

WG report: Theory and Methods in Astronomy Education

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Report for the period Jan to Dec 2017

This WG has needs and goals and the main project up now is focused on making surveys in different regions and continents, and on literature reviews of scholarly production that already exists on PhD and MSc theses, published papers in journals and works in proceedings of meetings on Astronomy, Physics and Science Education.

Webpage

On the webpage of the WG (<http://www.iau-wgtn.ufscar.br>) are available the links about:

- * Brasil: PhD and MSc Thesis, Published Papers in Journals, Proceedings of Meetings
- * Colombia: [MSc Thesis version 03May2017](#)
- * 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 area at: <http://www.iau-wgtn.ufscar.br/papers>

Lectures in Colombia

From 04 to 05 May, 2017, P. S. Bretones has been in Colombia and did an oral presentation in the IX Congreso Internacional de Formación y Modelación en Ciencias Básicas held in Medellín. More lectures by P.S. Bretones were held in Colombia about astronomy education research and the international projects of the IAU C.C1 WG. More specifically, the WG-TMAE projects on surveys, publications and meetings were shown:

04 May – Conference “Perspectivas en Investigación en Enseñanza de Astronomía” for students of the MSc Program of Mathematical Education of the Univ. de Medellín (UDEM).

05 May – Seminar: “Perspectivas em Investigación Enseñanza de Astronomía” for students of the MSc Program of Education of the Univ. de Medellín (UDEM).

The survey of theses was also mentioned in two interviews (in Spanish):

04 May – TV Program of the Centro de Producción de Televisión of the UDEM. The video is available and the interview is from 10:36 to 12:30 at:

<https://www.youtube.com/watch?v=sIK0U3CEUEw>

05 May - Radio program ‘Culturama’ of the Radio ‘Frecuencia U 940 AMU’.

We are mentioning here these lectures and interviews to be considered as examples of efforts about the survey to get theses, to make the references available and publish a paper with the analysis.

Lectures and Meetings in Netherlands

A seminar was held in 30 June by P.S. Bretones in the Leiden University: "Astronomy Education Research: history, trends and challenges".

Motivated by the ise2a meeting ([www](#)) held in Utrecht, Netherland, from 3 to 7 July 2017, for the closing invited talk, 7 July, "Astronomy Education Research: impact and future directions", the members of the WG were consulted about the past and future of AER. For this, we have started by sending an email to members of IAU CC1 and the WG in 01 May 2017 with the questions:

In your opinion:

- 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?

There were 16 answers from 01 to 16 May being very suitable and for this work and we thanks here for the collaboration of our colleagues. The complete answers can be read at: <http://www.iau-wgtn.ufscar.br/files/answers-to-iau-c-c1-wg-tmae-questions>

The answers were selected and analyzed and the abstract of the lecture is available at: http://www.iau-wgtn.ufscar.br/files/ISE2A_Abstracts_Bretone_p17.pdf During the symposium a meeting of the WG was held with the colleagues: Frederic Pitout, France; Anthony Lelliott, South Africa; Aniket Sule, India; Nicoletta Lanciano, Italy; Akihiko Tomita, Japan and Susana Deustua, USA (vice president of the IAU Division C). Current and future projects in many countries were discussed.

Within a network of contacts with colleagues, by e-mails and videoconference talks, the following actions were done for the goal of the WG about the steps for surveys:

1) Find the documents; 2) Provide a list of the references; 3) Get the pdf files of works; 3) Make them available online; 4) Analyze and classify the 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.

Contacts with colleagues committed to these tasks include the following names and countries in 2017:

Carlos Molina – Colombia; Frederic Pitout – France; Urban Eriksson – Sweden; Aniket Sule – India; Nicoletta Lanciano – Italia; Paulo Maurício – Portugal; Héctor Bravo-Alfaro, Roberto Vázquez – Mexico; Margarita Metaxa – Greece, Nataliya Kovalenko – Ukraine; Chenzhou Cui – China; Akihiko Tomita – Japan, Lars Broman - Sweden

Received Surveys and Results

Contact/Country	Surveyed Country	Results
Argentina/Néstor Camino	Chile	3 undergraduate theses [2]
China/Chenzhou Cui	China	5 MSc theses; 3 papers [3]
Sweden/Urban Eriksson/	Sweden	3 works of meeting; 1 journal paper; 12 works ESERA 2017 [4]
Sweden/Lars Broman	Sweden	5 MSc theses [5]
Ukraine/Nataliya Kovalenko	Ukraine	1 MSc theses [6]

More specifically, the surveys made by the colleagues had as results the references mentioned in the end of the report. It is important to mention here that Akihiko Tomita, from Japan, found the printed issues of the journal Teaching of Astronomy in the Asia-Pacific Region, published by the National Astronomical Observatory of Japan (NAOJ). From 1990 to 2003, 20 issues of the journal were published. It was discussed with the staff of NAOJ Library and it is preparing the PDF of the issues that will be posted and available to access through the Internet.

Challenges

Even considering the difficulties of the field to find researchers and publications (theses and papers), we think that the efforts of this WG produced good results.

The surveys reported here are examples of what it is possible to do.

One task to be done is to get the indexation of the publications as in ADS, Google Scholar etc.

We are continuously making contacts with colleagues in many countries not surveyed up to the moment and the suggestions are very welcome.

As we know, researchers on education and astronomers are in different communities but in this project the collaboration is very fruitful.

One of the achievements was the new Associate Members of the WG: Anthony Lelliott from South Africa, Carlos Augusto Molina Velásquez from Colombia, Frederic Pitout from France, Paulo Maurício from Portugal and Urban Eriksson from Sweden. They were invited because of the great contribution for this project and are very welcome.

In the same way we invite more colleagues to join us and to make more collaborations in the astronomical community.

The complete version of this report is available at:

http://www.iau-wgtn.ufscar.br/files/wg_report_20162017_v121217.pdf.