FOREWORD

InScience Press is delighted to publish this book entitled *Education Applications & Developments III* as part of the Advances in Education and Educational Trends series. These series of books comprise authors' and editors' work to address generalized research, albeit focused in specific sections, in the Education area.

In this third volume, a dedicated set of authors explore the Education field, contributing to the frontlines of knowledge. Success depends on the participation of those who wish to find creative solutions and believe their potential to change the world, altogether to increase public engagement and cooperation from communities. Part of our mission is to serve society with these initiatives and promote knowledge, therefore it requires the reinforcement of research efforts, education and science and cooperation between the most diverse studies and backgrounds.

The contents of this edition show us how to navigate in the most broadening issues in contemporary education and research. In particular, this book explores three major areas within general Education's theme, corresponding to three sections: "Teachers and Students", "Projects and Trends", and "Teaching and Learning". Each section comprises chapters that have emerged from extended and peer reviewed selected papers, originally published in the proceedings of the International Conference on Education and New Developments (END) conference series (http://end-educationconference.org/). This meeting occurs annually with successful outcomes. Original papers have been selected and its authors were invited to extend them to once again undergo a review process, afterwards the authors of the accepted chapters were requested to make the necessary corrections and improve the final submitted chapters. This process has resulted in the final publication of 19 high quality chapters organized into 3 sections. The following sections' and chapters' abstracts provide some information on this book contents.

Section 1, entitled "Teachers and Students", provides studies within educational programs and pedagogy for both tutors and students. Each chapter is diversified, mainly addressing thematics in teaching identity, quality learning, teacher-student relationships and curriculum and practice, amongst others.

Chapter 1: *The Teaching Excellence Project: A Framework for Leading Integrative Change and Quality Learning in Technological and Vocational Education*; by Hua Hui Tseng. The use of the Teaching Excellence framework developed in the UK Government Green Paper (2015) and the Taiwan Stage Two Teaching Excellence Project (TEP) implemented at the Tainan University of Technology (TUT), Taiwan, between 2009 to 2016 is documented in this narrative study. With the goal of improving domestic universities' teaching systems, the TEP framework includes

effective teaching, support, assessment, and learning opportunities that lead to students becoming successful and responsible learners. Improvements in teaching quality were identified and implemented at the TUT based on this framework. The areas and practices involved using the framework to create university-wide commitment to comprehensive curriculum development. A general overview of the framework for leading integrative change is included and an explanation of how the dual objectives of the framework can be used as an index to measure the progress of change discussed. The case of the TUT provides insight into the implications of implementing the framework, one of which is excitement about teaching issues. The findings demonstrate that success involves creating a sustainable future that is realized by raising the quality of education, research, and development that supports the vision of collegial governance and academic freedom.

Chapter 2: *Values Education at Classroom Level in Vietnam: The Insider View*; by Quynh Thi Nhu Nguyen. This chapter explores how values education is implemented explicitly and implicitly at the classroom level in two upper secondary schools in Vietnam. Following a qualitative research design with semi-structured interviews of sixteen teachers and observation of their teaching, and focus group interviews of twelve students, the study findings focus on the most important values that should be taught, teaching methods and evaluation of values education at the classroom level. It reveals tensions in teaching values and initiatives which teachers use to promote values. The study concludes that it is necessary to select the value *honesty* as the key value to be taught in upper secondary schools in Vietnam due to cheating in examinations. Values education should be planned and prepared with the consensus of all stakeholders in a school community. Teacher modelling seemed to be a preferred way to teach values and the relationships between teachers and students should be friendlier. Furthermore, new educational strategies should be developed to help teachers regarding values education pedagogy and evaluation.

Chapter 3: *Curiosity and Students' Questions in the Teaching Process*; by Ante Kolak and Ivan Markić. Within the framework of teaching communication the attention of the researchers was focused on the problem of symmetry. Due to the complexity of the symmetry phenomenon in teaching communication the research was narrowed to student speech, i.e. to student questions. By considering the student question from different aspects the authors of this paper single out as important the number of questions asked by students during one teaching lesson as well as the types of questions asked as regards the presence or absence of students' curiosity. Therefore, the analysis of questions asked by students in teaching process during which students acquire new teaching contents, has also been singled out as a problem of research. The goal of this research is to establish symmetry (or asymmetry) of teaching communication and to analyse the questions asked by students. The results showed the constancy of asymmetrical communication in the

teaching process in almost all the teaching units observed, and the lack of students' questions, resulting from their lack of curiosity. Symmetry in communication and the largest number of questions arising from students' curiosity were seen in teaching units where the principles of integrated learning were applied.

Chapter 4: *The Impact of Intellectual Creativity Skills on Mathematics;* by Nurdan Özreçberoğlu, Çağda Kıvanç Çağanağa, and Ahmet Karahan. Creativity may be defined in the most general sense as producing different solution strategies apart from ordinary solutions when individuals encounter with a problem. The production process of such solutions should be designed with original ideas, which are sufficiently flexible and fluent. The aim of the research is to identify the methods used by mathematics teachers for the formation and development of creative, analytical and probabilistic thinking skills of students by taking both student and teacher views into consideration. In this context, it has been conducted in order to reveal the environments prepared, the methods applied and the assessment made by the teachers. The research was conducted in 2015-2016 at two public schools (colleges) which students can enrol after passing entrance examinations. The study group of the research consisted of 8 mathematics teachers and 8 college students randomly chosen from the public schools. Eight teachers and eight students determined by the convenience sampling method formed the sample of the research. Semi-structured interview forms containing open-ended questions were used as a data collection tool. In line with the results obtained from the research, it has been observed that the collected data support the views of teachers and students.

Section 2, entitled “Projects and Trends”, delivers chapters concerning, as the title indicates, education viewed as the center for innovation, technology and projects, concerning new learning and teaching models. Knowledge in different usabilities, communication, software and new methods of teaching and learning and concerns with parental involvement in children's education are used to compile these works.

Chapter 5: *The Mothers of Special Needs Children, Coping Styles and Educational Involvement*; by Aviva Lavan an d Lipaz Shamoa-Nir. The purpose of this study was to examine the effects of stress and coping style with stress among mothers of children with special needs on their involvement in the school. The findings indicate that an emotional coping style predicts a high level of stress among all mothers. Comparing mothers of children with special needs with mothers of normally-developing children, higher levels of stress were found among the former. However, this difference was not reflected in the involvement at the school which did not differ between the two groups. Moreover, it was found that mothers of children with special needs make more use of a social support coping style. The findings contribute to the investigation of predictive factors of parental stress and parental involvement in children's education.

Chapter 6: *Flipped Classrooms, Flipped Homes? Tending to Students' Personal Competencies*; by Eva N. Patrikakou. Sharply increased workforce demands for computer skills are due to the significant effects that technology and media use have had on several aspects of daily life. These changes have prompted shifts in pedagogical thought, a push for change in classroom practices, and an urgent need for tending to the learning needs of students in an ever-changing global landscape. In the era of personalized learning, technology use is indispensable to enhance the individualization and differentiation of learning, and serves as the pillar of competency-based education. The swift pace of change, however, has raised concerns and reluctance from practitioners and other stakeholders. As with any and every innovation, its use is as good as its users. Educators who are utilizing technology and media advances in a targeted and purposeful way can enhance student learning by putting an emphasis on the four personal competencies of the learner (cognitive, metacognitive, motivational, and social/emotional). The present paper explores ways students' personal competencies can be addressed within a flipped-classroom model, and the ramifications that such a model shift has on parent involvement and school-family interactions. The flipped classroom framework is discussed as a context in which media integration can foster competence-based, personalized education.

Chapter 7: *Entry into Greater Diversity – Interdisciplinary Scientific-Technically Project Laboratories - New Learning Settings in a Globalized World*; by Beatrice Moreno, Sophie Kröger, Anett Bailleu, and Andreas Münchow. Since 2013 HTW Berlin has been working with a special form of interdisciplinary project laboratories. This kind of learning process is characterized by very active participation of the students and it creates open spaces and opportunities for international cooperation. Students exert their influence on the contents of the projects and lectures during the course. The teaching process based consequently on partnership of the students and the teaching staff. The courses consist of students from different departments of the HTW Berlin. Participants are supervised by scientific-technically oriented interdisciplinary professional staff. Thereby the learning setting intends to motivate Bachelor (BA) and Master (MA) students to conduct independent development and research, to apply new form of presentation skill and to engage on an international level scientific discussion. Interdisciplinary project laboratories courses are particularly suitable for new methods of transcultural learning. The methods and goals of the courses are designed to be carried out on the basis and demands of a world with grown mobility and immigration.

Chapter 8: *Toward Wider Explanations of Technology Adoption: The Case of Secondary Education Teachers in Bucharest, Romania*; by Andrei Ogrezeanu and Cezar Scarlat. The dominant theoretical model in the field of technology adoption by individuals, TAM, has come under recent criticism for having had an oversimplifying effect on research.This paper aims to widen the universe of

possible explanations of *ICT use* and *intentions* of use, by simultaneously testing for a large number of variables advanced by the main theories in the field. The study is based on a survey of 845 secondary education teachers primarily from Bucharest, Romania.Our regression analysis (OLS) results show that: 1) a high percentage (60%) of variance is explained; 2) the results of the *use* and *intentions* models are quite different; main relevant direct explanatory variables for use express capability, opportunity and social influence: *ICT access*, *ICT skills*, and *observability*; while the main explanatory variables for intentions are *computer enjoyment*, *compatibility*, *perceived usefulness*, *image* and *self-efficacy* denoting psychological motivations; 3) TAM variables, *perceived usefulness* and *perceived ease of use*, don't play a very important role (the former is significant in the model of intentions only, and the later not at all), suggesting that broader models of direct determinants of technology adoption need to be constructed.

Chapter 9: *Master Degree Students' Proposals and Opinions about Innovation in the Secondary Education in Spain*; by María Luisa Renau Renau. This present paper describes the research carried out in the subject of the *The University Master's Degree for Secondary Education, Vocational Training and Language Teaching* at the University Jaume I (Castellón, Spain): 'Teaching Innovation and Introduction to Educational Research' in the specialty of Language and Literature and Language Teaching. 245 students were enrolled in this subject. As part of the subject´s assessment, students were asked to work in groups in order to write a research proposal divided into two main parts: (i) theoretical background (definition of innovative teaching, main trends and authors and some examples of innovative projects), (ii) students define the innovative tool/resource they have chosen (e.g. blog, podcasts, digital books, Mahara, fakebook, etc.) and design a didactic unit using this virtual tool. In this paper, we analyse the virtual resources chosen by our students and reflect on their feelings and opinions about the implementation of these new innovative materials in a real secondary school classroom. Results show that these innovative tools can help secondary school teachers to enrich and improve the teaching/learning methods by supporting the traditional methods but, by no means, substituting it; however not all our students think about the possibility of implementing them.

Chapter 10: *The Impact of Neoliberalism on TVET in England*; by Eleanor Andressen and Johannes L. van der Walt. Neoliberalism, as embraced by many employers in England, has had a number of impacts on Technical and Vocational Education and Training (TVET). Among others, it introduced performance measures to every aspect of the system, not just to learner achievement, thereby giving employers a dominant role in the TVET sector. This chapter focuses on the historic relationship of employers in England with the education and training sector and explains where the disproportionately strong role of neoliberal employers originated and how it persists to this day. It also explains how the problematic role of neoliberalism in the mind set of employers has contributed to the partial failure

of government policy in TVET in that this education and training sector is being shaped in accordance with the demands of large employers, to the detriment of wider sector and of economic skills growth. The chapter also reflects on the barriers that neoliberalism erected to the creation of a TVET system which can truly address the needs of the economy as well as of individuals as total human beings. It concludes by suggesting ways in which some of these issues might be resolved, for example, through better partnerships with a wider group of stakeholders, such as universities, government and parents.

Chapter 11: *Analyzing Values Education in Schools in Germany. Theoretical Model and Empirical Data*; by Birgitta Kopp and Heinz Mandl. The main objective of this contribution is to introduce a model for analyzing values education in institutions, and to illustrate this model by providing data on projects fostering values education in schools in Germany. Our model includes five levels, namely (1) needs/objectives of practical values education, (2) the macro-level (politics and society), (3) the meso-level of institutions, (4) the micro-level of interactions between individuals, (5) and the outcomes of practical values education. The presented model is exemplified by projects that were launched in schools in Germany in the years 2009 to 2014. We identified 51 school projects that were analyzed according to our model. Results show that using this model for analyzing values education is an effective way to obtain a systematic overview about different projects for values education. Even though needs/objectives, meso-level and micro-level are reported in these projects, often, key issues for explicitly evaluating the outcomes of the projects on values education are missing.

Chapter 12: *How to use Robotics in Education*; by Leonardo Mesquita, Galeno José de Sena, and Matheus de Felippe Ferreira. This article describes a method for structuring and developing training programs based on educational robotics. The method can be applied in short-term programs, such as workshops, as well as in longer-term courses. We also present a mini-course structured according to the method, proposed and applied in form of a workshop to students and teachers of public secondary schools. The use of educational robotics to stimulate student learning in public schools is a reality in several developed countries of the world. In the Brazilian context, the main motivation underlying this project is the shortage of laboratories and materials for the development of experimental activities, observed in public schools. Thus, the development of the course allows not only students, but also their teachers, a contact with technological innovations, in particular in the field of educational robotics. The developed mini-course covers the topics and concepts of electronics and programming based on the Arduino platform, aiming to present the main resources available in this platform to propose and develop robotic-based educational activities. The course presupposes an active attitude of the students, who are instigated to "get hands dirty", which also contributes to their formation, through the development of new skills and abilities.

Chapter 13: *Learning to Design during Pre-Service Education*; by Jacquelyn Baker Sennett. This chapter examines design thinking as a pedagogical tool to support the learning of pre-service teachers and human services professionals. Over the course of a 10-week period fourteen pre-professionals completed design projects that involved working with children/youth, teachers, families and/or community members with the goal of arriving at meaningful and creative solutions to challenging educational and/or community-based issues. Pre-professionals learned and practiced four stages of the design process that included learning how to empathize, define, ideate, and prototype. Participants documented their progress in hand-written and hand-drawn sketch books and they also completed online surveys and semi-structured interviews. The chapter focuses on two descriptive case examples, considering affordances and barriers to prototype development while one pre-service teacher designed the prototype for an online writing game and a pre-service human services professional developed the prototype for a substance abuse learning game. Findings from this exploratory work offer suggestions for future research and the re-vision of pre-professional education in ways that incorporate design practices.

Chapter 14: *Rapid Enrolments in Higher Education: Implications on Teaching and Learning*; by Jane Iloanya and Abbas Lusenge. African higher education has witnessed massive increases in enrolments due to improvements at the primary and secondary school levels, coupled with the realisation that higher education qualifications help in economic development and improved standard of living for the individuals and the society. Botswana is one of the countries in Africa that is faced with high enrolment figures in tertiary institutions. This book chapter examines the implications of rapid enrolments on teaching and learning in higher institutions of learning in Botswana. Through a qualitative approach, semi-structured interview questions were used to elicit information from lecturers and students of two selected institutions of higher learning in Botswana. The chapter concludes by providing some possible solutions to the challenges posed by rapid enrolments in higher education.

Section 3, entitled "Teaching and Learning", offers research about foundations in the education process itself, in various contexts, both for educators and students.

Chapter 15: *Dysgraphia, Educational Interventions and Didactic Implications: from Prevention to Intervention*; by Angelo Luigi Sangalli, Angelo Lascioli, and Andrea Lascioli. Dysgraphia is a widespread disorder among school children. The prevalence for developmental writing disorders is about 7–15% among school-aged children (Döhla, & Heim, 2016; Katusic, Colligan, Weaver, & Barbaresi, 2009). It has become clear now that learning to write has an unquestionable educational value. According to Konnikova (2014), it is not only what children write that matters, but how they write. That's why we need to examine and understand which education and didactic methods can be useful to teach handwriting to those

children that find it difficult or that, despite all the efforts, have an unreadable handwriting. It is also necessary to investigate the best way to intervene, especially since writing difficulties are often related to other learning disabilities. This paper contains the conclusions of a lengthy period of observations and data collecting on those children identified by the authors, who suffer from writing difficulties. This work was aimed at identifying an educational working methodology to prevent writing difficulties or recover from them. We will describe here early manifestations of dysgraphic disorder and show efficient educational and didactic intervention tools within the school context.

Chapter 16: *Fostering Critical Thinking in Teacher Education*; by Ginette D. Roberge. In teacher education, nurturing critical thinking skills in students has the potential to influence not only the quality of education that is delivered by teachers in schools, but also to allow future teachers to cultivate cognitive skills that they will transmit to their students. This paper presents the results of an exploratory study that experimented the *Practical Inquiry Model* (PI) (Garrison, Anderson, & Archer, 1999). The purpose was to examine the extent of critical thinking cues that participants utilized when reflecting, in writing, on a controversial problem that they could encounter in their practice after having received extensive instruction on various constitutive elements of critical thinking. These cues manifested by students helped inform on the effectiveness of the instructional approach utilized in the course. The results indicated that the majority of participants were able to propose new and innovative ideas, reflect and propose suggestions that went beyond the parameters of the problem, were able to consider and accept external information and were able to make relevant links to lived experiences or existing knowledge while considering the problem. Results of this study can help inform educational approaches and pedagogical practices that are conducive to nurturing critical thinking in adult students.

Chapter 17: *The Effects of Problem-Based Learning in Chemistry Education on Middle School Students' Academic Achievement and Attitude*; by Mona El Charif, Ahmad Oweini, and Samar Zeitoun. The objective of this study was to determine the effects of problem-based learning (PBL) on student performance and attitude toward chemistry. In the study, data was obtained through the use of pre-test post-test, research-control group model. The data obtained from both groups was analyzed using t-test cores, mean, and standard deviation. The study was conducted on a sample of 120 7th grade students, in a French-speaking private school in Lebanon. Two types of instruments were used for measurement: achievement tests and an attitude questionnaire. The experimental group was taught chemistry using PBL whereas conventional teaching methods were applied in the control group. Results indicated that implementing the problem-based learning approach had improved students' achievement and attitude. This study recommends that teachers implement problem-based learning in teaching science concepts especially chemistry for middle school students.

Chapter 18: *Learning in Home Language: Preferences in South Africa;* by Pule Phindane. The aim of this study is to investigate children and parents' preferences of language of learning and teaching (LOLT) in Grades 1 – 3 (aged between six and eight years), in Foundation Phase. This study is a survey in which questionnaires and interviews were conducted to collect data from identified stakeholders. The sample consisted of fifty learners, forty parents, thirty school heads, hundred and fifty Foundation Phase teachers and twenty Early Childhood Development teachers. Respondents were purposively selected from metropolitan, township and rural schools in Motheo district in Free State province in South Africa. The findings were that learners and parents preferred English as the language of instruction at Foundation Phase. The implications of these findings are discussed.

Chapter 19: *First Language versus First Additional Language(s) Teaching in Foundation Phase*; by Takalani Samuel Mashau, Humbulani Nancy Mutshaeni, Fhatuwani Ravhuhali, and Matodzi Grace Muremela. In a multicultural society like South Africa, where eleven languages are regarded as official languages, usage of language contributes towards quality education. If languages which are regarded as official according to the Constitution are used differently, this makes the different users of language to be disgruntled as their language is not recognised. In terms of Section 6 of the Constitution of the Republic of South Africa (1996) official languages are: Sepedi, Sesotho, Setswana, IsiSwati, Tshivenda, Xitsonga, Afrikaans, English, IsiNdebele, IsiXhosa and IsiZulu. The question which arises mostly is whether these (especially formerly marginalised) African languages are mastered by the children. The language of teaching and learning in most schools in South Africa is English. The chapter investigated whether Foundation Phase learners are able to switch from mother tongue (first language) to second language (first additional language) without challenges. Quantitative design was used where questionnaires were used to collect data. Ten (10) Grade 3 teachers from Sibasa Circuit were purposefully sampled as participants. The research paper found that, it is not difficult for learners to learn first additional language before they master their own first language. It is not difficult for learners to comprehend what they have read in first additional language.

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