

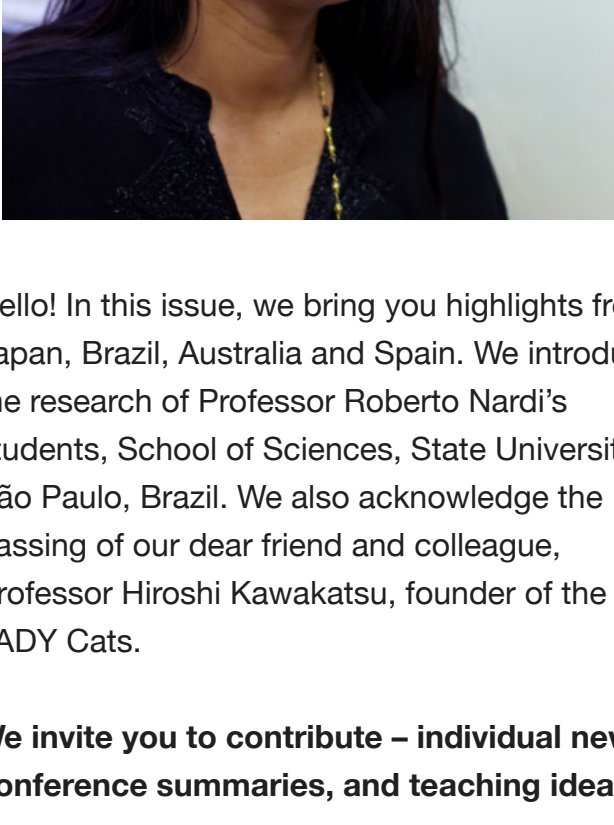
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Number 67

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Editor's Corner



Hello! In this issue, we bring you highlights from Japan, Brazil, Australia and Spain. We introduce the research of Professor Roberto Nardi's students, School of Sciences, State University of São Paulo, Brazil. We also acknowledge the passing of our dear friend and colleague, Professor Hiroshi Kawakatsu, founder of the LADY CATs.

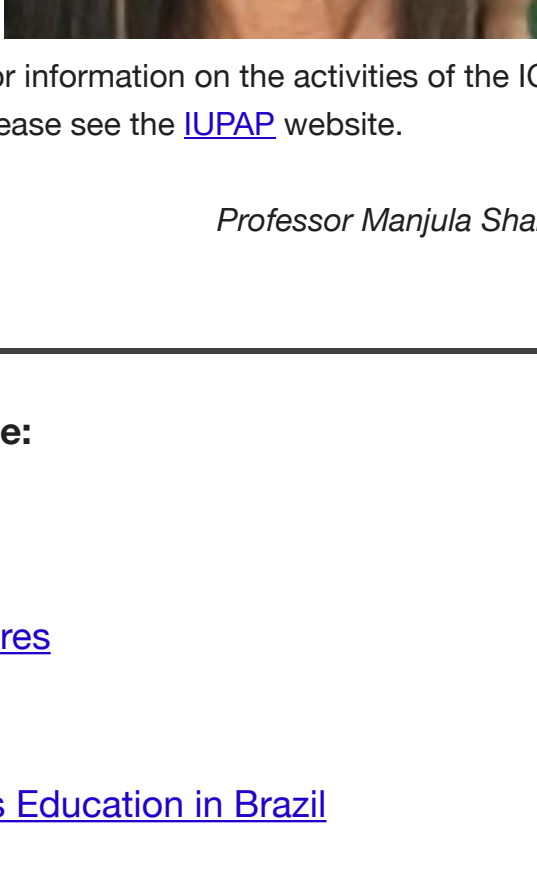
We invite you to contribute – individual news, conference summaries, and teaching ideas.

I would also like to introduce our new Assistant Editor, Dr Vicky Tzioumis.

Vicky has a PhD in Marine Ecology from The University of Sydney and a broad knowledge of the natural sciences.

She is passionate about science and has worked on several research projects focused on learning and teaching across several science disciplines, including Physics, Biology and Veterinary Science.

She has extensive experience in writing and editing scientific papers and reports for publication in international journals as well as producing/editing newsletters and short communications for both expert and lay audiences.



For information on the activities of the ICPE please see the [UPAP](#) website.

Professor Manjula Sharma

In this Issue:

- [Editor's Corner](#)
- [In Memory of Hiroshi Kawakatsu](#)
- [Teaching Tips: Delivering Effective Lectures](#)
- [Student Research](#)
- [GIREP-MPTL Conference Report](#)
- [MRPE - Meeting of Research on Physics Education in Brazil](#)

In Memory of Hiroshi Kawakatsu

By Hideo Nitta

Professor Hiroshi Kawakatsu passed away on August 29, 2018. Prof. Kawakatsu dedicated his life to the improvement of physics education. After graduating from Nagoya University in 1969, he started his career as a high-school teacher of physics and then became a professor at Kagawa University in 1997. In 2006-2009, he served ICPEas its member.

Prof. Kawakatsu was a member of Japanese teacher group known as the STRAY CATS. In 2005, he founded LADY CATS (LADY Creators of Activities for Teaching Science), to carry on the international activities of the STRAY CATS, as an organization of mainly, although not exclusively, female teachers from all levels of the educational system in Japan from primary school to university.

Many of you would have had a chance, at recent ICPE conferences, to visit the workshops presented by the LADY CATS on simple and inexpensive, yet beautiful, science experiments that demonstrate physics principles.

Prof. Kawakatsu was awarded the 2011 ICPE Medal on behalf of the LADY CATS. We will miss his commitment to the global community of physics teachers.

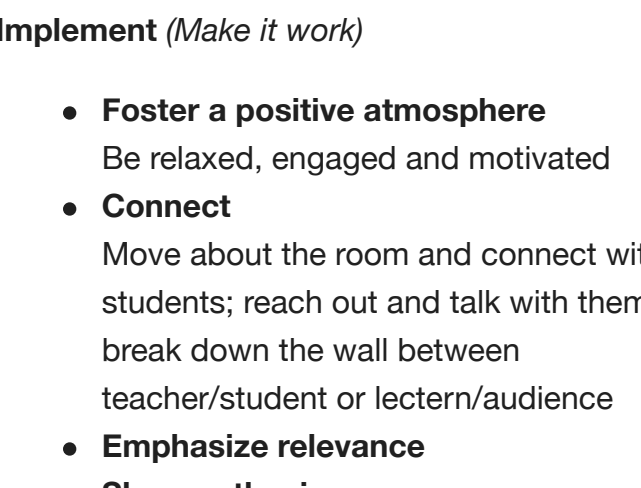


Image: Professor Kawakatsu with the LADY CATS at the 1st WCPE 2012, Istanbul.

Teaching Tips: Delivering Effective Lectures

Peer Observation and Review of Teaching (PORT) team

The University of Sydney

Purpose (Reflect on why)

- To inspire, inform, motivate and/or instruct
- To provide a framework as a guide
- To provide a forum in which key concepts can be emphasised
- To explain and practice difficult concepts and techniques
- To provide new information beyond the textbook
- To build knowledge (beginning of course) or to encourage analysis (later in course)

Plan (Decide on how and what)

- **Rule of 7**
Maximum number of key points per lecture (Miller 1965)
- **Rule of 20**
'Chunk' lecture time with each chunk lasting no more than 20 min
- **Create a lesson plan**
 - **The start**
Outline the objectives and learning outcomes and link to any previous lecture
 - **The body**
Signpost, state transitions, use examples to provide connection and relevancy
 - **The close**
Summarise important points and conclusions
- **Choose a format**
e.g. Story telling
A narrative can be an interesting break from content; innovations, historically important people, discoveries, news items etc.
- **Consider how you dress**
- Formal: communicates authority, expertise and confidence
- Informal: less authority
- **Choose one or more strategies**

Implement (Make it work)

- **Foster a positive atmosphere**
Be relaxed, engaged and motivated
- **Connect**
Move about the room and connect with students: reach out and talk with them; break down the wall between teacher/student or lecturer/audience
- **Emphasize relevance**
- **Show enthusiasm**
- **Pace your speech**
Speak slowly, emphasise key points
- **Make eye contact**
Connect with and check whether students are engaged
- **Use gestures meaningfully**

Reinforce what you are saying

Evaluate (Did it work?)

- **Self reflection**
 - Were objectives met?
 - What went well?
 - What could be improved?
- **Student feedback and performance**
 - Informal – gather your own
 - Formal – USS
 - Quality of associated assignments
 - Exam performance
- **Peer review**
 - Ask a colleague to attend

Information sourced from the following websites:
<http://www.ohsu.edu/xd/education/teaching-and-learning-center/for-faculty/lecture-strategies.cfm>
<https://www.cmu.edu/teaching/design/teach/design/institutionalstrategies/lectures.html>
<http://www22.ac.uk/offices/developing-learning-and-teaching/teaching/strategies/large-groups>

Student Research

Theses dissertations from the School of Sciences, State University of São Paulo

FIGUEIRA, M.J.S. Contribution of argumentative practices for the democratisation of scientific debate in classes of Physics, 2016, 148p.
Master's Dissertation in Science Education. Science Education Graduate Program. School of sciences, State University of São Paulo - UNESP, BAURU Campus, 2016
Advisor: Professor Roberto Nardi

Abstract

An initial teacher education program represents a key moment in the constitution of future teachers, since it is probably the first stage that creates formal opportunities for reflections on the educational, pedagogical, political, and social dimensions involved in the processes of teaching and learning.

Discussing socio-scientific issues of current importance and presenting scientific knowledge as a dynamic, time-situated and socially constructed set of possible explanations are necessary developments for Science Education in the upcoming years, aligned with a more complete and recent view of science.

Several authors have already pointed out argumentation as a powerful methodological resource for science classes. However, the development of argumentative skills is still distant from the current physics teachers' education programs in Brazil. In this regard, it is complicated to expect teachers to exhibit certain skills and develop certain practices in their future classrooms when they have never had the chance to engage in such kinds of activities.

In order to address some of these research interests, we describe here a study that was carried out with seven students in the final year of a physics undergraduate program (better known as licenciatura in Brazil) designed for future Physics high school teachers, who were attending the course of Didactics of Science in a public university – the State University of São Paulo, Brazil.

The research aimed to understand how an argumentative dynamic about socio-scientific issues could contribute to the construction of argumentative pedagogical knowledge among the students. The debate session, which was organized as a simulated public hearing, had as its main theme the possibilities for the Brazilian nuclear plan in the next few years.

Students were grouped in pairs that were asked to represent the views of four different social groups related to the nuclear issues (each student chose a name and title). The activities were recorded on video, for later transcription, and the analysis of the episodes was done according to references on sociolinguistics and argumentation in science education.

This dynamic of educational role-play seems to have facilitated the discursive interactions between students and to have stimulated students to consider alternative sources of information and to search for information before coming to the debate in order to better roleplay the assigned characters.

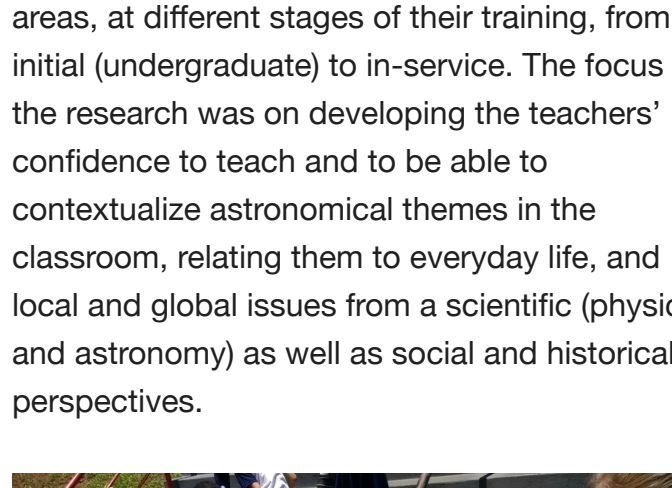
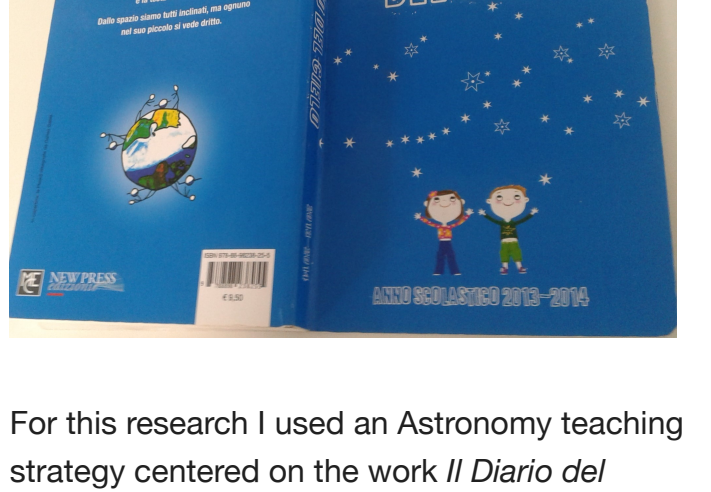
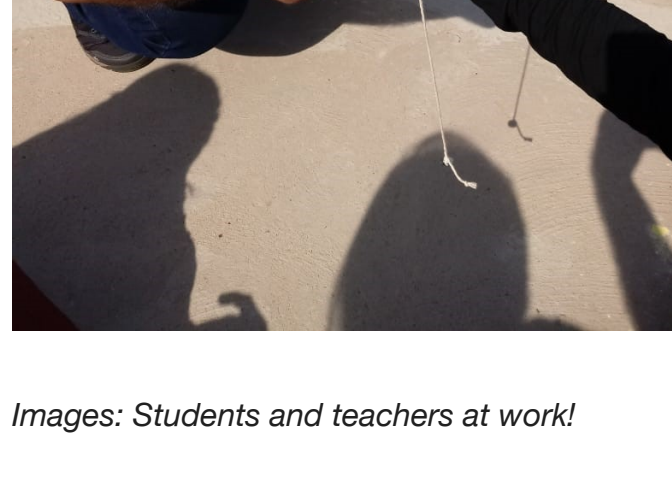


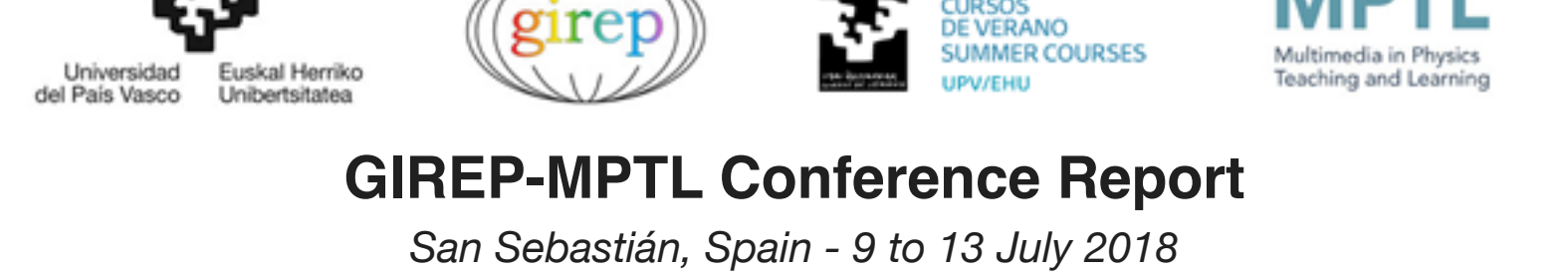
Image: A review of the Brazilian nuclear plan in 'episodes' (van Dijk, 1992), according to the chronological classification created by Marques (1992).



For this research I used an Astronomy teaching strategy, centered on the work *Il Diario del Cielo* (The Diary of the Sky), developed by Prof. Nicoletta Lanciano, from the Università "La Sapienza" di Roma, and collaborated with the Research Group on Pedagogy of the Sky, of the Movement of Educational Cooperation (MCE), Rome, Italy, led by Prof. Lanciano.



Images: Students and teachers at work!



GIREP-MPTL Conference Report

San Sebastián, Spain - 9 to 13 July 2018

Jenaro Guisasaola and Kristina Zuzza on behalf of the local organizing committee of the GIREP-MPTL 2018 Conference

The GIREP-MPTL 2018 international conference offered the opportunity for 257 delegates from 42 countries to come to San Sebastián, 9 - 13 July, to share their knowledge and experiences under the theme of "Research and Innovation in Physics Education: two sides of the same coin".

The Conference was organized by the Donostia Physics Education Research Group (PERG) at the University of the Basque Country (UPV/EHU) in cooperation with: the Conference of the International Federation of Physics Teaching (GIREP), Multimedia Physics Teaching and Learning (MPTL) and Cursos de Verano-Udako Ikastaroak at UPV/EHU. The Conference was sponsored by: the Sociedad Española de Física, European Physics Society-Physics Education Division (EPS-PEd), City Hall of San Sebastián, the Provincial Council of Gipuzkoa and the International Conference on Physics Education (ICPE) of the Commission C14 of the International Union of Pure and Applied Physics (IUPAP). The Conference organizers gratefully appreciate the patronage received from the Department of Education of the Basque Government for this conference.

Altogether, there were 101 oral presentations, 49 poster presentations, 10 workshops, six plenary sessions, two plenary dialogues, and five GIREP Thematic Group contributions - across the seven conference topics:

1. Physics teaching and learning at Primary and Secondary Education
2. Physics teaching and learning at University
3. Pre-service and in service physics teachers education
4. Physics education in non-formal settings
5. Physics into STEM teaching and learning
6. ICT and multimedia in Physics Education
7. Nature of Science, gender and socio-cultural issues in physics education

Participants came from the following countries:

Argentina (5), Australia (4), Austria (5), Belgium (4), Brazil (14), Canada (2), Colombia (1), Czech Republic (14), Denmark (2), Ecuador (2), Finland (4), France (3), Germany (19), Greece (2), Hungary (6), Ireland (6), Israel (12), Italy (24), Japan (2), Malta (3), Mexico (11), Netherlands (12), New Zealand (1), Norway (1), Poland (7), Portugal (3), Romania (2), Russian Federation (1), Slovakia (2), Slovenia (3), South Africa (1), Spain (38), Sweden (2), Switzerland (3), Thailand (2), Turkey (5), United Kingdom (11), United States (10), Chile (1), Uruguay (3), Venezuela (1), Vietnam (1).

The Conference provided an opportunity to recognize outstanding individuals in Physics Education. Professor Gorazd Planinšič from the University of Ljubljana (Slovenia) received the GIREP medal for his relevant contributions in Physics Education.

57 PhD, Masters degree and undergraduate students participated in the conference, presenting posters and oral presentations. A "Best PhD Student Oral Presentation Prize" was awarded by the Real Sociedad Española de Física and a "Best PhD Student Poster Prize" was awarded by the European Physical Society.

The six invited speakers were:

- Dr. Gorazd Planinšič
- Dr. Claudio Fazio
- Dr. Terhi Mäntylä
- Dr. Trinh Ba Tran
- Dr. Anton Santamaria
- Dr. Mila Krijevacka

The idea of a "Dialogue" involves two experts with a leader who gives a brief feedback on the subject and proposes to the two experts questions for the discussion. The two invited dialogues were:

Dialogue 1: Primary, Secondary and University pre-service physics teacher Education. Leader: Marisa Michelini. Invited speakers: Knut Neumann and Gabriela Lorenzo.

Dialogue 2: The actual and potential impact of physics education research in students' learning. Leader: Mieke De Cock. Invited speakers: Jaume Ametller and Paula Heron.

The Conference included seven workshops, two invited by GIREP, one invited by EPS and one invited by MPTL. The Conference program also included three symposiums and one workshop from the GIREP Thematic Group (GTG) organized through international cooperation. The Conference also provided an opportunity for the international exchange focus at two sessions: European Projects Corner and Early Career Topical Discussions. In the "European Projects Corner", on going European projects and ideas to find synergies and possible partners were presented. In the "Early Career Topical Discussion", postdocs, new faculty, and other junior Physics Education Research (PER) members were invited to this topical discussion to meet and discuss common issues.

The second and third day of the Conference were dedicated to celebrating the teachers of physics and included two plenary presentations, two dialogues, 61 oral presentations, six symposiums and six workshops on classroom teaching ideas and practices.

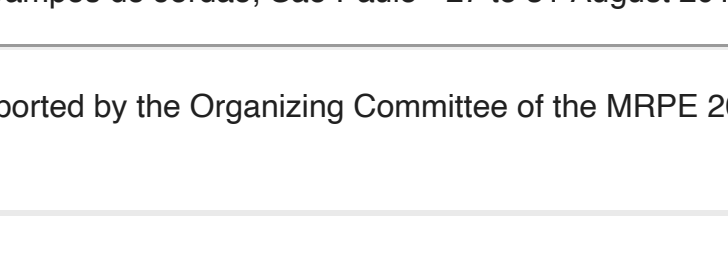
Proceedings

The conference papers will be published in two formats. Keynote papers and some selected conference papers will be published in a printed form, with ISBN code, by Springer. Other presentations which pass the reviewing process, will be published in an electronic form by the Institute of Physics (IOP), under the Journal of Physics Conference Series (JPCS).

We would like to thank all contributors, especially the Invited Speakers, symposium Leaders and all individuals without whom the organization of the conference would not have been possible.



More information can be found at: <https://www.girep2018.com/en/home>



MRPE - Meeting of Research on Physics Education in Brazil

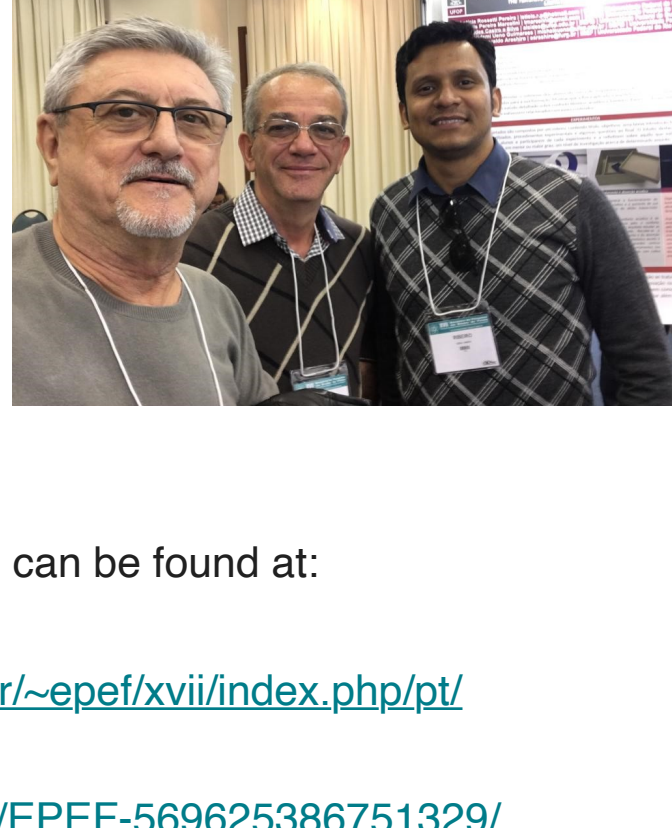
Campos do Jordão, São Paulo - 27 to 31 August 2018

Reported by the Organizing Committee of the MRPE 2018

The Meeting of Research on Physics Education (MRPE) is one of the main conferences for the Brazilian Society of Physics (SBF). It is the most important meeting on Physics Education in Brazil, bringing together nearly 300 Brazilian researchers.

In 2018, in its 17th edition, the Meeting was held from August 27 to 31 in Campos do Jordão, in the State of São Paulo. It covered 11 research areas, including a new one 'Equity, inclusion, diversity and cultural studies on Physics Education', ranked fourth based on the number of submitted papers.

280 full papers were submitted and 191 of them were approved to be presented at the Meeting. The Meeting included two plenary talks, six round tables, 30 oral sessions, and nine poster sessions.



More information can be found at:

<http://www.sbfisica.org.br/~epef/xviii/index.php/pt/>

<https://www.facebook.com/EPEF-569625386751329/>

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