THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH

Abstract Book
3rd Annual International Symposium on "Higher Education in a Global World"
8-11 July 2019, Athens, Greece

Edited by
Gregory T. Papanikos

2019

Abstracts

3rd Annual International Symposium on "Higher Education in a Global World"

8-11 July 2019, Athens, Greece

Edited by Gregory T. Papanikos

TABLE OF CONTENTS

(In Alphabetical Order by Author's Family name)

Preface

This book includes the abstracts of all the papers presented at the *3rd Annual International Symposium on "Higher Education in a Global World" (8-11 July 2019)*, organized by the Athens Institute for Education and Research (ATINER).

In total 35 papers were submitted by 41 presenters, coming from 16 different countries (Australia, Belgium, Canada, China, Hong Kong, Hungary, Iceland, Ireland, Italy, Mexico, Singapore, South Africa, Sweden, Uganda, UK, and USA). The conference was organized into 11 sessions that included a variety of topic areas such as, Assessment and Evaluation, Applied Research & Social Innovation, Student Support Mechanisms, Faculty Development, Social and Global Challenges, Student Mobility, Teaching & Learning, and other. A full conference program can be found before the relevant abstracts. In accordance with ATINER's Publication Policy, the papers presented during this conference will be considered for inclusion in one of ATINER's many publications.

The purpose of this abstract book is to provide members of ATINER and other academics around the world with a resource through which to discover colleagues and additional research relevant to their own work. This purpose is in congruence with the overall mission of the association. ATINER was established in 1995 as an independent academic organization with the mission to become a forum where academics and researchers from all over the world could meet to exchange ideas on their research and consider the future developments of their fields of study.

It is our hope that through ATINER's conferences and publications, Athens will become a place where academics and researchers from all over the world regularly meet to discuss the developments of their discipline and present their work. Since 1995, ATINER has organized more than 400 international conferences and has published nearly 200 books. Academically, the institute is organized into 6 divisions and 37 units. Each unit organizes at least one annual conference and undertakes various small and large research projects.

For each of these events, the involvement of multiple parties is crucial. I would like to thank all the participants, the members of the organizing and academic committees, and most importantly the administration staff of ATINER for putting this conference and its subsequent publications together. Specific individuals are listed on the following page.

Gregory T. Papanikos
President

3rd Annual International Symposium on "Higher Education in a Global World"
8-11 July 2019, Athens, Greece

Scientific Committee

All ATINER's conferences are organized by the [Academic Council](). This conference has been organized with the assistance of the following academics, who contributed by a) setting up the program b) chairing the conference sessions, and/or c) reviewing the submitted abstracts and papers:

1. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, UK.
2. Sharon Claire Bolton, Vice President of Research, ATINER & Professor, The Management School, University of Stirling, Scotland.
3. George Priovolos, Director, Center for Small and Medium-Sized Enterprises (CSME) & Professor, Iona College, USA.
4. Roy Carr-Hill, Professor, University College London, UK.
5. Matthew Zagumny, Professor, Tennessee Tech University, USA.
6. Abdeljalil Metioui, Professor, Université du Québec à Montréal, Canada.
7. Gregory Bynum, Associate Professor, State University of New York at New Paltz, USA.
8. Cormac Doran, Head of Centre for Higher Education Research, Policy & Practice, Technological University Dublin, Ireland.
9. Patricia Holt, Professor, Georgia Southern University, USA.
10. Mary Ellis, Academic Member, ATINER & Senior Lecturer, National Institute of Education (NIE), Singapore.
11. Francis Espinoza Figueroa, Associate Professor, Universidad Católica del Norte, Chile.
12. Natasha Mrkic, Instructor & Social Innovation Coordinator, Langara College, Canada.
13. Jean Berlie, Fellow, Education University of Hong Kong (EdUHK), Hong Kong.
14. Natasha Johnson, Educational Policy Studies, College of Education and Human Development, Georgia State University, USA.
15. Thaddeus L. Johnson, Criminology & Criminal Justice, Andrew Young School of Policy Studies, Georgia State University, USA.

FINAL CONFERENCE PROGRAM
3rd Annual International Symposium on "Higher Education in a Global World", 8-11 July 2019, Athens, Greece

Conference Venue: Titania Hotel, 52 Panepistimiou Avenue, Athens, Greece
(close to metro station *Panepistimio*)

Monday 8 July 2019

07:50-08:40 Registration and Refreshments
08:50-09:15 (Room C - 10th Floor): <u>Welcome and Opening Address</u> by Gregory T. Papanikos, President, ATINER.
09:30-11:00 Session I (Room B - 10th Floor): Assessment and Evaluation

Chair: Roy Carr-Hill, Professor, University College London, UK.

1. Matthew Zagumny, Professor, Tennessee Tech University, USA. The QUEST-20: Measuring Intellectual Curiosity and Scientific Epistemology among Undergraduates.
2. Abdeljalil Metioui, Professor, Université du Québec à Montréal, Canada. Developing a Two-Tier Diagnostic Instrument to Assess High School Students' Understanding Newton's Laws of Motion and Law of Universal Gravitation.
3. Francis Wagaba, Chemistry Teacher, Darwin High School, Australia. Action Research: The Use of Metacognitive Strategies to Enhance Learning in Year 9 Science.

11:00-12:30 Session II (Room B - 10th Floor): Student Mobility

Chair: Abdeljalil Metioui, Professor, Université du Québec à Montréal, Canada.

1. Jean Berlie, Fellow, Education University of Hong Kong (EdUHK), Hong Kong. A Short Overview of China's Higher Education, Globalization and Glocalization, and Student Mobility.
2. <u>Alice Sanna</u>, PhD Student / Research Assistant, Catholic University of Louvain, Belgium & Marcel Gerard, Professor, Catholic University of Louvain, Belgium. Brain Drain vs. Return Rate, an Assessment of the Ecuadorian Scholarship Policy.
3. <u>Yuanyuan Li</u>, Postgraduate Student, Sichuan University, China & <u>Xuehong Wan</u>, Professor, Sichuan University, China. A Research on the Motivation and Satisfaction of International Students on Studying Medicine in China.

12:30-14:00 Session III (Room B - 10th Floor): Teaching and Learning: ICT, MOOC, Augmented Reality and Project-based Learning

Chair: Matthew Zagumny, Professor, Tennessee Tech University, USA.

1. Patricia Covarrubias-Papahiu, Professor and Researcher, FES Iztacala – UNAM, Mexico. Social Representations of Information and Communication Technologies (ICT) in University Educational Practice.
2. <u>Mary Ellis</u>, Senior Lecturer, National Institute of Education (NIE), Singapore, Christopher Pang, Senior Lecturer, National Institute of Education (NIE), Singapore, Li Li Teo, Senior Lecturer, National Institute of Education (NIE), Singapore & Christian Chia, Senior Lecturer, National Institute of Education (NIE), Singapore. Higher Order Competencies and Augmented Realities.
3. Tanya Dove, Instructor, Hong Kong Polytechnic University, Hong Kong. Using MOOC to Facilitate Consistency in Teaching and Learning; Pattern Cutting and Sewing for Different Figure Shapes.
4. Philisiwe Juliet Mchunu, Lecturer, Durban University of Technology, South Africa. Students' Reflections on Collaborated Project-based Learning in the Department of Ecotourism.

14:00-15:00 Lunch

15:00-16:30 Session IV (Room B - 10th Floor): Applied Research & Social Innovation

> **Chair:** Natasha Mrkic, Instructor & Social Innovation Coordinator, Langara College, Canada.

1. John Widdowson, Principal & Chief Executive, Chair of Mixed Economy Group of Colleges, New College Durham, UK. Degree Apprenticeships: First Steps into New Territory. What have we learned so far?
2. Shujing Fu, Professor, Capital Normal University, China. Exploring the Reform for Cultivating System on the Master of Education Administration.
3. Erik Hedlund, Associate Professor, Swedish National Defence College, Sweden. A Generic Pedagogic Model for Academically based Professional Officer Education.

16:30-18:00 Session V (Room B - 10th Floor): Student Support Mechanisms

> **Chair:** Jean Berlie, Fellow, Education University of Hong Kong (EdUHK), Hong Kong.

1. Patricia Holt, Professor, Georgia Southern University, USA. Helping Students Identify and Overcome Negative Emotions in the University Classroom.
2. Hanna Ragnarsdottir, Professor, University of Iceland, Iceland, Anh-Dao Tran, Adjunct Professor, University of Iceland, Iceland & Susan Rafik Hama, PhD Candidate, University of Iceland, Iceland. From Non-Policy to Practice: Staff's Perspectives on Teaching and Supporting Students of Immigrant background in Icelandic Universities.
3. Annabel Yale, Lecturer, Edge Hill University, England, UK. Quality Matters: Personal Tutoring in a UK Higher Education Context from the Student Perspective.

18:00-20:00 Session VI (Room B - 10th Floor): Higher Education Institutions: Cooperation, Competition and Country Experiences

> **Chair:** Patricia Holt, Professor, Georgia Southern University, USA.

1. Cormac Doran, Head of Centre for Higher Education Research, Policy & Practice, Technological University Dublin, Ireland. The Formation and Ongoing Work of The Centre for Higher Education Research, Policy and Practice (CHERPP).
2. Zhimin Liu, Professor, Nanjing Agricultural University, China, Shunshuan Hu, PhD Student, Zhejiang University, China & Song Zhang, Section Chief, Nanjing Agricultural University, China. On the Relationship between China's Agricultural Higher Education and the Industrial Structural Adjustment.
3. Maria Vincent Kaguhangire-Barifaijo, Head of Department, Uganda Management Institute, Uganda & James Luyonga Nkata, General Director, Uganda Management Institute, Uganda. Collegial Co-operation Turns Toxic: Implications for Higher Education Institutions.
4. Victoria Bigelow, Administrative Associate Manager, Advisor, University of Montana, USA. Case Study: Honors Education at a Rural, American University.
5. Chuan-Rong Yeh, Assistant Research Fellow, Research Center for Indigenous Education, National Academy for Education Research, Taiwan. Exploring the Competition in Education.
6. Gerald Kagambirwe Karyeija, Associate Professor, Uganda Management Institute, Uganda. Dynamics of Internationalization of Higher Education in Emerging Economies: Experiences from Uganda.

21:00-23:00 Greek Night and Dinner

Tuesday 9 July 2019

07:45-10:45 Session VII: An Educational Urban Walk in Modern and Ancient Athens

Group Discussion on Ancient and Modern Athens. Visit to the Most Important Historical and Cultural Monuments of the City (be prepared to walk and talk as in the ancient peripatetic school of Aristotle)

11:15-13:00 Session VIII (Room B - 10th Floor): Policy Implications in Education and the Role of Higher Education in Democracy

Chair: Mary Ellis, Senior Lecturer, National Institute of Education (NIE), Singapore.

1. Xenia Coulter, Professor Emerita, SUNY Empire State College, USA & Lee Herman, Professor Emeritus, SUNY Empire State College, USA. Higher Education for Democracy or Autocracy?
2. Gayil Talshir, Head, The President's Program for Academic Leadership, Department of Political Science, The Hebrew University of Jerusalem, Israel. The Role of Education in Democracy.
3. Bill Glenny Wullur, Assistant Professor, Universitas Klabat, Indonesia. Academic Competence and Teaching Performance of Practicum Students in a Teacher Education Program.
4. Adina Mannes, Lecturer, Bar-Ilan University, Israel. The Confused Professional Identity of Native and Non-Native EFL Teacher Educators: Are they Teachers or Researchers?

13:00-14:30 Session IX (Room B - 10th Floor): Faculty Development

Chair: Francis Espinoza Figueroa, Associate Professor, Universidad Católica del Norte, Chile.

1. Jeremy Schnieder, Director for the Center for Teaching and Learning, University of La Verne, USA & Jessica Tinklenberg, Program Director, The Claremont Colleges Center for Teaching and Learning, USA. The Intentional Alignment of Current and Future Faculty Development Programs to Produce more Equitable Student Learning Outcomes.
2. Thea Schoeman, Lecturer, University of Johannesburg, South Africa. Can Higher Education Institutions Contribute to Teachers' Knowledge, Skills and Teaching of Geographical Information Systems in South Africa?

14:30-15:30 Lunch

15:30-17:00 Session X (Room B - 10th Floor): Social and Global Challenges

Chair: Cormac Doran, Head of Centre for Higher Education Research, Policy & Practice, Technological University Dublin, Ireland.

1. Roy Carr-Hill, Professor, University College London, UK. Inequalities in Higher Education in Africa: How Large are they? Do they Mirror the Situation in the Metropole 60 Years Ago?
2. Gregory Bynum, Associate Professor, State University of New York at New Paltz, USA. "Race Is a Fiction. Racism Is Not.": Improving Historical Understandings of Race in Anti-Racist Discussions among Social Justice Educators.
3. Francis Espinoza Figueroa, Associate Professor, Universidad Católica del Norte, Chile. The Impact of European Influences upon Received Countries: The Case of the Development of Domestic Policies in Chilean Education (HE).

17:00-18:30 Session XI (Room B - 10th Floor): Transforming Higher Education: Service Learning, Inclusive Leadership and Workplace Spirituality

Chair: Gregory Bynum, Associate Professor, State University of New York at New Paltz, USA.

1. Luigina Mortari, Professor, University of Verona, Italy & Marco Ubbiali, Temporary Assistant Professor, University of Verona, Italy. Service Learning: A Philosophy and Practice to re-Frame Higher Education.
2. Marco Ubbiali, Temporary Assistant Professor, University of Verona, Italy, Luigina Mortari, Professor, University of Verona, Italy & Roberta Silva, Temporary Assistant Professor, University of Verona, Italy. Redesign pre-Service Teacher's Training: A Systematic Literature Review on Service Learning Practice.
3. Kerri Heath, Assistant Vice Chancellor, Pepperdine University, USA. Exploring the Intersection of Inclusive Leadership and Workplace Spirituality at a Faith-Based Institution of Higher Education.
4. Zsuzsanna Demeter-Karaszi, PhD Student, University of Debrecen, Hungary, Gabriella Pusztai, Director of the Doctoral Program, University of Debrecen, Hungary & Eniko Maior, Dean, Partium Christian University, Romania. Church Contributions to the Transformation of Higher Education in Central and Eastern Europe.

20:30-22:00 Dinner

Wednesday 10 July 2019
Mycenae and Island of Poros Visit
Educational Island Tour

Thursday 11 July 2019
Delphi Visit

Friday 12 July 2019
Ancient Corinth and Cape Sounion

Jean Berlie
Fellow, Education University of Hong Kong (EdUHK), Hong Kong

A Short Overview of China's Higher Education, Globalization and Glocalization, and Student Mobility

China launched in 2013 a global project called the One Belt One Road (OBOR), renamed later the Belt and Road Initiative in English. The term 'initiative' does not exist in Chinese and OBOR is simply represented by four characters –带一路.

The approach What, Why, How, Who and When will be used to try to understand how global is China's higher education and China's ambitious program on higher education.

Between 1990 and 2010, in just twenty years, after the reforms of Deng Xiaoping, China's unbelievable progresses of higher education stand probably unique in the world history.

The number of universities in mainland China was 1908 in 2007, 2491 in 2013 and 2631 in 2017 (Statista 2019). This number has increased constantly over the past decade. In contrast, the number of high schools in China was "receding, from about 78,000 schools in 2005 to 65,645 schools in 2015".

In 2012, 400,000 of Mainland China students left and studied abroad, in 2013 this number increased to 420,000 and became 550,000 in 2016 (China's Minister of Education). The number of foreign students who came to study in China was respectively 320,000, 380,000 and 440,00. In 2019, does the US-China trade war will affect the current high number of Mainland Chinese students studying overseas? Does it reflects more 'globalization' in Chinese higher education than elsewhere in the world?

This paper will compare globalization, and study in particular glocalization, a concept which fits better China's higher education. China certainly accepts the fact that it is more convenient to retain some Chinese local tradition, and keeps the best norms of the international higher education adapted to the Chinese cultural concepts. This is probably why China's higher education has reached its present high level.

Economic factors, political change will also be studied; Asian countries are doing their best to be desirable international student destinations. China knows how to succeed. In 2019, the first university of China was Tsinghua University in Beijing, followed by Beijing University, Zhejiang University and Shanghai Jiao Tong University. In the world university ranking table, Tsinghua was respectively ranked the 71st in 2012, 52nd in 2013, 30th in 2018 and 22nd in 2019. There is in fact huge changes in higher education in China, which is an important case study of glocalization and also an example of great student mobility in higher education.

Victoria Bigelow
Administrative Associate Manager, Advisor, University of Montana, USA

Case Study:
Honors Education at a Rural, American University

The Davidson Honors College (DHC) at the University of Montana is an international model for honors education. The DHC is a small liberal arts college, at the heart of a mid-sized, public, state university. The student body consists of the best and brightest students from Montana and across the United States and world.

I serve as an academic advisor for undergraduates at the Davidson Honors College at the University of Montana in Missoula, Montana. Our campus is located at the mountain base of a canyon, the setting of the infamous American film, *A River Runs Through It*. Our unique campus is the state's arboretum and has been identified as one of the top 20 most beautiful campuses in the United States.

The Davidson Honors College is comprised of 750 of the 11, 000 students at the University of Montana. Students are selected by the Dean and a small selection committee based on academic merit, and leadership qualities. Honors students at the DHC have the benefit of small classes capped at 20-students, taught by dedicated honors faculty who facilitate academically-enriching content for students.

Our curriculum and pointed, individualized attention to students provide them with private-university likeness. Honors students at the University of Montana have access to personalized academic advising and a robust interdisciplinary honors curriculum; a tailored Career Development Program, the first of its kind at an Honors College in the United States; access to research faculty dedicated to mentoring honors students; experiential learning opportunities to study abroad or visit national parks of the western United States; and more. In many ways, the Davidson Honors College operates as a private institution within a public university.

Students are required to meet eight honors requirements throughout their undergraduate experience. The Davidson Honors College experience is distinguished by our dual commitment to hands-on learning and thoughtful reflection. Of students' academic requirements, all honors graduates must conduct original research and creative scholarship that manifests into a thesis project. Thesis projects are guided by personalized mentors at the University of Montana, on recommendation of the Davidson Honors College. Seniors then present at UM's annual Conference on Undergraduate Research, hosted by the Davidson Honors College.

Through students' experience at the Davidson Honors College, graduates of the DHC will be able to contribute to, and lead, a diverse team in pursuit of a shared goal; make decisions based on the University of Montana's four guiding principles: innovation and creativity, openness, partnership, and impact; and finally to engage as a citizen with a strengthened commitment to meaningful service and community. The dedicated Dean, faculty, and advisors like myself, hold students of the Davidson Honors College to high standards as noted above while delivering individualized support to the honors cohort to ensure their success both at UM, and beyond.

Gregory Bynum
Associate Professor, State University of New York at New Paltz, USA

"Race Is a Fiction. Racism Is Not.": Improving Historical Understandings of Race in Anti-Racist Discussions among Social Justice Educators

In an April, 2014 TED Talk, the African American civil rights leader, public interest lawyer, voting rights defender, and educator Francys Johnson put his finger on an essential challenge in understandings of race with his statement, "Race is a fiction. Racism is not."

Among social justice educators, as well as among citizens in the broader society, it has been difficult to keep in focus the crucial fact that being anti-racist must mean being aware that traditional racial categories (the Caucasian race, the African race, the Asian race, etc.) are themselves the products of racist thinking and racist exploitation, and that these categories neither support social justice education nor conform to the best-informed, most current scientific and genetic data available about human diversity. For this purpose, it is useful to understand current debates about racial categories that have been developing among scientists, cultural studies scholars, historians, and other experts on human history and racial history.

One such debate has sprung up in response to Harvard geneticist David Reich's 2018 book, *Who We Are and How We Got Here: Ancient DNA and the New Science of the Human Past*. Through study of the rapidly expanding data on the DNA of historical and pre-historic human populations, Reich's brilliant book provides exciting, new insights into human history and human pre-history. However, in the process of developing and publicizing his genetic research, Reich has aroused criticism from a group of 67 scientists and researchers objecting to his characterization of racial categories. In a March 30, 2018 *Buzzfeed* article, the researchers objected to Reich's statements on race including the following statement from a March 23, 2018 *New York Times* column: "it is simply no longer possible to ignore average genetic differences among 'races.'"

Reich's statement reflects his frustration at what he sees as racial justice advocates' refusal to acknowledge that human categories may be developed on the basis of genetics. However, his critics' most robust arguments do not pose objections to all genetic categorization of human beings. Rather, biologist Joseph L. Graves and others have objected that instead of employing traditional racial categories when categorizing human genetic groups, it is preferable to categorize human beings according to their ancestors' environmental influences and those influences on their genetics, their predispositions to disease, and other,

related characteristics. This more accurate and useful approach to categorizing humans entails movement away from traditional racial thinking. For example, instead of the oft-repeated statement that members of the African race are particularly susceptible to sickle-cell anemia, it is preferable to state that evidence points to the conclusion that sickle-cell anemia is more prevalent among people whose ancestors lived in regions with high rates of malaria – a human category that includes people from parts of India and people from the Arabian peninsula as well as people from some (but not all) parts of Africa.

In this presentation it will be argued that it is essential for social justice educators, in their pursuit of democratic ideals, to understand the fictional and scientifically unjustified nature of racial categories.

Roy Carr-Hill
Professor, University College London, UK

Inequalities in Higher Education in Africa: How Large are they? Do they Mirror the Situation in the Metropole 60 Years Ago?

There have been many studies of the socio-economic background of students in developed countries; but – apart from commentary on the gender gap – very few in developing countries. This paper sets out to provide cross-country data, specifically focusing on any differences between students from Anglophone or francophone countries, on the poverty/wealth of graduate students. It then asks whether the inequalities observed can be compared to those of the 'mother' country, with a nuanced positive conclusion.

Xenia Coulter
Professor Emerita, SUNY Empire State College, USA
&
Lee Herman
Professor Emeritus, SUNY Empire State College, USA

Higher Education for Democracy or Autocracy?

Scholars argue that teachers in the 21st century must, in addition to keeping up-to-date with ever increasing knowledge, prepare students to live and work in an age of technology (Collins & Halverson, 2018) and in a global society (NEA, nd). The NEA, for example, says students must learn to better communicate and collaborate, think more critically and creatively, i.e., to acquire the four C's, rather than the traditional three R's. Instead of memorizing information and acquiring test-taking skills, students today must learn to be intellectually nimble, tolerant, worldly, and open to diverse ideas. It could be argued, however, that it is not just in the 21st century that these skills have become important. In the early 20th century, for example, when the world was neither wired nor large, the American philosopher, John Dewey, writing about the kind of education appropriate in a democracy (1916), promoted skills that were remarkably similar to those espoused today. But for him, the purpose was not to make better use of new technologies or to respond more effectively to global job demands, but to prepare students for a rapidly changing world and to help them acquire the aptitudes necessary for a viable and enduring democracy.

At the Athens conference, we propose to briefly summarize Dewey's educational philosophy and its relevance to higher education. We will then argue that it may be the failure to actually implement Dewey's recommendations that explains in part why there appears today to be a growing attraction to autocracy across the world, such as in the United States. We have worked some years at a university that promoted teaching and learning consonant with Dewey's philosophy. However, we have watched our college fail to resist pressures toward more conventional practices (Coulter, 2017; Herman, 2017). At the conference we would like to discuss the important obstacles that keep faculty and students shackled to the faulty metaphor of minds as empty vessels (Bereiter, 2002) to be filled by information delivery methods. We point at the three T's – textbooks, testing, and teachers – that deliberately or inadvertently resist efforts to promote diversity of thought, individuality, and trust in the capability of students to think for themselves, share ideas, and find ways of working together. Although these characteristics were assiduously developed in Dewey's experimental school (Mayhew & Edwards, 1965) and are essential in a vibrant democracy, that school did not last. We

would invite the audience to share their thoughts on reasons why and possible ways to resist the pressures that seem to push professors and students more toward autocracy than democracy.

Patricia Covarrubias-Papahiu
Professor and Researcher, FES Iztacala – UNAM, Mexico

Social Representations of Information and Communication Technologies (ICT) in University Educational Practice

The objective of the research presented was to know how Information and Communication Technologies (ICT) represent education, teachers who teach contents of psychology in higher education institutions.

Many countries place ICT as a means to promote the quality of education and efficiency in learning, mainly because of the arguments presented in the report of the Organization for Economic Cooperation and Development (OECD, 2003), which range from economic arguments, as they consider the need for competent personnel in the use of ICT by the labor market; social arguments, which allude to ICT as a requirement to participate in a society in which online services are becoming more frequent; to pedagogical arguments, which ensure that ICTs favor learning by developing the ability to think independently, promote the management of one's own learning and the solution of problems.

However, the specialized literature on the use and appropriation of ICT in schools reveals that it is not enough to reinforce the political (official and institutional), economic, infrastructure, equipment or technological devices enabling factors to affect in the improvement of education and its transformation. The dominant trend in the introduction of ICTs in Mexican educational institutions reveals that, in general, the pedagogical conditions of traditional face-to-face education are reproduced with the provision of information on declarative and disciplinary contents (Monerero and Pozo, 2008; 2009; Díaz and Moran, 2011).

In view of the scarcely delineated problems regarding the use and appropriation of ICTs in education, an exploratory, descriptive and interpretative study was carried out based on a qualitative methodology, in which a semi-structured interview was applied to professors of various public and private universities of Mexico, with the objective of investigating their representations and the meaning they attribute to ICT in education, as well as the importance that from their perspective has to use ICT in the teaching and learning processes of the psychology of who participate, and where appropriate, the levels of use and appropriation of ICTs, as well as the limitations they face for their use.

The results show a generalized acceptance of ICT in educational scenarios by teachers, however, an instrumental and pragmatic use of ICT among teachers prevails. Although some consider that they are innovative and unavoidable and facilitate teaching and the teacher-student link, for others, they do not improve learning by themselves.

Zsuzsanna Demeter-Karaszi
PhD Student, University of Debrecen, Hungary
Gabriella Pusztai
Director of the Doctoral Program, University of Debrecen, Hungary
&
Eniko Maior
Dean, Partium Christian University, Romania

Church Contributions to the Transformation of Higher Education in Central and Eastern Europe

After three decades of the transformation process in post-communist countries the contributions of the churches to the new higher education systems and policies proved to be crucial. First of all, they had new visions on higher education influenced earlier by party-ideology. Secondly, they reached social-cultural groups that were not preferred by former party-policy. They put higher education closer to regions and territories considered not important by the former regimes (deprived territories with ethnic and national minorities, as well as religious minorities and minority denominations). With these inputs churches and denominations became the important actors of the new higher education policies as well as the transformation processes in the countries of Central and Eastern Europe.

In our research, we are investigating the answer for the question, how the managers imagine the situation of their higher education institutions in the international area of higher education full of competition. We interviewed managers of public and ecclesiastical higher education institutions from Hungary and also from the cross-border areas.

Cormac Doran
Head of Centre for Higher Education Research, Policy & Practice,
Technological University Dublin, Ireland

The Formation and Ongoing Work of The Centre for Higher Education Research, Policy and Practice (CHERPP)

This paper discusses the formation and ongoing work of The Centre for Higher Education Research, Policy and Practice (CHERPP). This is an international collaborative project hosted by the University of Ontario Institute of Technology (UOIT), Durham College, and the Technological University for Dublin Alliance (TU4D). The TU4D Alliance is a group of three Irish higher education institutions, the Institute of Technology, Blanchardstown, the Institute of Technology, Tallaght, and the Dublin Institute of Technology, that are going through the process of merging to form a Technological University.

CHERPP facilitates the Higher Education in Transformation Symposia (HEIT). The first HEIT was held in Dublin in March 2015, while HEIT 2016 was held in Oshawa in November 2016. A third HEIT symposium was held in Dublin in November 2018 concurrently with the European Conference on Universal Design. The fourth HEIT symposium is planned to return to Canada in November 2019.

There are over 40 active projects taking place by CHERPP Fellows under a number of higher education domain areas including:

    System and Institutional Design and Transformation
    Progression, Transfer and Recognition
    Teaching and Learning in a Digital Context
    Curriculum Development and Transformation: Skills, Learning
        Outcomes and Universal Design
    Supporting Student Access and Success
    Internationalization, Globalization and Exchange in Higher Education
    Cultural and Personal Identities
    Partnerships and Community Engagement
    Work Life, Careers and Professional Development
    Equity

Tanya Dove
Instructor, Hong Kong Polytechnic University, Hong Kong

Using MOOC to Facilitate Consistency in Teaching and Learning; Pattern Cutting and Sewing for Different Figure Shapes

Massive Online Open Courses (MOOC) provides a flexible and engaging learning environment. The development of MOOC was a result of the increased networking in the digital era. Tracey (2016) claims pioneer online courses were created in the realization of connectivism, a theory to complement other classical learning theories. During the learning processes, individuals can attain connections between resources, information and ideas.

A MOOC in Apparel Technology facilitates a comprehensive e-Learning platform, with a variety of instructional videos and technical resources, which will foster a technical foundation in pattern cutting and sewing for learners. Apparel technology is a core skill for fashion design students, however universities only address a limited range of construction techniques within their curriculum. Students work towards model size apparel for their graduate fashion shows, which limit the learner's knowledge in developing apparel for different body shapes. A MOOC in Apparel Technology would facilitate learners with the skills and knowledge to develop apparel for different sizes and figure shapes, with fit assessment and problem-based forums on fit solutions.

With many retailers now providing a global platform for the sales of clothing, the sizing of women's clothing is an area of concern in the fashion industry, 'one size does not fit all'. The inconsistencies in garment sizing can contribute to the dissatisfaction of garment fit, leaving women unable to find, or know, what size fits their body shape. MOOC incorporates an innovative design and e-Learning platform, in a less structured approach, which harnesses learning in an interactive setting, with online interactions prompting learners to collaborate, share ideas and examples, in a less structured environment.

Mary Ellis
Senior Lecturer, National Institute of Education (NIE), Singapore
Christopher Pang
Senior Lecturer, National Institute of Education (NIE), Singapore
Li Li Teo
Senior Lecturer, National Institute of Education (NIE), Singapore
&
Christian Chia
Senior Lecturer, National Institute of Education (NIE), Singapore

Higher Order Competencies and Augmented Realities

Educators know why higher order competencies (HCO) are critical. Curricular interventions for teaching and learning higher order competencies impact future employability and career prospects. What is less clear is how educators can support the acquisition of HCO using new and potentially disruptive technologies. Research consistently shows that classroom instruction alone is often insufficient and textbook-like eLearning tends to be ineffective in enabling HCO. As such, this study examined the use of one such technology, augmented reality (AR) for promoting HCO. The study investigated a novel pedagogy to infuse problem-solving and inquiry to attain higher business communication skills proficiency, namely prose and document literacy. Few studies have specifically explored the issue of literacy skill attainment in business studies using new technologies. Most studies focus on language acquisition or content knowledge rather than literacy as a skill. For this intervention, learners interacted with AR-transformed artefacts, learning activities and assessment tasks to activate problem-solving skills in a digital environment. The study reported how the use of different types of AR-enhanced scaffolding, which were contingent or just-in-time learning interactions learners could trigger – displayed explanations, guided instruction, and self-assessment – supported HCO development. A randomised controlled trial with pre- and post-proficiency tests was used. It was found that the experimental group of about 250 students, significantly improved their literacy skills compared to the control groups. It is thought that the experimental group achieved higher literacy proficiency due to AR being more intuitive and the different scaffolds allowed for a greater immersion into logical and critical thought. The learners that benefitted the most was those who achieved lower proficiency scores in the pre-tests. Contingent AR scaffolds enable learners to quickly and intuitively receive digital content, which facilitates skill development for self-directed literacy improvement. The triggered just-in-time access to visual information and instructions supplemented with text, guided learners towards higher proficiency attainment. AR shows

promise as an emerging educational technology for eLearning. This is significant because integrating new technologies like AR can help prepare learners who are increasingly differentiated at the workplace by their ability to communicate and work with digital information.

Francis Espinoza Figueroa
Associate Professor, Universidad Católica del Norte, Chile

The Impact of European Influences upon Received Countries: The Case of the Development of Domestic Policies in Chilean Education (HE)

The EU as an influential actor has a significant impact on non-European countries. Europe is considered as a 'model-maker' or 'model-offerer' impacting on Latin American Higher Education (HE) from the 'birth' of universities there, whilst Latin America has been seen as a traditional 'model-taker'. The EU seen as a 'global teacher' (Adelman 2009, 170) refers to a notion of the Union spreading and exporting its model beyond the geographical boundaries of Europe. It presents a powerful image of the EU as an international actor, endorsed it with a special capability, a force that manifests a pedagogic potential for establishing its (external) relationships.

Therefore, its power is not 'deposited' in its material capabilities for exerting physical strength, but rather it is to be found in its ability to structure/organise (to shape) knowledge. Besides, in a contemporary society of knowledge and information (Drucker, 1969), knowledge strategies are at vanguard of contemporary global politics. Knowledge must be the basis on which societies merge and economies prosper, competition for knowledge drives global race for talent (Chou, 2016).

This paper is part of my Project 'Fondecyt de Iniciación 2015 –2018'. N° 11150378 **"Higher Education (HE) in Chile as a strategy of international cooperation: analysis of American, European and Asian models".** In this article, *I examine the construction of a common space for higher education determined by the effects of adopting the European model on the formulation of domestic policies in Chile through the growth of European ideas circulating throughout the field of Latin American Higher Education (HE), as part of the Bologna Process, which has manifested itself in a set of procedures, methods and tools that have contributed to the transformation of Chilean HE.* This phenomenon requires a rigorous analysis of European ideational factors present within Normative Power Europe (NPE), not only through a cluster of ideas, norms, principles and values but also through analysing language.

Shujing Fu
Professor, Capital Normal University, China

Exploring the Reform for Cultivating System on the Master of Education Administration

It was established to the Cultivating system on the Master of Education Administration about "one orientation, two concerns and three levels".

One orientation: the orientation of the reform for Cultivating system on MEA is to cultivate high-quality application-oriented educational managers. Educational managers here include not only functional personnel specializing in management, but also teachers engaged in education, teaching and research.

Two concerns: In order to achieve the above goals, the reform focuses on the improvement of students' educational leadership and research ability. Managers and teachers should guide the development of education, teachers or students. They should have some abilities, such as ability judgment, decision-making, execution, inspection, sustainability, and so on. Managers and teachers should also have a high research literacy, be keen to identify problems, clearly identify problems, deeply insight into problems, and effectively solve problems, which can be achieved through research.

Three levels: In order to improve the students' leadership and research ability, three levels of "knowledge-ability-quality" are determined. The three levels are progressive progression and spiral upward. Knowledge cultivation is achieved through classroom teaching, reading papers for students, writing reading notes for students and holding regular reading exchanges. Ability cultivation is realized through case teaching and practical training in work. Comprehensive quality cultivation is carried out in a multi-channel and three-dimensional way. We regularly let students sort out their actual management work, let them sum up their experience, find out the problems, and also use the opportunity of training principals and teachers to exchange management experience with students, so as to improve their comprehensive quality.

Kerri Heath

Assistant Vice Chancellor, Pepperdine University, USA

Exploring the Intersection of Inclusive Leadership and Workplace Spirituality at a Faith-Based Institution of Higher Education

The world is shrinking as a result of advances in technology and globalization. Humans are more connected than ever before, and organizations are growing in diverse representation... yet isolation persists. Inclusion, however, can take this new reality to another level of productivity and providence. It is not sufficient for a company to be diverse in the makeup of employees, inclusive leadership must accompany diversity in order to create an environment where all employees can thrive. Many organizations focus on attracting diverse employees, but then struggle to retain them because there is not an inclusive workplace culture (Janakiraman, 2011). Surprisingly, organizations with highly diverse workforces that refuse to design an inclusive environment are likely to be more dysfunctional than organizations without diversity at all (Janakiraman, 2011). Faith based institutions have established techniques for acceptance and inclusion, so come to this workshop to find out more about research on the intersection of workplace spirituality and inclusive leadership from leaders at a "Top 50" faith-based institution in the United States.

Research suggests that diversity policies and procedures are not able to create inclusive environments. The mindset of leaders determines the creation of an organizational culture that is inclusive (Janakiraman, 2011). Pelled, Ledford, and Mohrman define inclusion as "the degree to which an employee is accepted and treated as an insider by others in a work system" (1999, p. 1014). It is a specific form of relationship with "leaders who exhibit openness, accessibility, and availability in their interactions with followers" (Carmeli, Reiter-Palmon, & Ziv, 2010, p. 250). Roberson suggested that inclusion is "the removal of obstacles to the full participation and contribution of employees in organizations" (2006, p. 217). Miller refers to inclusion as the extent to which diverse individuals "are allowed to participate and are enabled to contribute fully" (1998, p. 151).

Lirio, Lee, Williams, Haugen, and Kossek describe the state of inclusion, "when individuals feel a sense of belonging, and inclusive behaviors such as eliciting and valuing contributions from all employees are part of the daily life in the organization" (2008, p. 443). A study was done at a private, faith-based institution of higher education in the United States of America to explore self-actualization through the intersection of workplace spirituality and inclusive leadership. The presentation will

include findings from this study, and the characteristics of inclusive leadership and workplace spirituality from around the globe.

Erik Hedlund

Associate Professor, Swedish National Defence College, Sweden

A Generic Pedagogic Model for Academically based Professional Officer Education

After the end of the Cold War many European countries cut back heavily on defense expenditures. These cutbacks resulted in some individual EU member states' armed forces becoming so small that they lost their capacity to defend themselves. This resulted in greater need for more cooperation and better interoperability among member states' armed forces and their officer education systems. This article presents a proposal for an EU common generic pedagogic model for academically professional officer education that can meet both the requirements of higher education systems as well as the demands of the military profession.

The generic pedagogic model could also be useful in solving the clashes in professional officer education between: theory and practice. The intention with this article is to invite scholars and professionals to join a constructive and fruitful discussion and dialogue to further develop the pedagogic model presented.

Patricia Holt
Professor, Georgia Southern University, USA

Helping Students Identify and Overcome Negative Emotions in the University Classroom

The Imposter Phenomenon (IP) is the feeling of fraudulence that many adult learners experience in the university setting. First identified by Clance and Imes in the 1970s, IP refers to an uncomfortable and, for some, a debilitating, feeling of fraudulence. IP is defined by the following characteristics: 1.) Feelings of intellectual phoniness, 2.) A belief that one's success is attributed to luck or hard work rather than ability, 3.) A lack of confidence in one's ability to repeat past achievements, 4.) A fear of being evaluated by others, 5.) The inability to derive pleasure from past achievements, and 6.) A fear that one's incompetence will be discovered by others (Clance & Imes, 1978).

The demographics of the university landscape have changed rapidly in recent years as career changers, first generation college students, and students from minority backgrounds enroll in increasing numbers. However, despite their differences in socioeconomic status, age, ethnicity and more, many college students share the experience of feeling as though they are an imposter. In fact, the majority of people, 70%, admit that they have felt like an imposter at some point in their lives (Gravois, 2007). The Imposter Phenomenon (IP) is a condition that is not restricted to individuals of a particular age, gender, race, or profession. Due to its prevalence, IP has become a concern for many professionals working with adult learners (Brookfield, 2006), and this concern is reflected in the literature. Research on IP generally examines the phenomenon among adult subjects, particularly, college students.

Recent research indicates that IP is not an experience exclusive to adults and may manifest in children at an early age. The development of IP may share a relationship with traumatic childhood experiences, which have been associated with numerous psychological and physical health problems in adulthood.

This presentation is based on a study that explores the development of IP and the relationship the phenomenon may share with negative childhood experiences. It goes on to discuss methods for helping adult students overcome these negative emotions that can have a detrimental outcome if not dealt with early in a student's career.

Gerald Kagambirwe Karyeija
Associate Professor, Uganda Management Institute, Uganda

Dynamics of Internationalization of Higher Education in Emerging Economies: Experiences from Uganda

Internationalization has become very critical for the development and survival of Higher education institutions globally, and there are unique experiences faced by emerging economies like Uganda. The dynamics have come as a double edged sword: promoting into the global network, but also stiff competitions for scarce resources. This is manifested in internationalization initiatives such as staff exchanges, co-taught courses and degrees, collaborative research projects and student exchanges. These come with a cost, which competes with other initiatives in higher education institutions. Nevertheless, the internationalization in Uganda has registered a number of achievements such as increased exposure if faculty, increased research, joint projects and collaborations and international ranking. Nevertheless, we need to examine the value of internationalization so as to determine how best we can benefit from it from global; perspective with a local concern. This paper will be based on experiences from Ugandan academics and administrators who are involved in internationalization projects.

Maria Vincent Kaguhangire-Barifaijo
Head of Department, Uganda Management Institute, Uganda
&
James Luyonga Nkata
General Director, Uganda Management Institute, Uganda

Collegial Co-operation Turns Toxic: Implications for Higher Education Institutions

This paper is part of the larger research that investigated the impact of toxicity on collegial co-operation in higher education institutions. The authors argue that over time academics' social and solidarity relations have existed among colleagues since the medieval times, and cooperative interaction among colleagues has been a key motivator to staff. The authors found that although toxicity has diminished academic enthusiasm and engagement, it has not been thoroughly given attention by higher education researchers. The paper discusses the relevance of collegial cooperation among academic professionals as a recipe for students' quality and progression. The implication of toxicity on productivity in HEIs was exhaustively explored. The authors found that although institutions have clear disciplinary guidelines on how to deal with visible disruptive behavior, toxic behavior has continued to damage institutions and its people, yet has hard-to-measure costs which continue to affect staff fortitude, as well as institutional stability. Study findings indicate that toxicity, if not checked, may harm institutional image and integrity, individual academics, partnerships and all those who are not direct targets - such as students and close associates of the victims. Findings further revealed that in such a toxic work environment, retention, stability, succession planning and sustainability were next to impossible. It was therefore concluded that toxicity was majorly fueled by the minority of assumed academic '*rock stars*' who use these processes in order to accumulate their own privilege at the expense of presumed "*academic precariat*". The paper further concludes that to a large extent, toxicity was driven by impostors who for fear of failure, power driven and an obsessive need for perfection will at all cost masquerade as the only "stars" in the institution competent enough to solve every problem. The authors further conclude that the "*impostor phenomenon*" is bred from a mix of genuine personal doubt over work abilities and the collective experience of a toxic work culture. It was further concluded that, the toxins suffer from "*identity crisis*" by belonging "*everywhere and nowhere*" in particular, when it comes to disciplines which influences their complex. The paper therefore recommends that despite the gravity of toxin cases, institutions need to tighten their grips on their values in order not to lose sight of the way these experiences are likely to cause burn-out, diminish

staff fortitude, engagement, productivity, retention, as well as academic standards.

Yuanyuan Li
Postgraduate Student, Sichuan University, China
&
Xuehong Wan
Professor, Sichuan University, China

A Research on the Motivation and Satisfaction of International Students on Studying Medicine in China

Since the 1980s, China's overall national strength and global influence are growing, and the internationalization of higher education is advancing. More and more international students choose to study in China. By the end of 2017, the total number of the international students in China had reached 489,200, including 241,500 students with academic degrees, in which 61,800 students with medical degrees, accounting for 25.59 percent of the total number of foreign students with academic degrees, making it the major that students with academic degrees choose the most. Influenced by age, language, learning environment and their own cognitive level when studying abroad, these medical international students show diverse characteristics in motivation and experience of studying abroad. This study investigates the motivations of foreign students studying in China and the satisfaction of studying abroad, explores ways and means to guide the motivation of foreign students, analyzes the current deficiencies and improvement measures of international students' education development. It is of great practical significance to the education and management of international students and the improvement of their educational quality.

This study mainly uses questionnaires and interviews. Based on the literature basis and the development of medical education in China, the survey scale and interview outline were designed. Based on the geographical location, nature and school-running level of the school, 10 Chinese universities that received Chinese medical students were selected as the source of research samples, to investigate the motivation and satisfaction of international medical students in China.

The main findings of the survey are: the main reason why international medical students study in China comes from the attraction of Chinese social culture and social development conditions and the pursuit of overseas education experience; On the whole, the medical education in China has reached the basic satisfaction state of international students, and individual background characteristics such as school level and academic level of medical students have an impact on their satisfaction with education experience. Based on the research conclusions, this paper puts forward some Suggestions to promote the development of medical education in China from five aspects: education input and quality control,

enrollment, social integration of medical students in China, life service system and the quality of international medical education.

Zhimin Liu
Professor, Nanjing Agricultural University, China
Shunshuan Hu
PhD Student, Zhejiang University, China
&
Song Zhang
Section Chief, Nanjing Agricultural University, China

On the Relationship between China's Agricultural Higher Education and the Industrial Structural Adjustment

In recent years, China's higher education has made remarkable achievements on the scales of expansion and connotation development. The gross enrollment rate of higher education in China has continued to grow rapidly with up to 45.7% in 2017. However, the reality is that, higher education in China is facing the dilemma of "Too big to being not strong". This is an indication that the quality and scale of higher education is highly uncoordinated as is with the structure which displays an obvious mismatch with that of the industrial sector.

As China's economy has entered a new norm and the structure of the industrial sector has gradually changed, the agro-related enterprises have developed rapidly in the participation of market-oriented competition. The demand for talents in the agricultural industry has undergone profound changes in terms of quantity, quality and structure. According to our independent survey, the types of agro-related enterprises are concentrated in agricultural product processing enterprises that provide production materials and services for agricultural production. The development of modern agriculture has further integrated agriculture and service industry, which poses new challenges to the structure of agricultural higher education. Therefore, this paper attempts to clarify the mismatching on the relationship that exists between agricultural higher education and economic restructures in China through the analysis of the employment data in the agricultural industrial sector. This paper uses Web text mining technology to obtain a large amount of recruitment data from the recruitment website(zhaopin.com) for a collection of about 8290 effective recruitment data by using the kernel density estimation, word frequency statistics & keywords extracted specific methods to analysis the data.

The result shows that 65.3% of the starting salary is concentrated in USD $ 291-437 ; 582-728, respectively; 24.2% of the positions recruit agronomy workers, and more R&D jobs are required for graduate education; agro-related jobs are mostly offered by developed or capital cities; it is the demand ratio respectively for college students, undergraduates, masters and Ph. Ds. 5.80: 3.29: 0.81: 0.09.

Through this analysis, we found that there is a notable mismatch on salary, majors, regions and degree structures, but match exists in the ability structure by and large. Specifically, the monthly salary expectation of recent agro-related graduates is slightly higher than that of agro-related enterprises offered, working positions and majors of graduates display a constant mismatch there exists an over-education phenomenon in higher agro-education, the level of economic development is an important factor on choosing career of graduates and the ability requirement of market's for graduates is mismatched with the cultivating goal of university.

Adina Mannes
Lecturer, Bar-Ilan University, Israel

The Confused Professional Identity of Native and Non-Native EFL Teacher Educators: Are They Teachers or Researchers?

The demands of teacher educators underwent a major change. They not only are required to excel in teaching, but also to conduct research as an essential part of their professional life. This ambivalence raises questions regarding their professional identity. How can they identify with their profession if their roles keep changing? Two native and two non-native EFL teacher educators were interviewed about their perception of professional identity regarding being a researcher or a teacher and whether the demand to excel relies also on personal background factors such as being a native English speaker. The results indicated tension between research and teaching, which is a cause of frustration for EFL teacher educators. As for the issue of personal background, most of the interviewees did not believe that such factors are crucial. However, everyday reality in their colleges, where there are more native than non-native English speaker teachers, shows otherwise.

Philisiwe Juliet Mchunu
Lecturer, Durban University of Technology, South Africa

Students' Reflections on Collaborated Project-based Learning in the Department of Ecotourism

The students at Universities of Technologies (UOTs) often come from previously disadvantaged communities. The schools they come from often are not well resourced. The level of academic depth in the curricula in these schools is uneven. UOTs have to bring the academic level of these students on par with national and international benchmarks using appropriate pedagogical techniques that ensure the students have the sound quality education as they would receive from any reputable university. This paper sought to find out the reflections on learning, using Gibbs reflective cycle for 120 undergraduate Ecotourism management students at the Durban University of Technology. Gibbs reflective cycle was also used to analyze the findings. The students' reflections were centered around their major marketing project (developing a marketing plan), on how the section was taught and assessed. In the past, this marketing module has been one of the most challenging for students to grasp, apply the theory and to pass. Using sticky notes/post-its to encourage participation in student focus groups, the paper reflected the effectiveness of a collaborated project based learning (CPBL), using sequential phases in grading the assignment to help improve students' learning of the selected marketing concepts. The paper also sought to examine how difficult or easy it was for the students to apply marketing theories, and how helpful the teaching methods used were in achieving their final project grade. The findings suggest that the marketing plan is not just any project, but it is a form of industry training. Project based learning prepared and empowered them about challenges in the marketing industry. Good team collaboration, growth in students' confidence, and being able to work under pressure, were some of the best benefits students expressed. They felt they obtained 21st century skills they did not have prior to the project.

Abdeljalil Metioui
Professor, Université du Québec à Montréal, Canada

Developing a Two-Tier Diagnostic Instrument to Assess High School Students' Understanding Newton's Laws of Motion and Law of Universal Gravitation

Research conducted around the world demonstrate that pupils aged from 7 to 12 years their conceptions about force and motion are erroneous compared Newton's laws of motion (Métioui & Trudel, 2017; Hast and Howe, 2012). The misconceptions commonly identified in these researches are: moving objects must necessarily have forces exerted on them to keep them moving; force exerted on an object is proportional to its speed; a moving object stops when, the applied force is exhausted; heavy objects necessarily fall faster than lighter objects. Unfortunately, such conceptions are deeply ingrained and survive formal teaching. To explain this failure, three major problems were identified by many researchers (Coppens and Munier 2005, OECD 2005): teacher training in didactics; time constraints related to the schedule for teaching; and the high number of students in a class. To overcome these problems, more and more researchers develop a two-tier and three-tier test to diagnose students' misconceptions rapidly (Hestenes & Wells, 1992; Coppens et al., 2009). Such developments help teachers to diagnose their students' misconceptions as identified in the international literature review. This research is part of this approach and has two goals, firstly, we constructed a questionnaire to identify 120 Quebec secondary students' conceptions regarding the Newton's law of motion. For this purpose, we proceed with classical methods such as paper-pencil questionnaire. The questions asked (N = 8) were based on the works done worldwide mentioned above. The students should write True or Wrong beside each question, and then justify their choice. To analyses their justifications, we grouped the responses into categories that ranged from four to six, depending on the question. The misconceptions identified are presented in the two-tier diagnostic test developed below. Secondly, we develop a two-tier test to diagnose the high school students' conceptions. For that, for each question studied with secondary students, we retained only four response categories (one is right, and the others are wrong). Thus, we have eliminated those that are not representative of all students, such as the one grouping only 2 or 3 out of the 120 respondents and those grouping the answers indecipherable, off-topic or incomplete. For each question, the student must assess the veracity of the statement (true/wrong) and then choose from four categories of answers which are confirmed with his initial choice of solutions.

Luigina Mortari
Professor, University of Verona, Italy
&
Marco Ubbiali
Temporary Assistant Professor, University of Verona, Italy

Service Learning:
A Philosophy and Practice to re-Frame Higher Education

In order to give an answer to the call of the Agenda 2030 (UN, 2015), higher education has to assist in giving form to a new society in which democracy is cultivated both in minds and practices. This democratic education must be an answer to that drift that philosophers and sociologists describe about our contemporary society, which is characterized by indifference (Baumann, 2005; Morin, 2007), scarce perception of the other (Boella, 2011; 2018), no disposability to engage for the common good and to respect the law of democratic coexistence (Pulcini, 2009; De Monticelli, 2010; 2011; 2015). This vision is enrooted in a not explicit individualistic ethic, in which the idea of "good life" consists in self-affirmation (Baumann, 1999): this individualistic way of living is one of the worst risks for democracy (Beck 1998). Educational practices are very often aligned to this trend so that they are planned with the aim of developing competences useful for individual success and economic improvement of society (Mortari 2017a, p. 15): education assumes the form of a "banking model" (Marullo and Edwards, 2000, p. 746).

In order to give a significant answer to the globalization and to the loss of significance of the common life in the global village, it is necessary to imagine a new vision of education intended as the offering of a rich meaningful experience, able to give form to a "good person" and a "good society". The classical virtue ethics by Plato/Socrates and Aristotle is a valid theoretical framework for this purpose. According to these classics, in fact, education is intended as *epimeleia*, the care that cultivates the being of everyone (Mortari, 2015). i.e. the flourishing of the human person in all its aspects: cognitive, social, affective, spiritual and political.

Since, as Aristotle states, the human being is a political animal, a good and complete form of education should mainly cultivate the feelings and values that give form to the community: in particular, the virtues of responsibility, solidarity and friendship that is the most important one (*Nichomachean Ethics*).

However, education is a practice: that is why we need to plan and design educative experiences able to translate theory into actions. According to Dewey (1993), education arises from experience, i.e. through the contact with the real world (and its problems and chances) and reflection (that gives sense to action). In particular, this experiential

education should be aimed at teaching not only technical or cognitive skills, but also the competences that educate people to become engaged citizens (Dewey, 1974).

The practice of Service Learning is a very interesting model that allows to these theoretical premises to have a practical and educative organization. Many researches, in fact, show how it can be considered both a philosophy of education as well as a didactic method that can be adopted in very different academic courses (see the literature review by Ubbiali, 2017).

In the University of Verona (Italy) we have been conducting for 5 years a SL experience for pre-service teachers, during their training in the Combined Bachelor's + Master's degree in Primary School Education. Since this SL project is set in a course for future teachers, it has a double responsibility, one for pre-service teachers and the other for their future pupils: a sort of "education to education" to ethics and civic engagement.

The paper will present the theoretical basis and the SL practice developed in Verona, also showing the quality of the learning attested by the students involved.

Hanna Ragnarsdottir
Professor, University of Iceland, Iceland
Anh-Dao Tran
Adjunct Professor, University of Iceland, Iceland
&
Susan Rafik Hama
PhD Candidate, University of Iceland, Iceland

From Non-Policy to Practice: Staff's Perspectives on Teaching and Supporting Students of Immigrant background in Icelandic Universities

Research shows that one of the reasons behind immigrant participation in higher education is positive attitude and motivation for better integration within the society (Geiger & Lund, 2010; Nordisk Ministerråd, 2004). Access to education for immigrants is crucial in counteracting their marginalization and isolation, encouraging active participation in society, and ensuring societal equality. However, according to the *Bologna Process Implementation Report*, the percentage of immigrants pursuing and completing tertiary studies is still considerably lower than native-born students (European Commission/EACEA/ Eurydice, 2015).

The increase in number of immigrant students in Icelandic universities (Statistics Iceland, 2018) calls for a response from university authorities, teachers and campus communities which needs to be cognizant of various hindering factors, including language difficulties, cultural precepts and social marginalization (Anderson, 2008; Rizvi & Lingard, 2010). Key prerequisites for improved access are suitable teaching methods for diverse student populations, understanding the need of individualized support for students, and responsive administrative infrastructure (Lillie, 2013; Ragnarsdóttir, 2010). Findings from document analysis suggest that while the policies and other official documents of Icelandic universities reveal an awareness of the diversification of their students there is little documentation and evaluation available on how these universities are addressing student diversity in practice (Wozniczka & Ragnarsdóttir, 2016).

The aim of the paper is to explore staff's perspectives on teaching and supporting students of immigrant background in Icelandic universities. This paper derives from the qualitative research project *Educational aspirations, opportunities and challenges for immigrants in University education in Iceland* (2016-2018) funded by the Icelandic Research Fund. It is framed within critical multicultural studies which focus on the analyses of the position of minority groups in societies from a critical perspective on these societies and their educational systems (Parekh, 2006).

The theoretical background of the paper includes Bourdieu's (1988, 1991, 1996) work on cultural capital, his concept of habitus and Institutional space. The concept cultural proficiency, which focuses of viewing diversity as a resource and interacting knowledgeably and respectfully among different cultural groups (Lindsey, Roberts & Jones, 2005) and writings on teachers and faculty members as facilitators for diverse learners (Knowles, Holton & Swanson, 2005) are also applied.

Data was collected in semi-structured interviews with 16 teachers and support staff (including student counsellors and representatives of international offices, equal rights committees and other entities within universities) at three Icelandic universities. This paper presents the findings of the interviews with the staff.

Findings from the interviews indicate, that despite unclear policies and the lack of training of staff members on how to embrace diverse learners, many staff members use their own professional and personal experiences for teaching and providing support for students of diverse background. The staff expressed the importance for being culturally sensitive when communicating with students of immigrant background. However, findings also showed that many staff members do not make the distinction between immigrant students who consider Iceland as their home and international and exchange students.

Alice Sanna
PhD Student / Research Assistant, Catholic University of Louvain, Belgium
&
Marcel Gerard
Professor, Catholic University of Louvain, Belgium

Brain Drain vs. Return Rate, an Assessment of the Ecuadorian Scholarship Policy

The mechanism adopted by countries all over the world, for financing students' mobility, is mostly based on either the host country principle, or on the alternative country of origin principle. Both systems have their own properties but both also exhibit inefficiencies due to externalities that they produce.

In this paper we propose an in depth examination of the system at work in Ecuador, a Latin-American state. Therefore, after a description of the system, including a first assessment using data and statistics, we use a model to evaluate the main characteristics of the Ecuadorian device. That system, launched in 2007, provides scholarships allowing Ecuadorian graduates to benefit from postgraduate studies abroad. However, after obtaining their master or PhD degree abroad, new highly skilled Ecuadorians are incentivized to return home and serve their country for a minimum period of time. Otherwise they have to repay their scholarship, plus a penalty. A penalty also applies should they decide not to come back home after final graduation. That system seems to be efficient but raises issues in terms of efficiency and fairness. To keep the discussion as close as possible to the real issues, we use a very careful formalization of the behavior of the Ecuadorian students and the Ecuadorian state, as well as of the country where tertiary education is conducted and which may want to keep the postgraduates in its territory.

Lessons from that experience are put forward and used for suggesting the design of an efficient and fair international Higher Education.

Government objective function is described in terms of return rate. Variables influencing student choices, who maximizes utility, include ability, family wealth, possible degree of homesickness (or conversely sweetheart effect) while among instruments available to the Ecuadorian government, to reduce the distance between his and students' optimal designs (especially in terms of return rate), we have compulsory length of the return period after final graduation, and the level of the penalty. Repaying the scholarship and penalty is also an instrument in the hands of the foreign government and the companies operated from its territory.

Jeremy Schnieder
Director for the Center for Teaching and Learning, University of La Verne, USA
&
Jessica Tinklenberg
Program Director, The Claremont Colleges Center for Teaching and Learning, USA

The Intentional Alignment of Current and Future Faculty Development Programs to Produce more Equitable Student Learning Outcomes

Higher education in the United States has a reputation for not preparing graduate students nor for providing faculty with the support needed to be effective classroom teachers. The result of such poor preparation is often less equitable student learning outcomes, especially for first-generation and other under-represented student populations in American colleges and universities. To better prepare faculty to teach students effectively, faculty developers of the Claremont University Consortium have developed a highly collaborative model of professional pedagogical development which 1) intentionally emphasizes connecting graduate students with undergraduate full time and contingent faculty in meaningful and mutually supportive ways; 2) builds, supports, and shares classroom "lab" spaces in which both faculty and grad students can learn and improve upon their high-impact teaching practices; 3) embeds equity and inclusion frameworks into all shared and separate development opportunities, and 4) purposefully attends to the social and emotional dimensions of teaching, whether before or after the PhD is in hand. In this paper, we will offer an analysis of this ongoing multi-campus collaboration between current and future faculty, the challenges of such a model, and the ways in which this model might make student success in higher education more likely, especially for under-represented groups.

Thea Schoeman
Lecturer, University of Johannesburg, South Africa

Can Higher Education Institutions Contribute to Teachers' Knowledge, Skills and Teaching of Geographical Information Systems in South Africa?

The importance and potential of Geographic Information Systems (GIS) as a field within Geography, was recognized by the South African Department of Basic Education when it was included within the Geography syllabus in 2006. Diagnostic reports of the national final examination indicate that the fundamental knowledge of GIS is lacking amongst teachers and that they are not familiar with GIS. A more detailed analysis of the 2016 diagnostic report indicates that the average for the GIS section was 43% and the question of the practical paper in which learners performed the worst. Due to this skill shortage of teachers, the University of Johannesburg developed a short learning programme to train teachers in GIS. Often training in GIS did not form part of teachers' studies at tertiary institutions as it is also a relatively new field of study at universities in South Africa. The use of technologies such as GIS are encouraged in a school environment. Furthermore, GIS are knowingly and unknowingly used in everyday life – e.g. in the use of location-based services such as Google Maps, Google Earth and Uber. A total of 56 Gauteng teachers that teach Geography attended this programme and evaluated its contribution to their knowledge and skills in GIS at the end of the programme. Before the programme, a staggering 76.8% of teachers indicated that they have never received any training in GIS – some even admitting that they 'left out' and did not teach the GIS part of the syllabus in the classroom. Vast improvements in teachers' levels of competence were recorded in the self-evaluation done by teachers. For e.g. before the course only 27.8% indicated that they have a moderately high to high level of competence regarding the different components of a GIS. After the completion of the course 100% of respondents indicated these levels of competence. Vector and raster data models recorded a very low (9.3%) moderately high level of competence, while none of the teachers indicated that they had a high level of competence. This improved to 87.3% with only 12.7% evaluating themselves on an average level of competence. The results of the self-evaluation clearly show that attending a short learning programme in GIS significantly improved teachers understanding and skills of GIS. With 276 771 learners that wrote the Geography national final exam in 2017, and with only 27.3% of candidates achieving 50% or more, there is a great need for upgrading the skills of Geography teachers. Tertiary institutions can positively contribute to the upgrading of skills of

Geography teachers. Not only in GIS, but across the different sections of the Geography syllabus as well as in other provinces in South Africa.

Gayil Talshir

Head, The President's Program for Academic Leadership, Department of Political Science, The Hebrew University of Jerusalem, Israel

The Role of Education in Democracy

Higher education is the economic engine in the knowledge post-industrial society. While it therefore function as the power behind globalization, it also has a viable role in advancing democratic culture. On the face of it, the values at the basis of the enlightenment – freedom of expression, exploration, creation of knowledge, criticism, nonconformism, equality etc. – are th bedrock of both the global market and higher education. Still, the spirit of criticism and the individual rights discourse is essential for democracy yes creates two different conflicting cultures – the market, consumer approach and the civic political approach. These are two distinct forms with different sub-sets of values.

How important is it to develop the role of the dissenting intellectual as part of higher education? What ios the role of politicizing students, and is it forbidden or part and parcel of the mission of higher education?

Marco Ubbiali
Temporary Assistant Professor, University of Verona, Italy
Luigina Mortari
Professor, University of Verona, Italy
&
Roberta Silva
Temporary Assistant Professor, University of Verona, Italy

Redesign pre-Service Teacher's Training: A Systematic Literature Review on Service Learning Practice

This paper has a double purpose: to explain how a systematic literature review (Petticrew & Roberts, 2006) is useful in educational research and present the results of a systematic literature review on Service Learning (SL) in pre-service teacher's education.

The specificity and purpose of pedagogical research is often object of discussion: many authors affirm that it is useless for practitioners and politicians when they need to understand what works in educational field (Mortari, 2017). An answer to this critic consists in carrying out a systematic literature review, inspired by the long-established medical reviews practices (Bennet et al., 2005). A systematic review is, in its essence, a research applied in cases of uncertainty about the efficacy of a practice, at the first steps of a policy development, when there is a large number of researches on the object that need to be systematized in order to orient new researches (Petticrew & Roberts, 2006).

Adapting the 7 steps proposed by Petticrew & Roberts (2006), we carried out a systematic literature review on the practice of Service Learning, starting from a very simple (but essential) question: "What does characterize the practice of Service Learning in pre-service teacher's education?". In our research, we have identified two groups of articles: papers on practices and theoretical papers. Papers on practices are characterized by narration of experiences in different educational contexts, with or without researches on them. The research articles presented qualitative and/or quantitative surveys: the quantitative ones have not been analyzed because the positivistic paradigms on which they are rooted is not able to attest the quality of a living experience, as an ecological paradigm can do (Mortari, 2007).

Thanks to this literature review, we could conceptualize a theoretical framework of what Service Learning is, with its own characteristics, and collect practices and researches on SL applied to pre-service teacher's education. In international literature, SL is very often applied to pre-service teacher's education in different ways (Hallman & Burdick, 2011; Hart & King, 2007; He & Prater, 2014; Root, 1997; Ryan & Healy, 2009; Seban, 2013). Moreover, researches on this program show how it is useful

to achieve different educational goals concerning different dimensions: cognitive, social, emotional, professional and civic engagement goals (Baldwin, Buchanan, & Rudisill, 2007; Carson & Domangue, 2013; Conner, 2010; Cooper, 2007; Hale, 2008; Jones & Hill, 2001; Lake & Jones, 2008; Myers-Lipton, 1996; Theriot, 2006). In particular, SL gains important learning outcomes for teachers: a deeper comprehension of society (Kahene & Westheimer, 1996), the deconstruction of stereotypes and stigmas (Baldwin et a., 2007; Barton, 2000), the attention towards students with different cultural backgrounds or coming from disadvantaged areas (Hunt, 2007; Carrington & Saggers, 2008), the education of pupils with special needs (Russel, 2007), the bulding of learning communities between pre-service and in-service teachers and the community (Swick, 2001), the awareness of social justice problems in society (Donahue, 199; Stamopoulos, 2006).

Francis Wagaba
Chemistry Teacher, Darwin High School, Australia

Action Research: The Use of Metacognitive Strategies to Enhance Learning in Year 9 Science

An action research study was designed to evaluate the effectiveness of providing metacognitive support to enhance Year 9 students' metacognitive capabilities in order to better understand science concepts related to light, environmental health, ecosystems, genetics, ecology, atoms and the Periodic Table. The study was conducted over three years involving 35, 20 and 24 students in each year. The interventions included providing students with clearly stated focused outcomes about the relevant science concepts, engaging in collaborative group work, reading scientific texts and using concept mapping techniques. The data to evaluate the effectiveness of the metacognitive interventions were obtained from pre- and posttest results of the *Metacognitive Support Questionnaire* (*MSpQ*). The results showed significant gains in the *MSpQ*.

John Widdowson
Principal & Chief Executive, Chair of Mixed Economy Group of Colleges, New College Durham, UK

Degree Apprenticeships: First Steps into New Territory. What have we learned so far?

English Further Education colleges have been the main providers of Apprenticeship courses for much of their history, drawing on their Level 2 and Level 3 trade training roots. They are therefore well-placed to respond to the new emphasis on higher technical skills promoted by the current (Conservative) British Government, an enthusiasm also shared by the Labour and the Liberal Democrat Parties.

Higher Apprenticeships, i.e. Level 4-5 qualifications, build on this expertise and are offered by many Further Education colleges with experience of delivering Higher Education. Degree Apprenticeships, which began in 2015, present new but accessible territory which blurs the line between academic and vocational education.

Using their extensive experience of Apprenticeships, how can colleges consolidate their role in this particular area of higher technical skills development?

This session emerges from recent published research by the Mixed Economy Group of Colleges (MEG.) It highlights the extensive experience of MEG members in designing, delivering and marketing Degree Apprenticeships. MEG constitutes 40 colleges, each with a minimum of 500 FTE HE students, most with over 1,000, and three with over 2,000 HE students. Five members have Foundation Degree Awarding Powers and two have full Degree Awarding Powers. All are delivering Higher Apprenticeships: roughly half are either finalising validation agreements for Degree Apprenticeships or are in the first year of delivering them.

We will discuss the Group's current experience of delivering work-based HE from an HE in FE perspective. Degree Apprenticeships are a new phenomenon, requiring an institution to have both Degree Awarding Powers and sustained experience of working closely with employers. They involve two quality assurance agencies and a Government agency (the Institute for Apprenticeships) which, whilst familiar to colleges, is largely unknown to universities. In theory at least, Degree Apprenticeships bring a number of people, agencies and intuitions together. Or do they? We will cover the following key areas:

- What challenges are faced in the marketing of Higher and Degree Apprenticeships?
- What do employers want from Degree Apprenticeships?
- What do Degree Apprentices expect?

- How can colleges meet the needs of employers and employees involved in the delivery of Degree Apprenticeships?
- What dexterity is required from colleges to support staff to ensure the successful delivery of higher level skills? How can they balance academic elements, workplace demands on Apprentices, complex student assessment, and such matters as quality assurance and formal funding regulations and controls?

Bill Glenny Wullur
Assistant Professor, Universitas Klabat, Indonesia

Academic Competence and Teaching Performance of Practicum Students in a Teacher Education Program

This research aimed to find the relationship between academic competence and teaching performance of practicum students in a teacher education program. A standardized 5-scale scoring rubric was used by raters to elicit scores of teaching performance. Respondent were 238 students who finished their practicum in the last eight semesters since 2012. Data treatment included mean score, Pearson correlation, t-test and ANOVA at α .05 significant level.

This study found a very high level of teaching performance teaching performance, a high academic competence, and a weak positive correlation between the two variables. The teaching performance scores increased every semester year and were higher on lab-schools than regular schools. Among the raters' roles, examiner gave lower teaching performance scores than the principal, mentor teacher and advisor. The recommendation included introducing performance-based task for basic educational courses, and a better understanding of rating standards for evaluators.

Annabel Yale
Lecturer, Edge Hill University, England, UK

Quality Matters: Personal Tutoring in a UK Higher Education Context from the Student Perspective

The research explores the personal tutor-student relationship in a UK higher education (HE) from a first-year undergraduate students' perspective. The quality and nature of the personal tutor-student relationship and how it develops is investigated through interviews and in-depth Interpretative Phenomenological Analysis. The research reveals new insights into the ongoing effectiveness of the personal tutor role and students' perceived worth of the relationship which go beyond that specific relationship to impact on wider student outcomes. What this means for HE institutions and the potential impact on personal tutor practice and provision are explored.

In the current and increasingly marketised UK HE context, the research highlights that personal tutoring is crucial given its potential to positively influence both student outcomes and institutional measures of success. The researcher challenges the underlying assumptions within student support mechanisms and how these position students. Constructing notions of students as either autonomous and independent learners, or as in need and dependent, has implications and consequences for students, tutors and the institution. It explores moving towards reconstructing more helpful discourses and provides suggestions on how the personal tutor role can be better utilised by HE institutions to empower both students and personal tutors.

Chuan-Rong Yeh
Assistant Research Fellow, Research Center for Indigenous Education, National Academy for Education Research, Taiwan

Exploring the Competition in Education

Competitiveness is a human biological instinct. In the context of school education, competition is not an objective, but rather a means or strategy frequently used to achieve certain educational goals and extrinsic cultural education. Therefore, competition occurring within this context often invites the controversy of being viewed as virtuous or vicious. This often renders ambiguous the nature and meaning of educational competition.

This article aims to reveal the true nature of Taiwanese educational competition and to highlight a less-known role of educational competition in an educational context. Firstly, the study begins with an explanation of the nature and meaning of competition, and then discusses the relationship and interaction between, and attitudes toward, education and competition. Later, a macro-level view of inter-national and inter-school educational competition that emphasizes social structure and market mechanism will be explored. Finally, through a micro-level view focused on school education or education within the classroom, educational competition occurring at an inter-personal level will be discussed. This article also presents the mutual dialectical relationship between competition and cooperation within the educational context. Regardless of whether cooperative approaches are adopted within the course of pursuing educational accomplishments, competition is still the ultimate objective.

Matthew Zagumny
Professor, Tennessee Tech University, USA

The QUEST-20: Measuring Intellectual Curiosity and Scientific Epistemology among Undergraduates

Epistemology examines the nature of knowledge and how it is knowable. Undergraduate students should be asking higher level questions about knowledge, what is knowable, and how to know it, yet pedagogically we focus too often on facts, methods, and skills. A crucial constituent of the "scientific mind" is intellectual curiosity, defined long ago as the "drive to know" (Berlyne, 1954). Once an individual envisions what is knowable and how to know it, one must be motivated to know. This is the essence of being a scientist. Research has demonstrated these habits of the mind toward scientific thinking and curiosity can be developed from elementary to higher education (Kazanas, Zagumny, & Clabo, 2018; Zimmerman, 2007).

The current study reports the validation of the online Q-test of Undergraduate Epistemology and Scientific Thought (QUEST; Zagumny, 2016). The QUEST utilizes Q-sort methodology (Stephenson, 1953), requiring respondents to rate how 20 statements describes them in a forced distribution resulting in Scientific Epistemology and Intellectual Curiosity scores. The major benefit of this approach to assessing dispositions is sensitivity to the relative valence of beliefs and attitudes. Certain beliefs/attitudes of a person are more central to their identity formation than others. The QUEST methodology mirrors this relative importance of defining habits of the mind by requiring respondents to define which statements describe them more or describe them less relative to other statements.

To validate the online QUEST version, we used the multitrait-multimethod approach to construct validity (Cambell & Fisk, 1959; Kidd & Judd, 1991). Construct validity of the QUEST was assessed by examining the pattern of relationships among scores on QUEST, CEI (Curiosity and Exploration Inventory; Kashdan, et al., 2009), RCI (Religious Commitment Index, Worthington, et al., 2003), BIS (Belief in Science; Farias, Newheiser, Kahane, & de Toledo, 2013), and Academic Self-Efficacy Scale (ASES, Zagumny, 2014) instruments from 203 participants enrolled in introductory and upper division psychology courses at a medium-sized, public university. Data showed that QUEST scores were positively correlated with BIS, $r(203) = .61$, $p<.001$ and CEI scores, $r(203) = .33$, $p < .001$. QUEST scores were also negatively correlated with RCI scores, $r(202) = -.41$, $p<.001$. Additionally, QUEST was positively correlated with ASES scores, $r(202) = .2$, $p<.005$. Although not directly

involving QUEST, BIS scores and RCI scores were negatively correlated, $r(200) = -.6$, $p<.001$.

The large positive correlation between QUEST and BIS scores with a moderately high positive correlation with CEI evidences convergent validity while the moderately negative correlation with RCI indicates divergent validity. This pattern suggests that the QUEST exhibits a high degree of construct validity and demonstrates that the QUEST is a valuable addition to the assessment of scientific thinking and intellectual curiosity among undergraduate students. The QUEST methodology protects against common problems with self-assessment of students including response bias, response habituation, and social desirability.