experience of CLAR credit in Latin America," *Tuning Journal for Higher Education*, no. 1 (2013): 165.

which academics develop high quality curricula and learning standards for students through the identification of generic and subject specific competencies in consultation with employers, students, graduates, peers and other stakeholders involved in higher education.

Mechanical engineering (ME) is one of five subject areas whose harmonisation is being piloted in Africa as part of the above initiative with representation from countries shown in Table 1.

Table 1

List of universities and countries participating in the ME Tuning project

1) Cameroon — University de Yaounde I (Coordinator)	2) France, University of Lille 1-Science and Technology (European Facilitator)
3) Democratic Republic of Congo — Institut Supérieur de Techniques Appliquées Kinshasa	4) Egypt — Cairo University
5) Ethiopia — Jimma University	6) Ghana — Kwame Nkrumah University of Science and Technology
7) Malawi — University of Malawi — the Polytechnic	8) Rwanda — Kigali Institute of Science and Technology
9) Zambia — Copperbelt University	10) South Africa — Stellenbosch University
11) South Africa — Cape Peninsula University of Technology	

The history of the Higher Education tuning started in the year 2000 in Europe following the Bologna process; it then moved on to Latin America, Russia, Georgia and other countries. Tuning holds the promise of establishing compatible academic structures, and reference standards across Africa, which could facilitate student and staff mobility, promote compatibility of degrees and qualifications as well as enhance cooperation, not only among African academic institutions, but also between African institutions and those in the rest of the world.

2. *Tuning mechanical engineering*

The objective of the first phase of "Tuning Africa" applied to Mechanical Engineering is to form what should be a typical "Mechanical Engineering"

(ME) degree profile in Africa. This is termed here as the degree "Meta-Profile". The procedure followed in developing this meta-profile includes the definition of ME, development of a suitable professional profile of an ME graduate, and evolution of initial set of generic and subject-specific graduate competencies. Consultation processes with four stakeholder groups then followed. These are: academics, employers, students, and graduates. These stakeholders were asked to indicate the level of "importance" and the level of "achievement" of each generic and subject specific competence and in addition to rank all competencies in a descending order of importance. This ranking is made on a scale of 1 to 4 as follows: strong = 4/4, moderate = 3/4, weak = 2/4, none = 1/4. Finally, a reordering and classification of the competencies based on the consultation results, led to the development of a Mechanical Engineering meta-profile.

III. **Development of generic and ME-specific competencies**

Sessions of extensive discussions and deliberations among representatives of the participating African Universities focussed on developing two sets of competencies. The first set is to be common to graduates of all disciplines and hence is termed as "Generic Competencies". The second set of competencies concerns holders of a bachelor in "Mechanical Engineering". The generic competencies were evolved working in collaboration with four other subject-area groups (Civil Engineering, Medicine, Agriculture, and Teacher Education). Eighteen generic competences were agreed upon to represent characteristics desired in a holder of a first degree (Bachelor) in any subject area. Nineteen ME-specific competencies were developed through deliberations among representatives the 11 representatives of the participating universities working in the ME subject-group. Table 2 list both the generic and ME subject-specific competencies.

Table 2

List of generic and ME-specific competencies

Generic Competencies	ME Subject Specific Competencies
1. Ability for conceptual thinking, analysis and synthesis	1. Ability to apply knowledge of the basic and applied sciences of mechanical engineering
2. Professionalism, ethical values and commitment to UBUNTU (respect for the well being and dignity of fellow human beings)	2. Ability to identify, evaluate and implement the most appropriate technologies for the context in hand

Table 2

List of generic and ME-specific competencies (continued)

Generic Competencies	ME Subject Specific Competencies
3. Capacity for critical evaluation and self awareness	3. Capacity to create, innovate and contribute to technological development
4. Ability to translate knowledge into practice	4. Capacity to conceive, analyze, design and manufacture mechanical products and systems
5. Objective decision making and practical cost effective problem solving	5. Skills in planning and executing mechanical engineering projects
6. Capacity to use innovative and appropriate technologies	6. Capacity to supervise, inspect and monitor mechanical engineering systems
7. Ability to communicate effectively in official/ national and local language	7. Capacity to operate, maintain and rehabilitate mechanical engineering systems
8. Ability to learn to learn and capacity for lifelong learning	8. Skills in evaluating the environmental and socio-economic impact of mechanical projects
9. Flexibility, adaptability and ability to anticipate and respond to new situations	9. Capacity to model and simulate mechanical engineering systems and processes
10. Ability for creative and innovative thinking	10. Skills in selecting, mobilizing and administering material resources, tools and equipment cost-effectively
11. Leadership, management and team work skills	11. Capacity to integrate legal, economic and financial aspects in decision-making in mechanical engineering projects
12. Communication and interpersonal skills	12. Capacity for spatial abstraction, graphic representation and engineering drawings
13. Environmental and economic consciousness	13. Providing mechanical engineering solutions to societal problems for sustainable development
14. Ability to work in an intra and intercultural and/or international context	14. Skills in safety and risk management in mechanical engineering systems

Table 2

List of generic and ME-specific competencies (continued)

Generic Competencies	ME Subject Specific Competencies
15. Ability to work independently	15. Skills in using information technologies, software and tools for mechanical engineering
16. Ability to evaluate, review and enhance quality	16. Capacity to interact with multidisciplinary groups towards developing integrated solutions
17. Self confidence, entrepreneurial spirit and skills	17. Skills in employing quality control techniques in managing materials, products, resources and services
18. Commitment to preserve and to add value to the African identity and cultural heritage	18. Capacity to conduct life cycle assessment for products and systems
	19. Capacity to employ mechanical engineering skills to transform local natural resources into products or services through value addition

IV. **Results of consultation process**

A total of 4323 stakeholder respondents returned the generic competencies questionnaire, while a total of 3812 respondents provided answers to the 5 sets of questions in the "subject specific" competencies questionnaire. About 13 % of the responses came from the ME stakeholders. Analyses of stakeholder responses were conducted using the following procedure:

   i. Competencies are ordered in a descending order of importance as seen by the stakeholders.

  ii. Levels of achievement corresponding to (i) are recorded,

 iii. The gap between (i) and (ii) for each competence is determined.

  iv. Ranking of each of the 18 generic competencies is then recorded

   v. The top-7, the bottom-7 and the middle 4 generic competencies, as well as the top-7, bottom-7 and the middle 5 of the 19 ME subject-specific competencies are established.

The final ranking of each competence was established after processing stakeholder responses in which they individually ranked competencies in a descending order of importance. The competence ranked "most important" by the highest number of stakeholders became competence number one in terms of ranking.

1. *Analysis of consultation results — generic competencies*

Thorough analysis of data from the consultation process yielded the following observations in regard to generic competencies (refer Table 2):

    i. Generally, the level of achievement of a generic competence is scored lower than its level of importance, with the highest gaps occurring where the competencies in question have to do with use of innovative technologies, ability for creative and innovative thinking. It becomes obvious that innovative thinking is an inherent ideal of the ME discipline.

    ii. Conceptual thinking and translating knowledge into practice are at the top of the list of competences in terms of importance and ranking, while competencies relating to the environment, quality, intra-cultural issues, and the African identity are at the bottom.

    iii. Students and graduates rank creation of technology much higher than its mere use, whereas for employers the reverse is true, a known feature of African industry with a preference by firms (i.e. employers) for importing, and not developing, technology.

    iv. Students and graduates of ME background rank leadership and teamwork much higher than do ME academics and employers of mechanical engineers.

    v. For ME graduates the largest gap between importance and achievement is observed for entrepreneurial talent and self-confidence. These represent examples of competencies that need rectification, improvement, and reinforcement in current curricula.

    vi. Effective communication in local national languages is ranked low. This feature reflects the fact that local/national languages are not typically employed in technical communications and reporting in the Mechanical Engineering profession.

2. *Analysis of consultation results — ME-specific competencies*

Analysis of data from the consultation process for ME specific competencies, resulted in the following observations (refer Table 2):

i. As in the case of generic competences, levels of achievement are scored lower than levels of importance by all stakeholders. Risk management, efficient use of natural resources, life cycle assessment, and working in multi-disciplinary teams turn out as competences with the largest gaps between levels of importance and achievement.

ii. The most highly ranked competencies are associated with abilities to apply of knowledge of the basic and applied mechanical engineering sciences, capacity to conceive, design, analyse and manufacture products and systems. Further, provision of ME solutions in a sustainable way is ranked high. Projects that would create or improve technology.

iii. Creation of technology and its innovation is ranked high by all stakeholders, except employers, probably reflecting their desire to use technology and not to ''waste time'' on Research and Development

iv. Competencies related to safety and risk assessment, quality control, and life cycle assessment are ranked very low by almost all stakeholders. This mirrors the low level of technological development in the continent.

The procedure followed in establishing the final ranking of each ME specific competence was similar to that used for the generic competences.

V. **Profile development**

In summarizing the key professional tasks of a mechanical engineer forming the basis for a corresponding meta-profile, the findings from the stakeholder consultation phase have been extensively utilized. It was thus agreed that the core elements of a ME programme can be represented as **"Design, Manufacture and Operate Mechanical Systems"**. "Design" aims to realise new or modified artefacts or systems, with the intention of creating value in accordance with predefined requirements and desires.[11]

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[11] A.W.M. Meijers et. al., "Criteria for Academic Bachelors and Masters curricula," Technical University of Eindhoven, 90-386-2217-1, Eindhoven, 2005.

"Manufacturing" involves translating design (digital or otherwise) into physical reality while "Operation" inherently implies safe and efficient use or application of the system.

1. *Constituent profiles and clusters*

The process for developing the Meta-Profile started with the formulation first of a professional profile with key occupational tasks. This was followed by the creation of a graduate profile**,** with (selected) core competencies that relate directly to the professional profile and subsequently to the **curriculum profile** where the final attainment levels of the graduate are defined in competence standards for both generic and specific competencies. This approach is in line with the development of a competency-based curriculum.[12] For greater clarity, competency is understood to be the capability to choose and use (apply) an integrated combination of knowledge, skills and attitudes with the intention of executing a task up to standard in a certain context, with personal characteristics such as motivation, self-confidence, will power being part of that context.[13]

2. *Profile clusters*

Based on a ranking of the generic and ME specific competencies arising out of the consultation results, clustering was done in terms of cognitive attributes — the drivers and the driven. Drivers are grouped under different categories such as knowledge, skills and attitudes. The driving and the driven elements are conceptualized in terms of gears, as illustrated in Figure 1. The system is represented by a central core (Design, manufacture, and operate ME systems), surrounded by 6 competence sub-groups (3 knowledge competencies and 3 skill competencies, termed here as planets). These subgroups are in turn surrounded by 3 outer sub-groups (attitude competencies). These are then regrouped to form profile (core, knowledge, skills and attitudes) clusters.

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[12] Kouwenhoven, W., "Competence-based Curriculum Development in Higher Education: a Globalised Concept," in *Technology Education and Development,* ed. by Aleksandar Lazinica and Carlos (InTech, 2009).

[13] Michael Cantrell et al., eds.,**"**Competence-based curriculum development in higher education: some African experiences," in *Access & Expansion: Challenges for Higher Education Improvement in Developing Countries* (Amsterdam, The Netherlands: University Press, 2010), 221, http://hdl.handle.net/1871/15816, 2010.
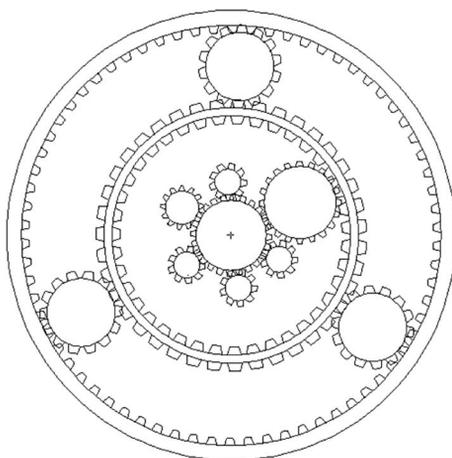
Figure 1

Mechanical Engineering Meta-profile: a pictorial version
(One Centre gear: represents ME core competencies
Six Intermediate gears: represents skill competencies
Three outer gears: represents attitude competencies)

2.1. Core and knowledge clusters

After reviewing ME degree profiles and learning outcomes from the participating universities, a consensus emerged with regard to the core elements of a ME curriculum. These together constitute the key elements of the enabling preparation needed by mechanical engineering trainees to function effectively according to the Conceive, Design, Implement, and Operate (CDIO)[14] framework paradigm. These core elements are shown in Figure 2. Each of the competency clusters including the ME core elements is constituted by both specific and generic competencies, with the exception of innovation and creativity and entrepreneurial skills. Broadly, this suggests that the competencies aid and reinforce each other. Ability to be creative and do innovative thinking and the capacity to contribute to technological development are adjoined with the core competency cluster. This is especially important in the African context, which is known to be characterized by low

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[14] "Worldwide CDIO Initiative," www.cdio.org.

levels of technological development, thus emphasizing the need not only for cost effective utilization of scarce resources but also for acquiring a competitive edge in the global context. A range of ME specific competencies attempt to address this challenge, recognising also that the ability to transform local national resources into products or services through value addition is central. Even under the ME Sciences cluster, it becomes clear that the ability to translate knowledge into practice requires far more than mere acquisition of knowledge. More important is what can be done or realized with that knowledge. The Quality cluster completes the knowledge group of competency clusters, where apart from quality related aspects, safety and risk assessment are appropriately highlighted.
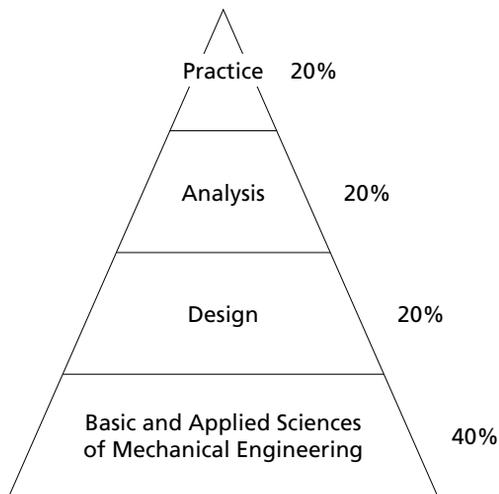
Figure 2

Core Elements of a First Degree in Mechanical Engineering

2.2. Skills cluster

A plethora of skills needed by ME graduates encompassing resource management (both material and human), practical problem solving, leadership, team work, cost effective decision making, planning, supervision, monitoring and execution of ME projects, is grouped under a Managerial and Behavioural cluster. Communication (technical drafting/drawing as well as verbal) is given due importance under a communication and interpersonal

skills cluster with the ability to use information and communication technologies (ICTs) included.

2.3. Attitudes cluster

Positive attitudes relating to serving the wider society and influencing sustainable development form the central theme under this cluster grouping. The entrepreneurial skills cluster, having ability for creative and innovative thinking as the common thread, signifies the need for entrepreneurial spirit, self-confidence and the capacity to use innovative and appropriate technologies to suit the context in hand. The community engagement cluster is an embodiment of the need for leveraging ME solutions to societal and local community development problems. The need for a sustainability outlook is encapsulated by the abilities for socio-economic and environmental impact assessment of ME projects as well as life cycle assessment of products and systems as a separate competency cluster under this grouping. The integration of legal and financial aspects is again placed here due to its relevance. Strong emphasis on sustainability is especially important in a curriculum profile in the present day context.

2.4. The meta-profile

Recalling the assemblage of driving and driven gears from Figure 1, the linkages and the relationships among different factors as well as the synergy between various competency clusters in delivering and realizing the ME core functions of design, manufacture and operation of mechanical systems, can be easily understood. The inter-meshing gear teeth show the common subset space between the two competency clusters and this is extended by the other gears in contact as well.

In constructing the ME meta-profile, the ME core is conceived as a hexagonal space representing the core specializations as well as the core professional tasks presented earlier, inter-connected and serviced by the 6 planets and the 3 outer spaces at the apexes of the outer triangle of Figure 3. The 6 planets represent ME Sciences, Innovation & Creativity, Quality, Managerial and Behavioural skills, Communication and Interpersonal skills, Professionalism and Ethics while the outer spaces represent Community Engagement, Entrepreneurial skills and Sustainability. The resulting meta-profile is depicted in Figure 3.
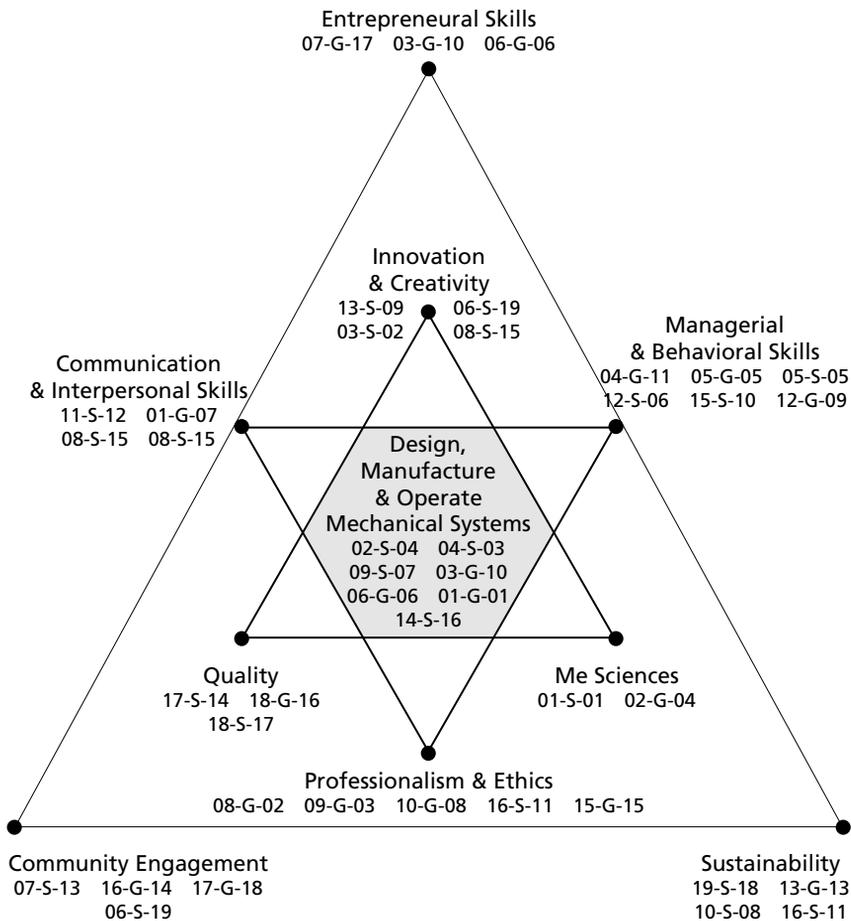
Figure 3

Graphical Representation of ME Degree Meta-Profile
(a competence coded 06-S-19 is interpreted as: the ME specific
competence whose original order is (19) and final ranking (06))

In the meta-profile, the groups of competencies associated with the core, the 6 planets and 3 outer spaces in Figure 3 are written according to the following code: **Final Rank-Type (G or S)-Original Order**. Thus, a competence coded as 08-G-02 is interpreted as: the generic competence whose original order is (02) and final ranking (08). From the original list, this competence is readily identified as: Professionalism, Ethical Values and

Commitment to UBUNTU (respect for the well-being and dignity of fellow human beings). Table 3 lists the coding for the other competency groupings.

Table 3

Construction of Mechanical Engineering Meta-Profile: Conceptual Basis
(A competence coded 08-G-02 is interpreted as: the generic
competence whose original order is (02) and final ranking is (08))

Core		Design, Manufacture and Operation of Mechanical Systems					
Core-Affiliated Competencies		02-S-04	04-S-03	09-S-07	03-G-10	06-G-06	01-G-01 14-S-16
Associated Planets							
Planet-1	Mechanical Engineering Sciences	01-S-01	02-G-04				
Planet-2	Innovation and Creativity	13-S-09	03-S-02	06-S-19	08-S-15		
Planet-3	Managerial and Behavioural Skills	04-G-11	05-G-05	05-S-05	12-S-06	15-S-10	12-G-09
Planet-4	Quality	17-S-14	18-G-16	18-S-17			
Planet-5	Communication and Interpersonal Skills	11-S-12	14-G-07	11-G-12	08-S-15		
Planet-6	Professionalism and Ethics	08-G-02	09-G03	10-G-08	16-S-11	15-G-15	
Outer Spaces							
Space-1	Entrepreneurial Skills	07-G-17	03-G-10	06-G-06			
Space-2	Community Engagement	07-S-13	16-G-14	17-G-18	06-S-19		
Space-3	Sustainability	19-S-18	13-G-13	10-S-08	16-S-11		

VI. **Discussion**

The Tuning project gives Africa an instrument which can improve teaching and learning methods with a view to enhancing the curricula of HE institutions. Analysis of consultation data with stakeholders regarding generic and ME competencies yielded a number of important general observations. Levels of importance attached to competencies are much higher than extents of achievement of those competencies as seen by stakeholders. Having developed and defined generic and specific competences

and the detailed meta-profile for ME, a comparison of the developed meta-profile is then made with existing degree profiles. In general the following observations set forth:

i. There exists a remarkable coincidence between the developed meta-profile and existing degree profiles especially in the ME core area of designing, manufacturing and operations of ME systems.

ii. However, in other areas there is poor correlation between the two, with existing degree profiles lacking in emphasis in the areas of innovation and creativity, managerial and behavioural skills and quality.

iii. Further, the existing degree profiles portray a serious lack of emphasis in the areas of professional ethics, community engagement, environmental, social and economic impact assessment as well as product life cycle assessment.

iv. Other areas of sharp differences between the two profiles include commitment to the African identity and provision of ME solutions towards sustainable development.

v. Whereas some established degree programmes incorporate aspects of legal and financial issues, in others they are totally absent.

vi. It is agreed that the developed profile is better than the existing profiles, in that the former not only addresses current societal expectations upon a ME graduate but also accommodates future expectations. Hence, there is a need to review and harmonize existing profiles with the developed one.

vii. It is imperative that the developed meta-profile be validated by other key stakeholders.

VII. **Concluding remarks and recommendations**

In summary, 18 generic competences and 19 ME-specific competencies have been developed, analysed and synergised, with input from stakeholders, to form a meta-profile that will inform the basis for the next phase of the project, which is actual curriculum development.

As noted earlier, the aim is to collaboratively contribute to make ME training more responsive to Africa's developmental needs. These needs include building the capability to exploit opportunities for increased intra-African trade, expanding transport networks and shared infrastructure, technology transfer, adaptation and assimilation as well as facing the

challenges of engineering globalisation. These have brought to the fore the need for harmonisation of engineering programmes across Africa, and the development of curricula that address the above technological needs. All these will require cooperation amongst engineers from different African countries such that curriculum harmonisation will enhance intra-African engineering human resource mobility at various levels namely, high-level research in areas of specialization which support judicious use of scarce and expensive resources, postgraduate programmes in specialist areas, and joint engineering programmes based on intra-African meta-profiles. Thus the harmonization of mechanical engineering education in Africa, through the developed meta-profile, could lay the foundation for addressing those needs in the future.

The following future engagements are recommended to be pursued:

- Deepening the process by defining detailed learning objectives and outcomes.
- Carrying out gap analysis between existing curricula and the developed meta-profile.
- Extending the process to cover: Civil, Electrical and Chemical engineering disciplines.
- Developing generic competencies for all engineering disciplines.
- Subjecting future work to a validation process, disseminating findings to a wider population and addressing implementation challenges.

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"Worldwide CDIO Initiative." www.cdio.org.

Research ability in Chemistry and the Tuning Latin America specific competences: a comparative study at University of Cuyo (Argentina)*

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Carina E. Rubau, and María M. Tovar Toulouse

Abstract: Research ability can be thought of as a competence, which requires other abilities — both generic and specific — to be successfully developed. In this study, we determine the degree of importance that the 21 specific competences (SCs) established in the Tuning Latin America (Tuning-LA) Project, have in the acquisition of research ability in Chemistry, as a result of taking the degree program offered at the Facultad de Ciencias Exactas y Naturales, Universidad Nacional de Cuyo (FCEN-UNCUYO, Mendoza, Argentina). To this end, we adopted the SCs proposed as learning objectives in undergraduate studies in Chemistry, and consulted academics and students at FCEN-UNCUYO about (1) the importance of these competences in his/her opinion for work in the profession; (2) the level of achievement of these competences, that they estimated was reached as a result of taking the FCEN-UNCUYO degree program in Chemistry; and, (3) the relevance of the Tuning-AL specific competences for the development of research ability in Chemistry. The results of the survey at FCEN-UNCUYO are compared with those obtained by consulting academics and students in the framework of the Tuning-LA Project. Detailed comparisons between the opinion of academics and students at FCEN– UNCUYO are also reported.

Keywords: Higher Education; Tuning Latin America; specific competences; research ability; research education; education in Basic Sciences; education in Chemistry.

I. Introduction

A key challenge in Higher Education is the improvement of the ability to perform research in undergraduate studies, since instructional sequences on research methodology do not necessarily guarantee that students develop the abilities needed to tackle successfully their degree thesis work. This problem

makes it desirable to incorporate research education as an explicit educational objective, i.e. to orient the educational practices towards the development of a multidimensional capacity, which will be referred to in the following as research ability. However, in order to move forward in designing, implementing and evaluating specific educational sequences to foster the development of this ability it is necessary, in the first place, to characterize research education and research ability.

The general objective of this study is to contribute to the characterization of research ability, in the framework of research education as an objective of the undergraduate studies in Chemistry at Facultad de Ciencias Exactas y Naturales, Universidad Nacional de Cuyo (FCEN-UNCUYO, Mendoza, Argentina). The specific objectives of the study are the following: (1) to compare the degree of importance and degree of achievement that academics and students of the FCEN — UNCUYO attribute to the 21 specific competences established by the Tuning Latin America (LA) Project for the Chemistry area; (2) to compare the results obtained at FCEN — UNCUYO with those obtained in the Tuning-LA Project; and, (3) to determine the degree of importance of the specific competences for the development of research ability in Chemistry.

II. Theoretical framework: premises and previous results

The current study is part of an interdisciplinary project carried out at FCEN-UNCUYO that seeks to identify the main competences that contribute to the development of research ability at the undergraduate level, and their potentiality to be developed in either classroom instruction and / or virtual environments. Previous studies by the current authors have dealt with the competence approach[1] and the relation between research ability and the Tuning-LA generic competences.[2,3] Moving one step forward, the current

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[1] Armando Fernández Guillermet and Carina Rubau, "El enfoque <por competencias> en Educación Superior: conceptos clave, debates y aplicaciones en América Latina" (paper presented at XI Seminario Argentino Chileno and IV Seminario Cono Sur de Ciencias Sociales, Humanidades y Relaciones Internacionales, Universidad Nacional de Cuyo, Mendoza, Argentina, March 07-09, 2012).

[2] Armando Fernández Guillermet and Carina Rubau, "La Capacidad de Investigación en un enfoque por competencias. Un estudio en el Instituto de Ciencias Básicas de la UNCUYO" (paper presented at III Jornadas de Enseñanza e Investigación Educativa en el campo de las Ciencias Exactas y Naturales, Facultad de Humanidades y Ciencias de la Educación, Universidad Nacional de La Plata, Buenos Aires, Argentina, September 26-28, 2012).

[3] Carina Rubau, Iris Dias, María M. Tovar Toulouse, and Armando Fernández Guillermet, "Importancia de las competencias genéricas Tuning-América Latina para el desarrollo de la

work focuses on the research ability as an objective of research education of the undergraduate studies in Chemistry at FCEN-UNCUYO. The general premises adopted in this study are the following:

- In agreement with the traditional idea that "research cannot be learned in theoretical methodology courses, rather you learn to investigate side by side with a master, i.e., under someone's supervision", in the current paper research education is seen as the result of a dialogic interaction between an expert researcher and a novice, mediated by an object of investigation. In this dialogic interaction the expert acts as a role model who transmits the ways of doing and acting in the different areas of knowledge.

- Research education is seen as a multidimensional process that involves not only the acquisition of specific knowledge, methodologies and technical abilities, but also attitudes, dispositions and values. To characterize this set of knowledge, methodologies, attitudes, dispositions and values, the present study adopts the competence approach.[4],[5] A "competence" is viewed here as the ability to mobilize, in a contextually determined problem situation the set of elements that allows us to act pertinently, efficiently, and adjusted to norms, principles and values.[6]

- Research education is conceived as a process through which a student develops an articulated set of competences that contribute — to a greater or lesser extent — to the development of a key ability, the integrator of these competences, research ability.[7] It is accepted that some of the competences that contribute to the development of research ability are general to any degree, and some are specific or subject-area related. In a tentative manner, and not leaving aside other

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formación para la investigación. Estudio comparativo en el Instituto de Ciencias Básicas de la Universidad Nacional de Cuyo (Argentina)," *Enseñanza de las Ciencias*, Número Extraordinario (2013): 3114-3119.

[4] Robert Wagenaar, "Competences and learning outcomes: a panacea for understanding the (new) role of Higher Education?" *Tuning Journal for Higher Education* 1, no. 2 (2014): 279-302.

[5] Pablo Beneitone and Edurne Bartolomé, "Global generic competences with local ownership: a comparative study from the perspective of graduates in four world regions," *Tuning Journal for Higher Education* 1, no. 2 (2014): 303-334.

[6] Fernández Guillermet and Rubau, "El enfoque <por competencias> en Educación Superior."

[7] Fernández Guillermet and Rubau, "La Capacidad de Investigación en un enfoque por competencias."

alternatives to explore in the future, in the current work it is accepted that the competences independent of the discipline that contribute to the development of research ability[8] are those established as **generic competences** (GCs) by the Tuning-LA Project.[9] In the current work it is also accepted tentatively that the competences that are specific to each area of knowledge are those established as **specific competences** (SCs) for various disciplines by the Tuning-LA Project.

• It is accepted that the *Ability for the planning, design, and running of research projects,* which is one of the SCs for undergraduate studies in Chemistry established in the Tuning-LA Project, expresses the research ability in this discipline.[10] The relation between this competence and the other Tuning-LA SCs for Chemistry will be studied using the methodology which is described in the following section.

III. **Methodology**

The Tuning — LA Project consulted academics, graduates, employees and students from a large number of countries.[11] Since FCEN — UNCUYO did not participate of that survey, we decided to carry out a similar questionnaire at this institution with three main objectives: (1) to learn the opinion of academics and students about the degree of importance and achievement of the SCs for Chemistry; (2) to compare these results with those obtained at the Tuning-LA Project, and (3) to learn the opinion of academics and students at the FCEN-UNCUYO about the relative importance of the SCs for the development of research ability. To this end, a structured survey was administered to students and academics in the area of Chemistry at FCEN — UNCUYO, which consisted of three parts:

• Personal information. Academics were asked about their labour situation and students about their secondary school studies and personal interests prior to their immersion in higher education.

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[8] Rubau et al., "Importancia de las competencias genéricas."

[9] Pablo Beneitone, César Esquetini, Julia González, Maida Marty Maletá, Gabriela Siufi, and Robert Wagenaar, eds., *Reflections on and outlook for Higher Education in Latin America* (Bilbao: University of Deusto, 2007).

[10] Beneitone et al., *Reflections on and outlook for…*

[11] Argentina, Bolivia, Brasil, Colombia, Costa Rica, Cuba, Chile, Ecuador, El Salvador, Guatemala, Honduras, México, Nicaragua, Panamá, Paraguay, Perú, Uruguay y Venezuela.

- Degree of importance and achievement of the 21 SCs established by the Tuning-LA Project for undergraduate studies in Chemistry. The respondents were asked to quantify the importance and achievement of each of the SCs using the four grade scale used by Tuning-LA, from 1 = none to 4 = strong.

- Degree of importance that the achievement of the SCs would have for the development of the *Ability for the planning, design, and running of research projects*, which is considered in the remainder of the current work as a formulation of the research ability in Chemistry.

Twenty three out of twenty eight academics of the Chemistry area of FCEN-UNCUYO answered the survey, out of which 4.3% are full professors, 8.7% are associate professors, 39.1% are assistant professors, 21.7% are teaching assistants in charge of the practice ("JTP"), 8.7% are teaching assistants, and 17.4% are ad honorem teaching assistants. More than half of the academics (69.5%) have a post-graduate degree (specialization, master or doctorate), 26.1% are undertaking graduate studies, and 4.3% have only an undergraduate degree. As regards the age of the respondents, 30.5% are 35 years old or less, 47.8% are between 35 and 49 years old, and 21.7% are 50 years old or more. Fifteen advanced students answered the survey. Most of the respondents (93.3%) are studying to get a "Licenciado" degree in Chemistry and 6.7% are studying to become Teachers of Chemistry. As regards the age of the students, 26.7% are 22 years old or less, 60% are between 22 and 27 years old, and 13.3% are 27 years old or more.

IV. **Results**

The average scores for degree of importance and degree of achievement assigned by the respondents to each of the SCs are presented and discussed in the following. In Table 1 the 21 SCs established for the area of Chemistry by the Tuning-LA project are presented in decreasing order of importance assigned by the academics at FCEN-UNCUYO. The degree of importance that each of the other SCs would have for the successful development of the *Ability for the planning, design, and running of research projects* — which is listed in Table 1 as SC18 — is also shown. **SC18 will be referred to in the following as research ability in Chemistry**.

Table 1

Average values, assigned by students and academics at FCEN — UNCUYO, for the degree of importance of the 21 Specific competences (SCs) established by the Tuning-LA project, and degree of importance for the development of research ability (SC18) that each of the other 20 SC represents, according to students and academics at FCEN — UNCUYO

	SC in decreasing order of importance assigned by academics at CEN — UNCUYO	Degree of importance		Degree of importance for the succesful development of research ability	
		Academics	Students	Academics	Students
SC1	Understanding the principles, concepts, and basic theories of Chemistry.	4.000	3.933	3.869	3.867
SC2	Mastery of the the chemical terminology, nomenclature, conventions, and units.	3.826	3.800	3.739	3.6
SC 3	Knowledge and application of good laboratory practice and quality assurance.	3.826	3.400	3.696	3.7
SC 4	Ability to understand and apply knowledge of Chemistry to solve quantitative and qualitative problems.	3.783	3.733	3.609	3.8
SC 5	Ability to interpret and evaluate data derived from observations and measurements, relating it to theory.	3.739	3.600	3.783	3.8
SC 6	Ability to act with curiosity, initiative, and endeavor.	3.696	3.400	3.652	3.533
SC 7	Ability to recognize and analyse problems, and to plan strategies for their solution.	3.609	3.467	3.739	3.8
SC 8	Ability to use, apply and develop analytical techniques.	3.609	3.533	3.391	3.8

Table 1

Average values, assigned by students and academics at FCEN — UNCUYO, for the degree of importance of the 21 Specific competences (SCs) established by the Tuning-LA project, and degree of importance for the development of research ability (SC18) that each of the other 20 SC represents, according to students and academics at FCEN — UNCUYO (continued)

	SC in decreasing order of importance assigned by academics at CEN — UNCUYO	Degree of importance		Degree of importance for the succesful development of research ability	
		Academics	Students	Academics	Students
SC 9	Ability to apply knowledge of Chemistry in sustainable development.	3.609	3.267	3.348	3.2
SC 10	Ability to monitor events and changes through measurement and observation of chemical properties, and to compile and document them in a systematic and reliable fashion.	3.524	3.467	3.522	3.533
SC 11	Knowledge of the English language to read, write, and present documents as well as to communicate with other specialists.	3.478	3.533	3.609	3.4
SC 12	Ability for the presentation of scientific information to different audiences in both oral and written form.	3.478	3.467	3.652	3.4
SC 13	Ability in the use of new information and communications technology applied to Chemistry.	3.454	3.467	3.522	3.533
SC 14	Knowledge and deep understanding of a specific area of Chemistry.	3.435	3.600	3.696	3.467
SC 15	Ability to participate in work teams.	3.435	3.333	3.348	3.333

Table 1

Average values, assigned by students and academics at FCEN — UNCUYO,
for the degree of importance of the 21 Specific competences (SCs) established
by the Tuning-LA project, and degree of importance for the development
of research ability (SC18) that each of the other 20 SC represents,
according to students and academics at FCEN — UNCUYO (continued)

	SC in decreasing order of importance assigned by academics at CEN — UNCUYO	Degree of importance		Degree of importance for the succesful development of research ability	
		Academics	Students	Academics	Students
SC 16	Knowledge of the frontiers of research and development in Chemistry.	3.409	3.467	3.174	3.267
SC 17	Knowledge of other scientific disciplines necessary for the understanding of Chemistry.	3.391	3.333	3.217	3.333
SC 18	Ability for the planning, design, and running of research projects.	3.391	3.467	—	—
SC 19	Knowledge of the main synthetic routes in Chemistry.	3.318	3.267	3.000	3.267
SC 20	Knowledge, application, and assessment on the legal frame in the field of Chemistry.	3.174	3.200	3.087	2.933
SC 21	Understanding of epistemology of Science.	2.826	3.000	2.956	2.733

The results in Table 1 indicate that academics at the FCEN — UNCUYO assign a higher degree of importance to 7 SCs when related to the development of research ability than when related to specific competences per se. Similarly, students assign to 8 SCs a higher degree of importance when related to research ability. Both groups assign:

- A higher degree of importance for the development of research ability to the competences SC5 (*Ability to interpret and evaluate*

data derived from observations and measurements, relating it to theory), SC7 (*Ability to recognize and analyse problems, and to plan strategies for their solution*), and SC13 (*Ability in the use of new information and communications technology applied to Chemistry*).

- A lower degree of importance for the development of research ability to the competences SC1 (*Understanding the principles, concepts, and basic theories of Chemistry*), SC2 (*Mastery of the chemical terminology, nomenclature, conventions, and units*), SC9 (*Ability to apply knowledge of Chemistry in sustainable development*), SC16 (*Knowledge of the frontiers of research and development in Chemistry*) and SC20 (*Knowledge, application, and assessment on the legal frame in the field of Chemistry*).

The students at FCEN — UNCUYO consider that SC15 (*Ability to participate in work teams*), SC17 (*Knowledge of other scientific disciplines necessary for the understanding of Chemistry*) and SC19 (*Knowledge of the main synthetic routes in Chemistry*) are equally important either for the development of research ability or as SC per se.
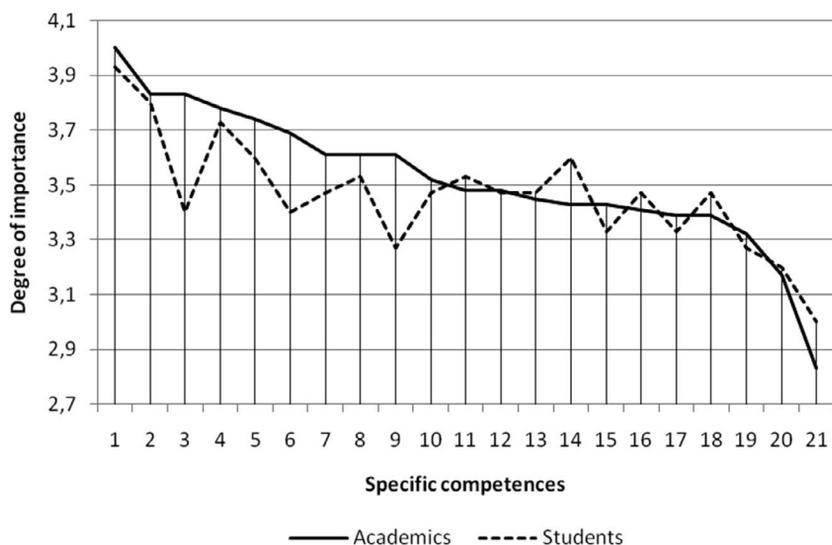
Figure 1

Average values of degree of importance assigned to the 21 SCs by academics and students at FCEN — UNCUYO

In Figure 1, the average values of degree of importance assigned by academics to the 21 SCs are compared with those assigned by students at FCEN — UNCUYO. Academics have assigned a:

- Higher degree of importance to the competences SC1 (*Understanding the principles, concepts, and basic theories of Chemistry*), SC3 (*Knowledge and application of good laboratory practice and quality assurance*), SC4 (*Ability to understand and apply knowledge of Chemistry to solve quantitative and qualitative problems*), SC5 (*Ability to interpret and evaluate data derived from observations and measurements, relating it to theory*), SC6 (*Ability to act with curiosity, initiative, and endeavor*), SC7 (*Ability to recognize and analyse problems, and to plan strategies for their solution*), SC8 (*Ability to use, apply, and develop analytical techniques*), SC9 (*Ability to apply knowledge of Chemistry in sustainable development*), SC10 (*Ability to monitor events and changes through measurement and observation of chemical properties, and to compile and document them in a systematic and reliable fashion*), SC15 (*Ability to participate in work teams*), SC17 (*Knowledge of other scientific disciplines necessary for*
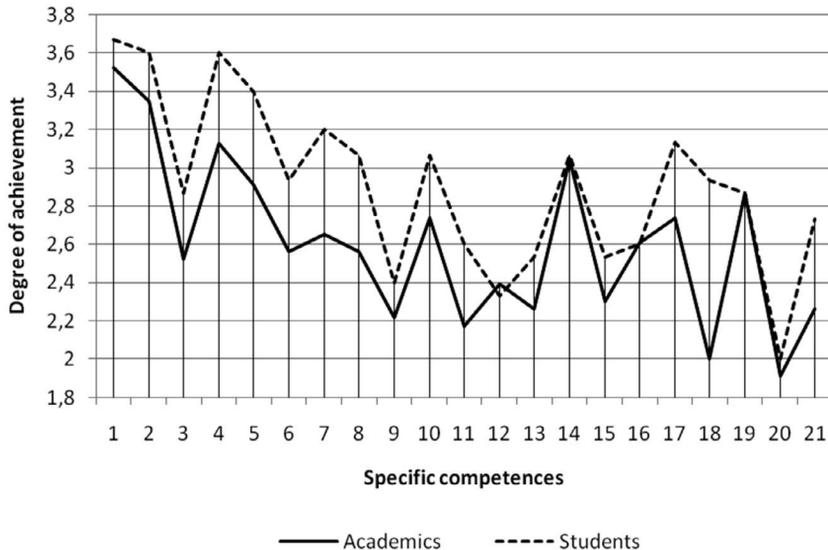
Figure 2

Average values of degree of achievement assigned to the 21 SCs
by academics and students at FCEN — UNCUYO

the understanding of Chemistry) and SC19 (*Knowledge of the main synthetic routes in Chemistry*).

- Lower degree of importance to the competences SC14 (*Knowledge and deep understanding of a specific area of Chemistry*), SC16 (*Knowledge of the frontiers of research and development in Chemistry*), SC18 (*Ability for the planning, design, and running of research projects*) and SC21 (*Understanding of epistemology of Science*).

In Figure 2, the average values of degree of achievement assigned by academics to the 21 SCs are compared with those assigned by students at FCEN — UNCUYO. In general, students have assigned a higher degree of achievement to most of the SCs. Both groups assign similar values to the competences SC12 (*Ability for the presentation of scientific information to different audiences in both oral and written form*), SC14 (*Knowledge and deep understanding of a specific area of Chemistry*), SC16 (*Knowledge of the frontiers of research and development in Chemistry*) and SC19 (*Knowledge of the main synthetic routes in Chemistry*).
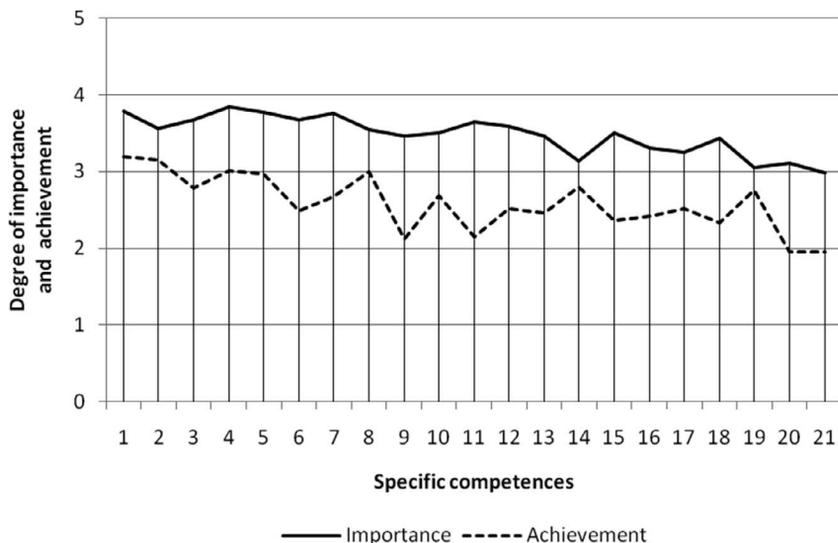
Figure 3

Average values of degree of importance and achievement assigned to the 21 SCs by academics surveyed in the Tuning-LA Project
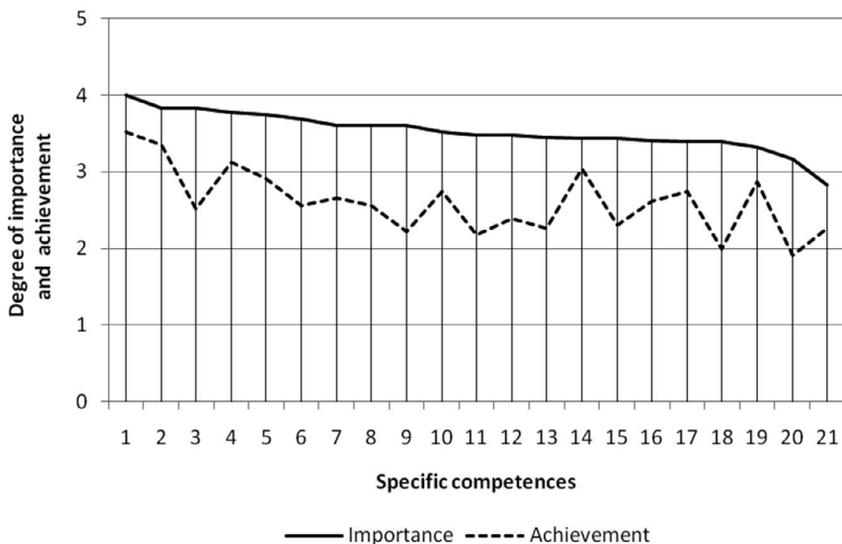
Figure 4

Average values of degree of importance and achievement assigned
to the 21 SCs by academics surveyed at FCEN — UNCUYO

In Figures 3 to 6, the results of the current survey are compared to those obtained by the Tuning-LA Project. Figures 3 and 4 show that academics in both surveys agree that the degree of importance of all SCs is higher than the corresponding degree of achievement. However, the average scores assigned by academics in the Tuning-LA Project show a wider variability. In addition, the academics in both surveys agree that:

- The SCs with similar values between degree of importance and achievement are: SC14 (*Knowledge and deep understanding of a specific area of Chemistry*) and SC19 (*Knowledge of the main synthetic routes in Chemistry*).

- The SCs with different values between degree of importance and degree of achievement are: SC9 (*Ability to apply knowledge of Chemistry in sustainable development*), SC11 (*Knowledge of the English language to read, write, and present documents as well as to communicate with other specialists*) and SC20 (*Knowledge, application, and assessment on the legal frame in the field of Chemistry*).

Figures 5 and 6 show that the students consulted in the Tuning-LA Project and those at the FCEN — UNCUYO share similar appreciation in that:

- Each of the SCs have a higher degree of importance than degree of achievement.
- The competences that present a closer degree of importance and degree of achievement are: SC2 (*Mastery of the chemical terminology, nomenclature, conventions, and units*) and SC19 (*Knowledge of the main synthetic routes in Chemistry*).
- The competence that presents the lowest degree of achievement is SC20 (*Knowledge, application, and assessment on the legal frame in the field of Chemistry*).
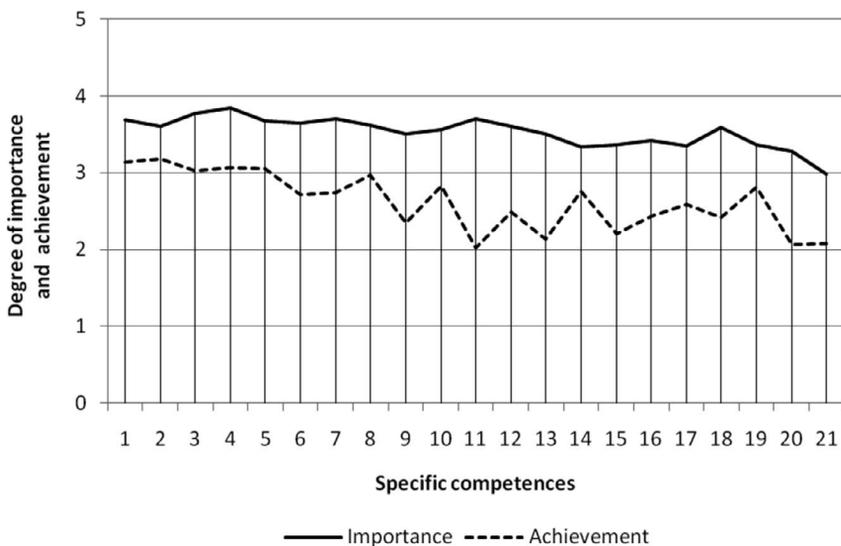
Figure 5

Average values of degree of importance and achievement assigned to the 21 SCs by students surveyed in the Tuning-LA Project
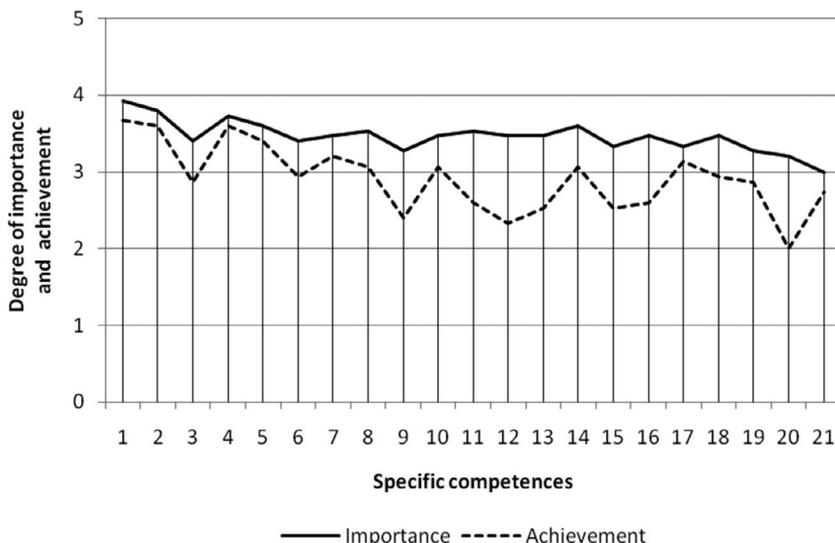
Figure 6

Average values of degree of importance and achievement assigned
to the 21 SCs by students at FCEN — UNCUYO

V. **Summary and concluding remarks**

The general aim of the current study is to contribute to the characterization of research education in undergraduate studies in Chemistry at Facultad de Ciencias Exactas y Naturales, Universidad Nacional de Cuyo (FCEN-UNCUYO, Mendoza, Argentina) adopting a competence approach. The work focuses on research ability, understanding it as a multidimensional competence, which requires the development of other competences, both generic and specific. In the current study, the *Ability for the planning, design, and running of research projects*, which is one of the 21 specific competences in Chemistry established by the Tuning-LA Project, is considered as a specific formulation of research ability. Thereby, the relationship of this competence with the other 20 SCs proposed for this subject area was studied. To this end two surveys were administered to students and academics at FCEN-UNCUYO. The first survey, similar to the one carried out in the Tuning-LA Project, had two objectives: (1) learn the opinion of academics

and students with respect to the importance and achievement of the 21 SCs; and (2) determine coincidences and discrepancies with the tendencies established by a great number of universities, by comparing the results obtained in this study to those of the Tuning-LA Project. The second survey enquired about the importance of each of the remaining 20 SCs for the development of the *Ability for the planning, design, and running of research projects*. The most relevant findings of the study are the following.

- In both the Tuning-LA Project and the current study it was found that: (1) academics agree in assigning a similar degree of importance and degree of achievement to the competences *Knowledge and deep understanding of a specific area of Chemistry* and *Knowledge of the main synthetic routes in Chemistry*; and, (2) students consider that the competences that show a major agreement between degree of importance and degree of achievement are *Mastery of the chemical terminology, nomenclature, conventions, and units* and *Knowledge of the main synthetic routes in Chemistry*. We note that the SCs involved in (1) and (2) are related to the acquisition of theoretical knowledge, which is the kind of content traditionally considered as the main educational objective of Higher Education. **These results suggest that both groups consulted consider that the competences which are given priority among the educational objectives in traditional teaching are better achieved**.

- The current study, which assesses the relevance of the SCs established in the Tuning-LA Project into the development of research ability, also has relevance for that project as it shows how the other SCs relate to the development of SC18 (*Ability for the planning, design, and running of research projects*). It is the opinion of academics and students at the FCEN — UNCUYO that a higher degree of importance for the development of research ability than as SC *per se* correspond to the *Ability to interpret and evaluate data derived from observations and measurements, relating it to theory*, *Ability to recognize and analyse problems, and to plan strategies for their solution* and *Ability in the use of new information and communications technology applied to Chemistry*. **These three SCs are closely related to the cognitive and methodological dimensions of Higher Education.**

- Comparison of the results of the Tuning-LA survey to those of the FCEN–UNCUYO survey highlights the fact that academics assign a low degree of achievement to the *Knowledge of the English language to read, write, and present documents as well as to communicate with other specialists*. This competence, little achieved in undergraduate

studies, was established in a previous survey to academics and researchers carried out by the current group in Mendoza (Argentina) as one of the competences that favor research ability.[12] Moreover, academics and students at FCEN — UNCUYO assign a relatively low degree of achievement to the *Ability for the presentation of scientific information to different audiences in both oral and written form*. **The achievement of these two SCs, related to research ability, should be taken into consideration when posing educational objectives and strategies so as to strengthen research education.**

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[12] María M. Tovar Toulouse, Carina E. Rubau, and Iris V. Dias, "Haciéndonos amigos de la ciencia. Inglés, la lengua franca de la comunicación científica en la Universidad Nacional de Cuyo" (paper presented at Congreso Latinoamericano de Ingeniería y Ciencias Aplicadas — CLICAP 2012, Facultad de Ciencias Aplicadas a la Industria, Universidad Nacional de Cuyo, San Rafael, Mendoza, Argentina, March 28-30, 2012).

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Contributors

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Editorial

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Modernising higher education: the emergence of European public goods

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Building a Higher Education Area in Central Asia: challenges and prospects

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Incremental steps towards a competency-based post-secondary education system in Ontario

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Lifelong Learning principles and higher education policies

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Competence-based multiple learning paths: on the road of implementation

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Ideological trends in initial teacher education curricula: the case of East African universities

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Collaborative meta-profile development to harmonise mechanical engineering education in Africa

Samuel M. Sackey, Venkata Ramayya Ancha, Moses P.M. Chinyama, Charles Awono Onana, Raïdandi Danwe, Mohammad M. Megahed, Béatrice Delpouve, Shadreck Chama, Nawaz Mahomed, Venant Kayibanda, Léonard Kabeya Mukeba Yakasham, and André Müller.

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Research ability in Chemistry and the Tuning Latin America specific competences: a comparative study at University of Cuyo (Argentina)

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Guidelines
for Authors

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Policy and implementation: actions for curriculum reform

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