

## **DIVISION C / COMMISSION 1 / WORKING GROUP THEORY AND METHODS IN ASTRONOMY EDUCATION**

**CHAIR**

**Paulo S. Bretones**

### **TRIENNIAL REPORT 2015-2018**

#### **1. Introduction**

This WG has 26 IAU-Members and 6 associated. The main project until now of the WG is focused on make surveys in different regions and continents, and literature reviews of scholarly work that already exists in PhD and MSc theses, published papers in journals and works in proceedings of meetings on Astronomy, Physics and Science Education. The needs, which motivate the work are:

1. To grow the number of emerging astronomy projects.
2. Innovate and adapt teacher training, curricula, pedagogical methods.
3. Develop a promotional strategy for enhancing Astronomical Educational Research.

In this sense, the goals of the WG are to promote:

1) Surveys and literature reviews of scholarly production that already exists in PhD and MSc theses, published papers in journals and works in proceedings of meetings on Astronomy, Physics and Science Education, in different regions and continents.

2) Meetings, courses, workshops, conferences and journals in regions and continents to enhance AER.

3) Structures and successful practices such as GHOU, GTTP, NASE, UNawe etc.

During a last period the WG developed the webpage (see <http://www.iau-wgtm.ufscar.br>) where is available information about:

- Brasil: PhD and MSc Thesis, Published Papers in Journals, Proceedings of Meetings.
- Colombia: MSc Thesis.
- USA-International: Various Document Sources as:

International Studies of Astronomy Education Research Database. Subject Index to Papers in Astronomy Education Review (2001-2013).

- Papers about reviews in the discipline.

During the last three years period, members of the WG participated in several meetings:

Colombia:

2016, April.

- "El universo en el salón de clases: los astrónomos queremos otra cosa. Medellín, Parque Explora (<https://www.youtube.com/watch?v=ECnwWkMRenQ>)
- A New International Agenda for Astronomy Education Research, Medellín, Universidad de Antioquia.
- Nuevas Tendencias en la enseñanza de la Astronomía, Bogotá, Observatorio Astronómico, Universidad Nacional de Colombia. (<https://www.youtube.com/watch?v=jBSDYH2d100>)

2017, May.

- IX Congreso Internacional de Formación y Modelación en Ciencias Básicas, Medellín, Colombia.
- Conference Perspectivas en Investigación en Enseñanza de Astronomía for students of the MSc Program of Mathematical Education of the Univ. de Medellín (UDEM).
- Seminar Perspectivas en Investigación en Enseñanza de Astronomía for students of the MSc Program of Education of the Univ. de Medellín (UDEM).

Netherlands:

- Astronomy Education Research: history, trends and challenges. Leiden University, June 2017
- Astronomy Education Research: impact and future directions", ISE2A, Utrecht, July 2017

## 2. Present and future work

The members of the WG were consulted about the past and future of AER. To do this, the WG has started by sending a questionnaire to members of IAU CC1 and the WG in May 2017 with the following questions:

- 1) What are the achievements and impacts of AER in the last decades?
- 2) What are the objectives and challenges of AER for the next decades?

The complete answers can be read at:

<http://www.iau-wgtm.ufscar.br/files/answers-to-iau-c-c1-wg-tmae-questions>.

The answers were selected and analysed and the abstract of the lecture (presented at ISE2A) is available at:

[http://www.iau-wgtm.ufscar.br/files/ISE2A\\_Abstracts\\_Bretones\\_p17.pdf](http://www.iau-wgtm.ufscar.br/files/ISE2A_Abstracts_Bretones_p17.pdf)

During the symposium in Utrecht a meeting of the WG was held and current and future projects in many countries were discussed. Within a network of contacts with colleagues, by e-mails and video conference talks, the following actions were done towards the goal of the WG regarding surveys:

- 1) Find the documents; 2) Provide a list of the references; 3) Get the pdf files of the scholarly works; 4) Analyse and classify the scholarly works by: year of publication, the authors' institutions, school level, study focus in education, content, kind of academic work, theoretical framework; 5) Write and publish papers about the results showing trends and gaps in the production. Even considering the difficulties finding researchers and publications (thesis and papers),

we think that the efforts of this WG good results. One of the most important objectives of the WG is to collect information about Astronomy Education Research. The reported results were successful, and the information is at the web site of the WG.

For the next period, the indexing of the publications in ADS or Google Scholar, is the next step, in order to make AER more visible.

The WG is continuously making contact with colleagues of many countries not surveyed until now. As it is known, researchers on education and astronomers are in different communities but in this project the collaboration is very fruitful. Having new Associate Members in the WG was one of the achievements and a factor in improving all the tasks in general. The contributions of all the WG members have allowed the creation of lists of references and PDFs of publications that have not previously been collected and organized. The next issue will be engaging colleagues in discussion of the surveys and results.

One of the objectives of the WG is to advertise the scholarly work in all countries and languages; studies like these are supposed to encourage new studies and to bind together the community of the area as well.

The last report of this WG can be found at:

[http://www.iau-wgtm.ufscar.br/files/wg\\_report\\_20162017\\_v121217.pdf](http://www.iau-wgtm.ufscar.br/files/wg_report_20162017_v121217.pdf)

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