CONFERENCE PROGRAM

SCIENCE AND TECHNOLOGY EDUCATION FOR ALL
6th CONFERENCE SIEST MÉDITERRANÉE 2019

Conference & Cultural Center of the University of Patras
3-5 April 2019

Laboratory of Didactics of Sciences, Mathematics and ICT
Department of Educational Sciences and Early Childhood Education
University of Patras, Greece

Co-organizer
Department of Education
School of Pedagogical & Technological Education – ASPETE, Greece

Wednesday 3. 4. 2019

16.00 – 19.00

Workshop 1: Quantitative analysis of research data: Introduction to R Statistical Software
Jérémy Castera, *Aix-Marseille Université*

Overview: This Workshop is an introduction to basic statistical analyses using R software (freeware). A user-friendly interface for beginners *R-commander* will be installed, consequently there is no need of programming skills to participate in this training session. Basic features of R-commander will be investigated (import of data, variable management, *etc*.) and some descriptive and inferential analyses will be addressed (e.g. means, standard deviation, Wilcoxon test).

Place: ICT Lab

Maximum number of participants: 15

Level: Beginners

Language: English (and French)

Requirements:

- PC (your own)
- Internet connection

- R installed (https://cran.r-project.org/bin/windows/base/)

Workshop 2: Qualitative analysis of research data: Introduction to NVivo (in English)
Marida Ergazaki, University of Patras

Overview: This workshop aims at introducing NVivo, a widely used qualitative data analysis computer software package, to newcomers in the qualitative educational research. Participants will have the opportunity to explore the rationale, tools and use of NVivo by actively engaging in the analysis of real data (coding, linking, creating sets, assigning attributes, performing searches) with the help of an aptly designed worksheet.

Place: Sciences Didactics Lab

Maximum number of participants: 15

Level: Beginners

Language: English

Thursday 4. 4. 2019

8.30 – 9.30
Registration and welcome coffee

9.30 – 10.30
Opening Ceremony (ROOM A)

Professor Venetsana Kyriazopoulou
Rector of the University of Patras

Professor Ioannis Saridakis
President of the Governing Body of ASPETE

Professor Vassilis Komis
Dean of the School of Humanities and Social Sciences

Professor Mariana Kondyli
Head of the Department of Educational Sciences and Early Childhood Education

Professor Konstantinos Ravanis
Chair of the Organizing Committee

10.30-11.30
PLENARY SESSION I (ROOM A)
Chair: CORINNE JEGOU

Collaborative research in science and technology education

JEAN-MARIE BOILEVIN
Professor
Centre de recherche sur l'éducation, les apprentissages et la didactique (CREAD)
Université de Bretagne Occidentale, France

Abstract

Research collaborations between researchers and practitioners in the field of education have kept going for a long time and become increasingly important. This collaborative research can be found in the literature under various terms, depending on the objectives to be achieved and the participants' levels of involvement: action research, didactic engineering, collaborative engineering, cooperative engineering, design-based research (DBR), etc. Regarding the field of research in didactics, the above mentioned types are often part of the educational research perspective that aims at transforming and improving teaching practices and learning conditions for students. This is the case for many research projects in science and technology education based on DBR methodologies. The purpose of this presentation is to introduce the different paradigms in practice and discuss the theoretical and methodological frameworks that are mainly encountered in collaborative research. Based on the presentation of research examples in didactics, developed in particular within CREAD, a number of questions will be addressed: what are the stakes of this type of research for the participants? Which are the possible roles for teachers and researchers? Why this type of collective work can be of great interest? What are the objectives that should be pursued by the participants? How is collaborative research organized? What are the contributions of collaborative research to the professional development and enhancement of the practices of the teachers?

11.30 – 13.00

Lunch break

13.00 – 15.30

Room A	**Room B**
Chair JULIE GOBERT VASSO ZOGZA	Chair MOURAD TAHA JANAN LEONIDAS GOMATOS
Mirror, mirror on the wall, is nature predictable at all? Tracing students' ideas on ecosystems' predictability *GEORGIOS AMPATZIDIS (Hellenic Open University, Greece)* *ALICE DELSERIEYS (Aix-Marseille Université, France)* *MARIDA ERGAZAKI (University of Patras, Greece)* *CORINNE JEGOU (Aix-Marseille Université, France)*	Autonomie des élèves et ressources numériques *FRANCINE ATHIAS (Université de Bourgogne Franche Comté, France)* *CATHERINE BARRUÉ (Université de Bretagne Occidentale, France)* *SYLVAINE BESNIER (Université Rennes 2, France)* *SOPHIE JOFFREDO LE BRUN (Université de Bretagne Occidentale, France)*

Towards a philosophy-inspired learning environment about biological classification: Insights from the 1st cycle of a design research *EFTYCHIA VALANIDOU* *MARIDA ERGAZAKI* *RENIA GASPARATOU* *(University of Patras, Greece)*	Instrumental genesis of students' comparison strategies in a digital environment of dynamic Geometry *ATHANASIA BALOMENOU* *VASSILIS KOMIS* *KONSTANTINOS ZACHAROS* *(University of Patras)*
La compétence scripturale, un indicateur de la construction des savoirs conceptuels en Sciences de la vie et de la Terre ? *SÉVERINE PERRON* *PATRICIA SCHNEEBERGER* *(Université de Bordeaux, France)* *DENISE ORANGE RAVACHOL (Université de Lille, France)*	Utilisation d'un Serious Game dans l'enseignement de l'Entrepreneuriat *YOUSRA CHARROUF* *MOURAD TAHA JANAN* *SAMIRA HADJI* *(Mohammed V University in Rabat, Morocco)*
Designing an interview protocol for identifying young children reasoning about variation within populations *ALICE DELSERIEYS* *(Aix-Marseille Université, France)* *MARIDA ERGAZAKI* *(University of Patras, Greece)* *JULIE GOBERT* *CORINNE JÉGOU* *(Aix-Marseille Université, France)*	La réalité augmentée un outil de présentation multimodal de la consigne au lycée *LUC ANTONELLI* *MARJOLAINE CHATONEY* *PATRICE LAISNEY* *(Aix-Marseille Université, France)*
Diabolo, une simulation pour l'apprentissage des métabolismes *CATHERINE BONNAT* *VIVIANE GUERAUD* *ANNE LEJEUNE* *(Université Grenoble Alpes, France)* *PATRICIA MARZIN-JANVIER* *(Université de Brest, Université de Rennes, France)*	Constructing and implementing an OER regarding sustainability issues in vocational education *STEFANOS ARMAKOLAS* *PERIKLIS ROBOLAS* *ILIAS KARACHALIOS* *ARCHONTIA KARACHASANI POLYKSENI ANASTOPOULOU* *LEONIDAS GOMATOS* *(School of Pedagogical & Technological Education, ASPETE)*

15.30 – 16.00

Coffee break

16.00 – 17.00

PLENARY SESSION II (ROOM A)

Chair: JEREMY CASTERA

Blockchain Technology as a Pedagogical tool

VASILIS KOULAIDIS
Professor
University of Nicosia, Cyprus

Abstract

The objective of this paper is to delineate the application of blockchain technologies to education. The acquisition of new knowledge entails its construction by each one of the students individually. Generally, the construction of new knowledge can be envisaged as a movement from 'incomplete' personal conceptual maps towards conceptual maps that are closer to those held collectively by the relevant scientific community. The construction of successive maps by each one of the learners entails a) the overcoming of certain cognitive obstacles, not necessarily the same for every learner, and b) the agreement that the final conceptual map represents valid knowledge. However, constructivism has to cope with the difficulty of dealing with individual constructions in a collective way. Blockchain technology permits the treatment of knowledge as constructed by individuals through similar chunks of knowledge (represented by blocks=codes). The combination/arrangement/sequence of these knowledge blocks is not necessarily the same for all students. The novel feature, which the application of blockchain technology can introduce, is that the valid articulation of chunks is secured collectively. Furthermore, constructive approaches are forced, to face the problem of identifying which student has made a particular error/misconception. Blockchain technology serves to give an answer to this predicament by dealing in a realistically effective way with its reverse as well (i.e. by identifying what particular error/misconception a student has made). If this is verified, then schools can fulfill the dream of carrying out individual learning in a collective, and therefore feasible, mode.

The use of blockchain technology for attaching each one of the participating students to a unique series of successive conceptual maps as he/she gradually constructs/develops has many advantages. Specifically:

1. There exists the possibility to coordinate massive amount of data in a secure and transparent. <u>All successive inscriptions (which refer to successive conceptual maps) are transparent</u> and therefore provide each student and their teachers with start-to-end visibility (based on their level of permission) allows an easy reconstruction of back and forth movements, useful to teachers who follow the progress of their students as well as to students, especially older ones, for self-inspection.
2. <u>All successive inscriptions are immutable and security rich so no one can delete or modify any of them</u>. This level of certainty will permit a just, accurate, absolutely secure and, more importantly (education-wise), a detailed certification of students' achievements.
3. Usually, teaching starts from students who attempt to discover "mistakes=obstacles". The availability of all the conceptual maps routes will enable both the application of

individualized teaching and more crucially the movement from mistakes to students and vice versa simultaneously. The last feature reverses the pedagogical practices and if employed successfully will transform practices radically.

17.00 – 19.30

Room A	Room B
Chair SILVANIA SOUSA DO NASCIMENTO DIMITRIOS KOLIOPOULOS	Chair ELENA BONACCORSI PASCALE BRANDT-POMARES
Teaching energy concepts in complex technological systems: The case of the car *VASILIOS STAVROPOULOS* *DIMITRIS KOLIOPOULOS* *(University of Patras, Greece)*	Co-intervention en formation professionnelle : représentations des enseignants *VALERIE THERIC* *HELENE CHENEVAL-ARMAND* *ALICE DELSERIEYS* *PASCALE BRANDT-POMARES* *(Aix-Marseille Université, France)*
Analyse des difficultés d'étudiants en BAC+1 de la compréhension des transformations chimiques en utilisant le modèle particulaire *SUZANE EL HAGE (Université de Reims Champagne Ardenne, France)* *YANN VERCHIER* *MORGAN PIEZEL* *(Université Technologique de Troyes France)*	Kindergarten teachers' beliefs and practices towards elicitation in science teaching *MARIA PAPANDREOU* *KATERINA KALAITZIDOU* *(Aristotle University of Thessaloniki, Greece)*
The ideal science teacher: a small-scale study on how science teachers see themselves in the classroom *GEORGIA DIMOPOULOU* *RENIA GASPARATOU* *(University of Patras, Greece)*	Approche d'enseignement de l'entrepreneuriat dans l'enseignement supérieur *FOUAD ABENBOUTAIEB* *SAMIRA HADJI* *MOURAD TAHA JANAN* *(Mohammed V University in Rabat, Morocco)*
Analyse de la pratique enseignante universitaire : cas de la chimie organique *MERIEM HARABI* *CHIRAZ BEN KILANI*	An investigation on the development of pupils' ideas about the rock formation *ELENA BONACCORSI* *ANNA GIONCADA*

(Université Virtuelle de Tunis, Tunisie)	*FABIO PIERACCIONI* *ALESSANDRA BORGHINI* *(University of Pisa, Italy)*
Les mémoires d´une visite à l´observatoire astronomique *FERNANDO ROBERTO DA COSTA LINHARES* *SILVANIA SOUSA DO NASCIMENTO* *(Universidade Federal de Minas Gerais, Brazil)*	Can we quantify the stability of a teaching? *ANTONIOS CHRISTONASIS* *(University of Ioannina, Greece)* *DAMIEN GIVRY* *(Aix-Marseille Université, France)*

20.00

Dinner and entertainment with Greek music

Friday 5. 4. 2019

9.30 – 12.00

Room A	**Room B**
Chair PATRICE LAISNEY KONSTANTINOS ZACHAROS	Chair ANDREAS MOUTSIOS-RENTZOS MARIA KAMPEZA
Vers des intelligences artificielles pour l'enseignement de la démarche d'investigation *MATTHIEU CISEL* *GEORGES-LOUIS BARON* *(Université Paris-Descartes, France)*	Introducing socio-environmental concepts to preschoolers: the case of the 'local-global' connection *MARIA-CHRISTINA KASIMATI* *MARIDA ERGAZAKI* *(University of Patras, Greece)*
Teaching the concept of angle through programming with Scratch *KONSTANTINOS KAKAVAS* *KONSTANTINOS ZACHAROS* *(University of Patras)*	Classification of minerals based on geological criteria by preschool children in a non-formal educational setting *AIKATERINI PARISI* *ANGELIKI LAOURDEKI* *DIMITRIS KOLIOPOULOS* *(University of Patras, Greece)*

Video as a tool for student counselling in Higher Education *ELENI KARFAKI (University of Patras, Greece)* *STEFANOS ARMAKOLAS (École Supérieure d'Enseignement Pédagogique et Technologique ASPETE, Greece)*	Supporting mathematical argumentation of pre-school children *ANDREAS MOUTSIOS-RENTZOS (University of the Aegean, Greece)* *MARIA ANGELA SHIAKALLI (Pre-school Education, Cyprus)* *KONSTANTINOS ZACHAROS (University of Patras, Greece)*
Étude de la dynamique d'une séance d'automatique en licence appliquée de génie électrique *NEILA MEJRI* *CHIRAZ BEN KILANI* *(Université Virtuelle de Tunis, Tunisie)*	Approaching change of state in early childhood education: the design of a teaching intervention based on storytelling *MARIA KAMPEZA* *(University of Patras, Greece)* *ALICE DELSERIEYS* *(Aix-Marseille Université, France)*
La théorie instrumentale en éducation technologique MARJOLAINE CHATONEY PATRICE LAISNEY *(Université Aix-Marseille)*	Investigating the teacher's roles for the integration of science learning and play in the kindergarten *ANGELIKI VELLOPOULOU* *(University of Patras, Greece)* *MARIA PAPANDREOU* *(Aristotle University of Thessaloniki, Greece)*

12.00 – 13.30

Lunch break

13.30 – 15.30

Room A	Room B
Chair NADIA ELMECHRAFI LEONIDAS SOTIROPOULOS	Chair KONSTANTINOS KORFIATIS GEORGIA NATSIOU
La compréhension comme acte solitaire. Quelques réflexions sur le sujet pensant *IOANNA BERTHOUD-PAPANDROPOULOU* *(Université de Genève, Suisse)* *LEONIDAS SOTIROPOULOS* *(University of Patras, Greece)*	

La dimension humaine dans l'orientation d'une démarche réflexive sur la régulation du dispositif de formation : perceptions des élèves-ingénieurs *NADIA ELMECHRAFI* *(Mohammed V University in Rabat, Morocco)* *MOURAD ABOUELALA* *(Aix-Marseille Université, France)* *ABDELLAH BAH* *KHALID ELBIKRI* *(Mohammed V University in Rabat, Morocco)*	Using a hydraulics bench to investigate 6th grade students' energy conceptions *ASIMINA DALAPA* *VASILIKI EVANGELIA VAYENA* *NIKI SISSAMPERI* *DIMITRIOS KOLIOPOULOS* *(University of Patras, Greece)*
L'autonomie des élèves dans l'apprentissage de la physique-chimie selon les enseignants *ANTOINE LE BOUIL* *(Université de Bretagne Occidentale, France)* *SUZANE EL HAGE* *(Université de Reims Champagne-Ardenne)* *ALAIN JAMEAU* *JEAN-MARIE BOILEVIN* *(Université de Bretagne Occidentale, France)*	Digital games in teacher education: a game-based learning approach *GEORGIA NATSIOU* *(Aristotle University of Thessaloniki, Greece)* *MARIA SFYROERA* *(National & Kapodistrian University of Athens, Greece)* *MELPOMENI TSITOURIDOU* *(Aristotle University of Thessaloniki, Greece)*
Enseigner et apprendre les sciences dans une langue étrangère : quelles stratégies pour travailler quels savoirs? *TRACY BLOOR* *(Aix-Marseille Université)* *BRIGITTE GRUSON* *ALAIN JAMEAU* *CAROLE LE HENAFF* *(Université de Bretagne Occidentale, France)*	Pre-primary education university students' opinions on different forms of inquiry: an exploratory study *KONSTANTINOS KORFIATIS* *STELLA CONSTANTINOU* *STELLA PETROU* *(University of Cyprus, Cyprus)*

15.30 – 16.00

Coffee break

16.00 – 18.00

Room A	**Room B**
Chair MARIA PAPANDREOU	Chair JEAN-MARIE BOILEVIN

FOTEINI S. DOLIANITI	LEONIDAS GOMATOS
Sentiment analysis on educational datasets: a comparative evaluation of commercial tools *FOTEINI S. DOLIANITI* *DIMITRIOS IAKOVAKIS* *(Aristotle University of Thessaloniki, Greece)* *SOFIA B. DIAS* *(Universidade de Lisboa, Portugal)* *SOFIA J. HADJILEONTIADOU* *(Democritus University of Thrace, Greece)* *JOSE A. DINIZ* *(Universidade de Lisboa, Portugal)* *GEORGIA NATSIOU* *MELPOMENI TSITOURIDOU* *PANAGIOTIS D. BAMIDIS* *(Aristotle University of Thessaloniki, Greece)* *LEONTIOS J. HADJILEONTIADIS* *(Khalifa University of Science and Technology, UAE)*	Analyse des connaissances pédagogiques acquises au cours d'une première expérience d'enseignement *DAMIEN GRENIER* *ALAIN JAMEAU* *JEAN-MARIE BOILEVIN* *(Université de Bretagne Occidentale, France)*
Designing PhysicIdea! MOOC: Challenges on teacher education *GEORGIOS K. ZACHARIS* *MELPOMENI TSITOURIDOU* *(Aristotle University of Thessaloniki, Greece)*	The attitudes of the minority students of Thrace towards science. The case of the minority students who attend either the minority primary school or the public primary school in Xanthi. *ELENI ARAMPATZI* *(University of Nicosia, Cyprus)*
Designing MOOCs: Motivation and Interaction Issues *MELPOMENI GNOSTOPOULOU* *MARIA ELENI KOUTSIAKI* *MELPOMENI TSITOURIDOU* *(Aristotle University of Thessaloniki, Greece)*	Effets d'un dispositif d'aide à la résolution de problèmes géométriques : un exemple avec les programmes de construction *ÉMILIE MARI* *KARINE MILLON-FAURÉ* *TERESA ASSUDE* *(Université Aix-Marseille)*
The impact of educational robotics on teachers' computational thinking *ANESTIS KOUSIS* *(Aristotle University of Thessaloniki, Greece)*	Relations science - technologie dans les manuels scolaires de génie mécanique en Grèce *KONSTANTINOS GRIVOPOULOS* *(Lycée Général, Greece)*

	MARIA METHENITI *(Ingénier Mécanicien, Greece)* *LEONIDAS GOMATOS* *(École Supérieure d'Enseignement Pédagogique et Technologique, ASPETE, Greece)*
Building an online teachers' community of practice *ANASTASIA KALOGIANNIDOU* *MELPOMENI TSITOURIDOU* *MARIA1BIRBILI* *(Aristotle University of Thessaloniki, Greece)*	

18.00 – 19.00

Closing Ceremony (Room A)