



International AGYA Panel on

# 'Science Education and Experimental Pedagogies'

Tunisian Academy of Sciences, Letters and Arts, 'Beit Al-Hikma', Tunisia

11 October 2018



within the Conference

Formation à l'Esprit Scientifique et Pédagogies Expérimentales d'Apprentissage  
(FESPE 2018)



### **Organizers of the International AGYA Panel**

The panel is organized by AGYA members Dr. Anis Ben Amor, Higher Institute of Human Sciences of Tunis (ISSHT), Department of Applied Languages, University of Tunis El Manar, Tunisia; Dr. Vanessa Lux, Ruhr-Universität Bochum, Faculty of Psychology, Germany, and Dr. Henda Mahmoudi, International Center for Biosaline Agriculture (ICBA), Dubai, United Arab Emirates.





International AGYA Panel on

## **‘Science Education and Experimental Pedagogies’**

Against the backdrop of ubiquitous digitalization, ever-growing complexity, and the need for sustainability, (higher) education pedagogy must be adapted in order to address these challenges. Students and learners should be enabled to develop as a whole person, fulfill their potential in their private and working lives and to take on the individual responsibility to help solving global challenges. Rethinking pedagogy is crucial to identifying the new skills and abilities that today’s students need to develop. How can professors and educators provide guidance to students to develop these essential skills? How do innovative teaching methods motivate students and encourage them to critical and creative thinking and problem-solving?

The International AGYA Panel on ‘Science Education and Experimental Pedagogies’ seeks to present best practice examples for using active pedagogical techniques and discuss opportunities, challenges, and prerequisites of implementation in different contexts and countries. The panel takes place within the Conference ‘Formation à l’Esprit Scientifique et Pédagogies Expérimentales d’Apprentissage (FESPE 2018)’ organized by the Tunisian Academy of Sciences, Letters and Arts, ‘Beit Al-Hikma’ from 11 – 12 October 2018, in partnership with the Ministry of Education, the Ministry of Higher Education and Scientific Research, Ministry of Women, Family, Childhood and the Elderly, ISEFC, CNIPRE, ESPRIT private university, UNICEF, UNESCO, ALECSO and AGYA.

# Speakers



## **Dr. Nuha Al-Shaar**

American University of Sharjah  
Department of Arabic & Translation Studies  
United Arab Emirates  
AGYA member since 2014

### **Short CV**

Dr. Nuha Al-Shaar is an Assistant Professor at the American University of Sharjah, specializing in Islamic intellectual history, and a Research Associate at the Institute of Ismaili Studies, London. As an AGYA member she has explored various themes of Arabic Literature and the diverse roles of women in Islamicate societies.

*'We need to merit serious attention to students' voices and their perceptions and put the learner at the heart of the process of improving education at all levels.'*

### **'Investigating Students' Views on the Teaching and Study of English Literature at al-Ba'th University in Syria'**

Students' voices and perceptions of their learning experiences have long been ignored. However, they have important pedagogical implications, since they provide a crucial foundation for improving education at all levels. Dr. Nuha Al-Shaar's research is, therefore, an original contribution to the field of teaching, learning, and studying foreign language and literature, partly because it emphasizes the need for understanding the students' experiences, and because it follows a qualitative case study approach. This contributes to a deeper understanding of foreign literature and language pedagogy. By investigating the views and opinions of fourth year undergraduate Syrian students on their experiences of studying English literature at al-Ba'th University in Syria, her presentation highlights the necessity of a more participatory approach to teaching English literature in Syria.'



**Prof. Dr. Fadi El Hage**

Delegate of the Rector for Regional Development and External Programs  
Saint Joseph University of Beirut  
Lebanon

### **Short CV**

Prof. Dr. El Hage is a lecturer and researcher at the Faculty of Education at Saint Joseph University (USJ) and associate researcher at the LIRDEF Laboratory at Montpellier University. As an education consultant, he has headed national and international projects and is the author of several scientific publications on educational issues. He also holds the Chair on Education on Eco-Citizenship and Sustainable Development of the 'Diane' foundation at the USJ and is First Delegate and Founder of the Association for the Development of Education Assessment Methodologies (ADMEE) in its Lebanese section.

*'The students of the new generations are digital natives and the integration of a digital culture in teaching is a must to join a global citizenship.'*

### **Pedagogical Innovation and Digital Integration in Teaching**

Nowadays, the lack of motivation of the students and the teachers constitute a major problem in any educational intervention. Mobilizing learning outcomes to solve problems simulating real life situations is expected from teaching. It is about shifting from 'traditional' pedagogies centered on the knowledge to 'interactive' pedagogies centered on students, in a holistic and global approach, linked to their environment. That's why it is very important to train teachers on innovative teaching methods such as: Process Oriented Guided Inquiry Lessons (POGIL), Reality Pedagogy, Peer-led team learning and flipped classrooms. All these methods are centered on problem-based learning and interdisciplinary approach integration of technology.



**Mr. Béchir Hechmi**

Retired Principal Inspector of Primary Schools  
Tunisia



**Mr. Mabrouk Jabri**

Retired Senior Teacher at a Primary School  
(Ecole Nouvelle Expérimentale) in Cheneni, Gabes  
Tunisia



**Mr. Ferjani Barbana**

Retired Principal Inspector of Primary Schools  
Tunisia

## **Implementation of a Pedagogy Inspired by Active Methods (Freinet) in a Public Primary School in Cheneni, Gabes in Tunisia**

Mabrouk Jabri and Béchir Hechmi, with the help of the community in their hometown Chenini-Gabes, created a new 'experimental school'. This primary school uses new innovative methods of education and technologies that explore the spawning capabilities of children. In this primary school in Chenini-Gabes, education is perceived as partnership with students, staff, families and the school community. The aim is to not only educate students but also to enable them to exercise responsibility and to develop their social and civic skills.

Mabrouk Jabri will present this best practice example and talk about the obstacles of implementing such a challenging project and highlight the opportunities of using innovative pedagogical tools in education.

'With the support of several brave people, we were able to realize our dream: 'The experimental school' in Chenini-Gabes, which uses new innovative methods of education. Now we want to share our experience with others to encourage them to follow this example.'

Mr. Mabrouk Jabri





**Dr. Henda Mahmoudi**

International Center for Biosaline Agriculture (ICBA)  
United Arab Emirates  
AGYA member since 2013

**Short CV**

Dr. Henda Mahmoudi is a Plant Physiologist at the International Center for Biosaline Agriculture, Dubai, United Arab Emirates and member of the AGYA Steering Committee. In AGYA, she is member in charge of the Working Group Arab and German Education and is currently member of the Working Groups Energy, Water and Environment; Common Heritage and Common Challenges and Innovation. Her research focuses on Plant Eco-Physiology, Plant-Biology, Water Conservation, Soil Improvement, and Salinity Management.



**Dr. Maha Nasr**

Ain Shams University  
Faculty of Pharmacy  
Egypt  
AGYA member since 2017

**Short CV**

Prof. Dr. Maha Nasr is an Associate Professor and Researcher of Pharmaceutics and Industrial Pharmacy at Ain Shams University, Egypt. In her research, she explores nanotechnology based drug carriers and composite delivery systems and investigates possibilities to create novel carriers for treatment of diseases. As an AGYA member, she is committed to interdisciplinary research in the fields of health and society as well as education.



## Active Pedagogical Techniques in Higher Education

Active learning is referred to as 'instructional methods that engage the students in the learning process', which allows students to take an active role while learning, by interacting with their instructor and their peers. This dynamic process ensures a metacognitive development of the students and creates a positive two-way learning environment that also allows the instructor to receive feedback regarding his way of teaching.

Incorporation of learner-centred pedagogy into the instructional design of academic courses was reported to improve the students' learning experiences through the promotion of critical thinking and problem-solving skills. However, from a methodological point of view, persuading educators to change from the traditional 'lecture format' to the more innovative 'active teaching methods' is a challenging task, as this requires the revision of the courses to allow for the implementation of the new learning methods.

AGYA members Drs. Henda Mahmoudi and Maha Nasr will give best practice examples for effective active learning in Higher Education as well as elaborate on the theoretical keystones of active learning.

'Using active learning techniques is beneficial because it not only stimulates the students' motivation but also provides them with skills that are important for their future professional success.'

Dr. Henda Mahmoudi





### **Dr. Tobias Redlich**

Helmut Schmidt University  
Institute of Production Engineering  
Germany  
AGYA member since 2014

#### **Short CV**

Dr.-Ing. Tobias Redlich is Head of the OpenLab Hamburg and Scientific Head of the Laboratory of Production Engineering at the Helmut Schmidt University in Hamburg, Germany. His research has taken him to fabrication laboratories, 'FabLabs', throughout the world with particular focus on Europe and Arab countries. He is a member of the AGYA Working Groups Innovation and Common Heritage and Common Challenges.

#### **Fablabs as Experimental Pedagogy**

Short for 'fabrication laboratories', FabLabs are modern and open high-tech workspaces, which offer public access to the means of 'Digital Fabrication' in order to foster education and the realization of individual ideas. 'Digital Fabrication' means to manufacture things based on a digital model – it starts to change our everyday world and our commercial life in a fundamental way. FabLabs are usually equipped with a variety of machines like 3D-printers, laser cutters, a CNC milling machines, electronics compartment etc.

FabLabs belong to the FabLab movement – a global network of more than 1000 open workspaces. Concise courses for beginners provide fast and easy access to the utilization of the machines. Handling the machines does not require special training. Additionally, workshops, lectures and regular meetings offer the opportunity for networking and exchange, mutual learning and knowledge creation.

FabLabs invite all students, pupils and private individuals, plus companies and other institutions, who are interested in craftsmanship, design and technology. In these open high-tech workspaces, contextualized learning in STEM takes place in an authentic, interdisciplinary, and collaborative context. FabLabs are spaces for research, learning and innovation, and foster a lively, creative and collaborative community. The workshops pursue the concept of learning by doing: In the process of constructing truly functioning prototypes, users typically pass through several stages entangling different processes such as idea generating, sketching, concept, design, prototyping and experimenting as well as re-evaluation and reflection.

AGYA member Dr. Tobias Redlich will introduce 'Fablabs as Experimental Pedagogy' using the example of a workshop with Tunisian students that took place at OpenLab Hamburg at the Helmut Schmidt University (HSU) in August 2018. In a month-long AGYA workshop in cooperation with HSU, eight highly motivated students from the National Engineering School of Tunis (ENIT) have built an open source dual laser cutter called 'LaserDuo'.

'FabLabs might be the answer to the question of how to provide people around the world with the means and capabilities of local value creation in a globalized world.'

Dr. Tobias Redlich





### **Dr. Hamida Trabelsi-Bacha**

Coordinator of the Anthropology Department at the Higher Institute of Human Sciences of Tunis (ISSHT), University of Tunis El Manar, Tunisia

#### **Short CV**

Dr. Hamida Trabelsi-Bacha is a Researcher with the network of the International Laboratory of Social Anthropology (Laboratoire d'Anthropologie Sociale – LAS) and a PhD in Ethnology and Social Anthropology of the School of Advanced Social Science Studies (Ecole des Hautes Etudes en Sciences Sociales–EHESS).

*'Mind Mapping as a pedagogical tool helps students to brainstorm and explore any idea, topic, or problem. At the same time it is an effective way of evaluating students' learning process.'*

#### **Mind Mapping as a Pedagogical Tool for Tutorials in Higher Education**

Mind mapping is an innovative learning technique which uses a non-linear approach to learning: Students can visually classify different ideas, topics and concepts and comprehend the relationships and connections between them. Furthermore, 'Mind mapping' can help teachers to observe and evaluate their students' learning process.

Dr. Hamida Trabelsi-Bacha will examine the use of both (heuristic, conceptual) mapping to reflect on the contribution of these techniques of information visualization in higher education and research. She will present best practice examples of using mind maps in lectures as well as in tutorial sessions and seminar classes within the anthropology degree program at the Higher Institute of Human Sciences of Tunis (ISSHT). This will emphasize the pedagogical qualities of this teaching tool whether it is used, collectively or individually.

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## Moderator

Dr. Anis Ben Amor, Higher Institute of Human Sciences of Tunis (ISSHT),  
Department of Applied Languages, University of Tunis El Manar, Tunisia

## Session 1: Experimental Pedagogy

- 15:30-15:45** Fablabs as Experimental Pedagogy (Dr. Eng. Tobias Redlich, AGYA member)
- 15:45-16:00** Active Pedagogical Techniques in Higher Education (Drs. Maha Nasr and Henda Mahmoudi, AGYA members)
- 16:00-16:15** Investigating Students' Views on the Teaching and Study of English Literature at al-Ba'th University in Syria (Dr. Nuha Al-Shaar, AGYA member)
- 16:15-16:30** Mind Mapping as a Pedagogical Tool for Tutorials in Higher Education (Dr. Hamida Trabelsi-Bacha, Coordinator of the Anthropology Department at the Higher Institute of Human Sciences of Tunis (ISSHT), Tunisia)

## Session 2: Innovation in Education

- 16:30-16:45** Implementation of a Pedagogy inspired by active methods (Freinet) in a Public Primary School in Cheneni-Gabes in Tunisia (Mr. Béchir Hechmi, Mr. Mabrouk Jabri and Mr. Ferjani Barbana, Gabes, Tunisia)
- 16:45-17:00** Pedagogical Innovation and Digital Integration in Teaching (Prof. Dr. Fadi El Hage, Beirut, Lebanon)



## **Scientific Organizers**

Prof. Dr. Anis Ben Amor

Higher Institute of Human Sciences of Tunis (ISSHT), Department of Applied Languages, University of Tunis El Manar, Tunisia

Dr. Vanessa Lux

Ruhr-Universität Bochum, Faculty of Psychology, Germany

Dr. Henda Mahmoudi

International Center for Biosaline Agriculture (ICBA), Dubai, United Arab Emirates

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## About AGYA

The Arab-German Young Academy of Sciences and Humanities (AGYA) is based at the Berlin-Brandenburg Academy of Sciences and Humanities (BBAW) and at the Academy of Scientific Research & Technology (ASRT) in Egypt. It was established in 2013. It is the first bilateral young academy worldwide. AGYA promotes research cooperation among outstanding early-career researchers from all disciplines who are affiliated with a research institution in Germany or any Arab country. The academy provides partnership building opportunities and funding to support the innovative projects of its members in various fields of research as well as in science policy and education. More than 50 members—in equal number Arab and German scholars—have been selected to join AGYA since 2013. AGYA is funded by the German Federal Ministry of Education and Research (BMBF) and various Arab cooperation partners.



## AGYA

at the Berlin-Brandenburg Academy  
of Sciences and Humanities (BBAW)  
and

at the Academy of Scientific Research and  
Technology (ASRT) in Egypt



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