1st International Conference on Education and Training

Thinking education in transition times

12-15 July 2022 | Instituto de Educação Universidade de Lisboa, Portugal

Thinking education in transition times

BOOK OF ABSTRACTS

INSTITUTO DE EDUCAÇÃO — ULISBOA

UNIDADE DE INVESTIGAÇÃO E DESENVOLVIMENTO EM EDUCAÇÃO E FORMAÇÃO

1ST INTERNATIONAL CONFERENCE ON EDUCATION AND TRAINING

THINKING EDUCATION IN TRANSITION TIMES

ORGANIZATION
Instituto de Educação – Universidade de Lisboa
Unidade de Investigação e Desenvolvimento em Educação e Formação

COVER, PAGING AND GRAPHIC DESIGN
Leading - People Connected & GoCreate – Brands & Business

Lisbon, 12-15 July 2022

ORGANIZING COMMITEE

• Joaquim Pintassilgo • Ana Luísa Rodrigues • Ana Sofia Freire • Benedita Portugal e Melo
• Cláudia Faria • Hélia Oliveira • João Piedade

SCIENTIFIC COMMITTEE

• Amélia Lopes • Ana Amélia Carvalho • Ana Paula Canavarro • António Magalhães • Cecília Galvão
• Dalila Andrade Oliveira • Diana Bannister • Feliciano Veiga • Fernando García • Fernando Ramos
• Graça Carvalho • Helena Araújo e Sá • Isabel Menezes • Jari Lavonen • João Pedro da Ponte
• Jorge Adelino da Costa • Jorge Ramos do Ó • Justino Magalhães • Leandro Almeida • Licínio Lima
• Luís Miguel Carvalho • Marcela Milana • Marcos Onofre • Maria Alessandra Mariotti
• Mariana Gaio Alves • Natália Alves • Pedro Reis • Salvador Llinares • Thomas Popkewitz

SECRETARIAT

Leading – People Connected

INSTITUTIONAL SUPPORT

• Presidência da Republica Portuguesa
• UNESCO – Organização Educacional, Científica e Cultural
• FCT – Fundação para a Ciência e a Tecnologia

Com o Alto Patrocínio de Sua Excelência
Under the High Patronage of the President of the Portuguese Republic

O Presidente da República

United Nations Educational, Scientific and Cultural Organization
Comissão Nacional da UNESCO Portugal
Portuguese National Commission for UNESCO

FCT Fundação para a Ciência e a Tecnologia

REPÚBLICA PORTUGUESA

The ICET 2022 is financed by national funds through FCT – Fundação para a Ciência e a Tecnologia, within the scope of the Unidade de Investigação e Desenvolvimento em Educação e Formação (UIDB/04107/2020).

WITH SUPPORT OF

• Visit Portugal
• Turismo de Lisboa

visit Portugal

Turismo de Lisboa

CONFERENCE NETWOKS

1.1 PRACTICES OF INCLUSION IN FORMAL AND NON-FORMAL EDUCATION CONTEXTS

1. Inclusion and participatory processes
2. Inclusion and learning in education and training contexts
3. Community intervention, inclusion and emancipation

Coordination:
Ana Paula Caetano, *Instituto de Educação da Universidade de Lisboa (Coordinator)*
Carmen Cavaco, *Instituto de Educação da Universidade de Lisboa*
Carolina Carvalho, *Instituto de Educação da Universidade de Lisboa*
Paula Guimarães, *Instituto de Educação da Universidade de Lisboa*

1.2 IMPROVING LEARNING IN TECHNOLOGICAL-ADVANCED SOCIETIES

1. Digital transformation in Education
2. STEAM literacy for learning
3. Educational technologies and teaching and learning improvement

Coordination:
Mónica Baptista, *Instituto de Educação da Universidade de Lisboa (Coordinator)*
Ana Pedro, *Instituto de Educação da Universidade de Lisboa*
Fernando Albuquerque Costa, *Instituto de Educação da Universidade de Lisboa*
Neuza Pedro, *Instituto de Educação da Universidade de Lisboa*

2.1 EDUCATION GOVERNANCE, AUTONOMY AND ACCOUNTABILITY

1. Performance-based accountability policies in education
2. School autonomy and local policies
3. Education Governance: new actors, spaces and tools

Coordination:
Estela Costa, *Instituto de Educação da Universidade de Lisboa (Coordinator)*
Luísa Cerdeira, *Instituto de Educação da Universidade de Lisboa*
Marta Almeida, *Instituto de Educação da Universidade de Lisboa*
Sofia Viseu, *Instituto de Educação da Universidade de Lisboa*

2.2 NEW TRAINING AND PROFESSIONAL DEVELOPMENT MODELS

1. Professional development and partnerships in education
2. Innovative teacher professional development models
3. Professional development for school-based innovation
4. Professional development for diversity and Inclusion

Coordination:
Maria João Mogarro, *Instituto de Educação da Universidade de Lisboa (Coordinator)*
Ana Cláudia Henriques, *Instituto de Educação da Universidade de Lisboa*
Ana Sofia Pinho, *Instituto de Educação da Universidade de Lisboa*
Luís Tinoca, *Instituto de Educação da Universidade de Lisboa*

PRESENTATION

This electronic publication contains the abstracts of communications submitted to 1st International Conference on Education and Training – ICET 2022 – held between July 12 and 15, 2022 at the Institute of Education of the University of Lisbon.

We are living in transition times. In the field of Education, institutions and routine behaviours are being called into question, and many tensions have become evident. For instance, tensions between the founding principles and values of the modern educational project, and the evaluative judgments about how to implement it and about its consequences.

The perception that we live in transition times is being radicalized by the experience of confinement, by the breakdown of daily interactions in educational contexts and by the continued use of emergency remote education. However, as before the pandemic, criticisms regarding the educational status quo are not reduced to the role of digital technologies in education, rather they focus on the many political, organizational and practical facets of the educational project. And as in the past, criticisms are driven by so many diverse perspectives that proposed solutions point to many different futures.

The debate around the fate of the school model is an excellent indicator of the current uncertainty. Multiple suggestions for re-schooling or unschooling society are being made, and opposing visions about contemporary education wrestle with each other, either understanding education as a personalized learning trajectory or as a path of sharing common learning and narratives.

Current tensions and uncertainties call us to reflect not on the - already tedious – 'post-COVID', but rather on contemporary education goals, processes, effects and beneficiaries, and on the crossroads that we have reached, where all discontent lies as well as different diagnosis of the present and different visions of the future.

In open societies, both communication and informed debate are necessary for going through experienced uncertainties and tensions and the University has the responsibility to stimulate it as one form of public action.

It is in this challenging scenario that the Instituto de Educação da Universidade de Lisboa invites you to participate in the **1st International Conference on Education and Training – Thinking education in transition times** – that will take place in Lisbon on the 12th to 15th July 2022.

The conference will be organized according to four thematic networks that explore four critical issues concerning the 'presents' and the 'futures' of education, in its multiple political, organizational and practical facets:

- Practices of inclusion in formal and non-formal education contexts;
- Improving learning in technological-advanced societies;
- Education governance, autonomy and accountability;
- Teaching education models and professional development.

INDEX

SYMPOSIA

NETWORK 1.2

(18736)

STEM EDUCATION

Chairperson: Mónica Baptista (Portugal)[1]

1 - Instituto de Educação da Universidade de Lisboa

Societies are currently facing accelerated globalization, coupled with an increasing rate of technological progress, which means that they are faced with unprecedented challenges. Therefore, qualified professionals in STEM (Science-Technology-Engineering-Mathematics) areas are needed to maintain an economically competitive global market and to meet contemporary requirements. The reinforcement of professionals in STEM areas has been a priority of many governments, namely through educational policies that lead more students to take courses related to STEM areas, or through immigration or relocation policies. However, notwithstanding the growing need for human capital in STEM areas, students tend not to follow these areas and the reasons given include the perception of low self-efficacy regarding science learning, and the idea that science curricula are very difficult and not very relevant. Students' lack of interest in STEM areas is particularly evident in the case of women, which translates into their under-representation in the labor market in these areas. The situation requires actions and leads us to ask questions such as: What projects can be implemented and what are their effects? What is the influence of STEM experiences on students' learning and interest, especially girls? How can cultural diversity be addressed on STEM Education? In this symposium, the authors will address and discuss these questions, taking into account the results of research developed in the scope of European Projects about STEM Education.

1 - DIFFERENT WAYS TO STEM EDUCATION CONCEPT AND CONTEXT – INTERNATIONAL CO-OPERATION ICSE

Martin Bílek (Czech Republic)[1]

1 - Department of Chemistry and Chemistry Education, Faculty of Education, Charles University

The concept and the context of STEM Education are a curricular approach for common educating students in four specific areas. Ways of STEM Education planning, realisation and evaluation could be different. It means that key words for the STEM implementation in different level of educational system are e.g.: interdisciplinarity or real-world application in case of content and creativity, critical thinking, or inquiry in case of methodology. Curricular systems in different countries have different traditions and their approaches to STEM are limited in extreme positions on the one hand in separate school subjects and on the other hand in integrated science or science and technology subjects. This diversity offers a possibility for fruitful discussion among representatives of both partly or fully applied paradigms. One platform for this kind of research was established at University of Education in Freiburg (International Centre of STEM Education-ICSE). International collaboration is the key to continuous improvements in European STEM education and it is reason, that ICSE has therefore initiated the foundation of an International Consortium for STEM Education, where 16 partners share a unique focus in their research in STEM education. ICSE members are working on various projects concerning environmental socio-scientific issues (MOST, ENSITE), the empowerment of girls in STEM (GEM) and the development of transversal skills in classrooms (STEMKey), as well as the professional development of teachers (3C4Life). Based on examples from elected mentioned projects we would like to discuss different ways to STEM implementation mainly in secondary curriculum and adequate teacher's education.

2 - STEM EDUCATION FROM THE PARK TO THE CITY: EDUCATIONAL VALUE OF MOBILE AUGMENTED REALITY GAME-BASED LEARNING APPROACHES

Margarida M. Marques (Portugal)[1]

1 - University of Aveiro

The claim for active learning approaches has been promoting the development of new teaching methodologies. These can integrate innovative elements, such as mobile devices, augmented reality (AR), and game-based learning, which allow learning to move beyond traditional classroom environments to outdoor spaces that students can physically explore. However, the educational value of this approach needs to be studied. Under EduPARK, a mobile AR game approach for contextual and interdisciplinary learning was created and explored in an urban green park by students and teachers. The EduPARK app was used as an illustrative case to analyse the approach's educational value based on students and teachers' perspectives, and on logs of game results. Thus, under a mixed method

research, the Educational Value Scale was applied to 924 users of the EduPARK app, from basic and secondary school levels. The results indicate high scores, especially among students and teachers from the 5th to the 9 th school grade. Hence, this particular approach seems to be more suitable for 10–15 years-old students who highlighted motivational features, such as treasure hunting, points gathering, the use of mobile devices in nature settings, and AR features to learn. Stemming from EduPARK's success emerges the EduCITY, which opens the park boundaries to the city, and to other cities. The aim is to enhance sustainable cities through the creation of a disruptive smart learning environment, sustained by a mobile app with active location games based on challenges, with AR educational resources. These games are co-created by the school, academic and wider community, and comprise enjoyable and interdisciplinary challenges to be explored by any citizen while touring the city. Future work involves studying how this STEM education smart learning environment promotes changes in knowledge, skills, values and attitudes in citizens to empower them towards sustainable development.

3 - ADDRESSING CULTURAL DIVERSITY IN STEM EDUCATION

Michiel Doorman (Netherlands)[1]

1 - Freudenthal Institute, Utrecht University, The Netherlands

A challenge for our current society is the increase in diverse cultural backgrounds of our citizens. This challenge holds true in particular for mathematics and science education, as around 20% of 15-year-olds underachieve in these subjects. The situation requires urgent action as these subjects are vital prerequisites for employability and active participation in society. Additionally, Western perspectives on science and mathematics do often not value the contributions of different ethnic groups to scientific development, thus making it hard for people with migrant background to identify with science and mathematics. Therefore, addressing cultural diversity in science and mathematics education has the potential to offer all students equal chances for future careers and responsible citizenship. This situation stimulated partners in the European ICSE consortium to address the research question: How can cultural diversity be addressed in science and mathematics education and how can teachers' self-efficacy and practices on addressing cultural diversity be fostered? I will present the results of a literature review that underpinned the design features of a professional development (PD) program, implemented by partners in six countries. To investigate the outcome of the PD program, we surveyed 311 mathematics and science teachers' pre- and post-attitudes towards addressing cultural diversity in their classrooms. Results from teacher survey show a small but significant increase in teachers' self-efficacy beliefs as well as practices to address cultural diversity. The results showed also that the course reduced limiting contextual factors to address diversity in their classrooms allowing all students to actively partake in STEM education.