



GIREP Newsletter

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EDITOR'S SECTION

Dear Colleagues,

Electronic GIREP newsletters are a service to active members of GIREP as well as to everybody interested in GIREP. Since summer 2012 all newsletters are available for everyone on the GIREP homepage. Following the tradition, we will announce the publishing of a new newsletter via e-mail for all members and colleagues subscribed at the GIREP mailing list.

Since February 2013 the GIREP newsletter has been recorded permanently as online publication in the ISSN register as follows:

ISSN 2307-0366

Key title: GIREP newsletter

Abbreviated key title: GIREP newsl.

As I am not any longer in the position of the Secretary General of GIREP this is going to be my last volume of the newsletter as editor. I want to thank you for your contributions to the past 7 GIREP newsletters and for the overwhelmingly positive feedback I got during the last years.

All the best for you and stay true!

Yours, Claudia Haagen (Editor of GIREP Newsletter)

GIREP Committee

During the last months the GIREP Committee was not only engaged in preparing the GIREP-EPEC Conference in Palermo, but also in promoting GIREP policy goals. This newsletter will provide an overview of the status quo of our agenda and it will report the results and discussions going on during the GIREP Committee meetings in Udine in April, 2014 and the general GIREP Assembly in Palermo in July, 2014, as well as issues discussed during our skype conference in October.

New GIREP Committee: Introduction of “new & old” members

Members of the GIREP Committee are elected for four years at the General Assembly, which takes place every other year at a GIREP Conference. This year the terms of both Vice presidents, the Treasurer and the General Secretary ended.

Ian Lawrence (Vice president) decided to step down from the GIREP Committee, while Wim Peeters, Leos Dvorak and Claudia Haagen-Schützenhöfer promised to be available for another term in the GIREP Committee.

The President of GIREP Marisa Michelini nominated Claudia Haagen-Schützenhöfer (Austria) to replace Ian Lawrence as Vice president of GIREP and suggested Dagmara Sokolowska (Poland) for the position of the General Secretary.

All members of the new GIREP Committee were elected without any opposing votes in the General Assembly in Palermo. In the following the “new” and “old” members of the present GIREP Committee are introduced.

PRESIDENT of GIREP: Marisa Michelini



Marisa is appreciated by very many people for her activities in Physics Education Research (PER) and Physics Education (PE) in Europe and elsewhere. The list of initiatives she has started or helped to start is very long. Generations of GIREP members do remember well what she has been doing for this community for many years. She has contributed to PER and PE activities aiming at widening the number of people involved and at highlighting the emerging contributions and experiences. But for her friends and all who know Marisa well a very impressive aspect is her enthusiasm, it shows in big and small initiatives. In addition, she strongly respects the value of institutions; because of this attitude Marisa has several times accepted to carry on heavy commitments. For these reasons, and the list is not exhaustive, Marisa will work

hard and wisely as President of GIREP.

VICE PRESIDENT: Claudia Haagen



Claudia has 8 years background as a high school teacher in physics. She earned her PhD in Education from the University of Graz in 2005. During her teaching career Claudia took part in many national projects as well as in EU projects on science teaching (COMEUPHYS2000, Crossnet). Between 2009 und 2014 Claudia held the position of a post doctoral research associate at the Austrian Educational Competence Centre for Physics at the University of Vienna. There, she was involved in pre-service high school teacher education (physics) as well as in in-service teacher training. Her main research interests are standards in science education, students' conceptions and conceptual change strategies especially in optics, PCK,

teacher formation and continuous professional development. Since 2014 Claudia holds the position of an Assistant Professor at the University of Graz, where she is head of the department of Didactics of Physics (Physics Education Research). Next to PER, her responsibilities lie in the coordination of pre-service teacher education and in-service teacher training. Claudia is also managing director of the Competence Centre for Physics Education of the University of Graz. Claudia is the General Secretary of the *Austrian Association for the Promotion of Physics and Chemistry Teaching* (VFPC). There, she is involved in the organisation of Austria's biggest annual teacher conference (“Fortbildungswoche”) for chemistry and physics teacher on the secondary level.

E-mail: claudia.haagen@uni-graz.at

VICE PRESIDENT: Wim Peeters

Wim Peeters has been a secondary school physics teacher for 27 years. During the last 14 years his job gradually shifted towards a 100% teachers coaching job. This implies in-service contacts on almost a daily base with teachers in physics and sciences and giving trainings in a wide field of subjects (didactics, pedagogy, teaching strategies, professionalization, quality thinking in education) for about 700 teachers spread over 300 schools in Flanders. He is also curriculum maker. Starting with a threefold participation at CERN's HST teacher programme, Wim became highly engaged in EU projects, ranging from physics to more general science subjects, always focussing on the role and needs of (physics) teachers. Examples are MOSEM, Fibonacci, SECURE and since September 14 the Erasmus+ project Linpilcare with key topics professional learning groups and evidence based teaching and learning. In the past years he has become more and more involved in primary education too. He established (with others) a non-profit organisation, PONTOn vzw, promoting and supporting science education in Flanders and Europe.

E-mail: wim.peeters.int@gmail.com

TREASURER: Leoš Dvořák

Leos Dvorak is associated professor of physics at the Faculty of Mathematics and Physics and the deputy head of Department of Physics Education at Charles University in Prague. He started his career in theoretical physics, namely in general relativity (RNDr. in 1976, CSc. – equivalent of Ph.D. – in 1982). Then his interests gradually shifted first to computers in education and later to more general questions of physics education, teacher training, simple experiments in physics teaching and learning and also to informal physics education.

Leos has been engaged in pre-service training of physics teachers for about 30 years, giving courses on physics and physics education. In recent years, he has been strongly engaged in in-service physics teacher training.

Leos Dvorak is president of Czech "Physical Pedagogical Society", part of the Union of Czech Mathematicians and Physicists (since 2010). Since 2009, he is a member of the International Commission on Physics Education (commission C14 of IUPAP). Apart from this, he is also involved – and, in fact, happier – in less formal activities, e.g. "spring camps for future physics teachers" or "Heureka" (an informal project for in- and pre-service Czech physics and guests from other countries). He cannot imagine life without books and music. And, of course, without good people around.

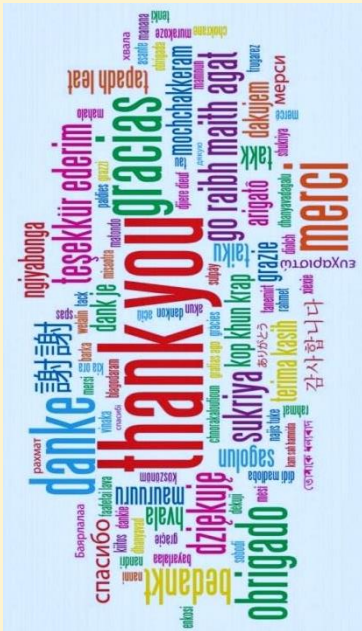
E-mail: leos.dvorak@mff.cuni.cz

Secretary: Dagmara Sokolowska

Dagmara got her PhD in physics, doing research in the field of soft matter. She is an associated professor at Jagiellonian University in Krakow. Her adventure with physics education started 11 years ago when she became a teacher of high-flyers in one of the high-schools in Krakow. Since then she has been involved in science teacher training and popularization of science, doing workshops with children, teenagers and seniors, organizing the Physics Academy, which gathers up to 600 secondary school students in every four-day session of lectures, and being the member of "Foton" and "Neutriono" Editorial Board. In 2007 she initiated "Firefly"- the Polish National Contest in Science for Primary School, being successful to involve 29800 pupils in the 7th run in 2014. Since 2012 she has been a president of FAMO, a non-profit organization, promoting and supporting science education in Poland.

Dagmara has been participating in GIREP conferences regularly since 2007. Her main interest is implementation of innovative teaching and learning strategies, including assessment, and transferring science education research to the schools. She was a partner in three European projects on education: the Fibonacci Project, SECURE and SAILS.

E-Mail: ufdsokol@cyf-kr.edu.pl



(<http://pinoakpto.org/files/2014/09/Thank-You.jpg> , 30th Oct, 2014)

Thanks to Ian Lawrence for all his efforts made for GIREP & PER/PE as the longest serving Vice-President of GIREP

Our outgoing vice-president, Ian Lawrence, deserves an enormous "thank you" from all of us— for contributing to the positive development of GIREP so ably, for being a critical thinker influencing the mission and vision of GIREP by his thought-provoking and humorous contributions. His shoes will be difficult to fill. Luckily, for all of us, Ian promised to keep contact to the GIREP Committee as a "critical friend". We are grateful that we will be able to rely on his helpful counsel in future.



GIREP present at Conferences of Co-operation Partners

GIREP has been successful in winning numerous co-operation partners in the field of PER & PR during the last two years: IACPE, CIAEF, LAPEN, EPS PED, AAPT, iSER, and MPTL. These now formalized co-operations aim at the exchange of Newsletters, Web-sites and mutual reports at conferences. Thanks to the support of numerous very active GIREP members, GIREP was represented at several conferences. Below you can find reports on some conference activities.

AAPT Meeting Mineapolis, August 2014

GIREP was represented by our President Marisa Michelini.

PERC Mineapolis, August 2014

GIREP was represented by Paula Heron.

ICPE Conference, 2014

Leos Dvorak, Treasurer of GIREP represented GIREP at the annual International Conference on Physics Education in Cordoba, Argentina.

GIREP Thematic Groups (GTG)

GIREP Thematic Groups (GTG) are focused communities of GIREP members interested in contributing their expertise in particular facets of physics education, from working with children, through undergraduate work, to teacher training. The aim of the GTG is to stay in touch as critical friends, exchanging thoughts, materials, and findings from the varied contexts in which we work and contribute to GIREP activities on the topic of GTG. The leader of a GTG takes responsibility for involving and organising the participation of active colleagues in the GTG in the conferences: offering an activity (workshop or poster-symposium, symposium) in each Conference or Seminar of GIREP. GTGs come into existence when someone offers to run one, and writes to the GIREP Committee. If the negotiations go well the GTG is announced in the newsletter.

Already constituted GIREP Thematic Groups

GTG on Energy

- Group Leader: Paula Heron (University of Washington, USA)
- Contact: pheron@phys.washington.edu

GTG Mathematics in Physics Education

- Group Leader: Gesche Pospiech (Technical University of Dresden, Germany)
- Contact: gesche.pospiech@tu-dresden.de

Physics Education Research at University (PERU)

- Group Leader: Jenaro Guisasola (University of the Basque Country, Spain)
- Contact: jenaro.guisasola@ehu.es

Evaluation of Learning and Instruction (ELI)

- Group Leader: Genaro Zavala, Tecnológico de Monterrey, Mexico
- Contact: genaro.zavala@itesm.mx

Physics Preparation of Teachers in Grades K-6

Leader: STAMATIS VOKOS, Seattle Pacific University, USA

Newly established GIREP Thematic Groups

GTG on Problem Solving in Physics Textbooks

(Josip Slisko, Facultad de Ciencias Físico Matemáticas, Benemérita Universidad Autónoma de Puebla, Puebla, México)

Numerical problem solving plays a very important role in physics teaching in two related domains. The first is **concept understanding** and application and the second is **practicing of mathematical modeling**. Being so, many physics textbook authors try to have the best possible collection of solved and end-of-chapters, both as a learning opportunity for students and a market advantage for those teachers who can decide which textbook their students will use.

Although students' performances in physics problem solving have been focused in research for a few decades, there are insufficient research data about how physics problems are treated in physics textbooks. That is little bit surprising taking into account how physics textbooks shape teaching and learning.

A few potentially interesting research lines are:

- Do physics textbooks inform students about expert-like steps in physics problem solving?
- Are those steps explicitly used in solved problems and required in to-be-solved problems?
- How are physics problems contextualized?
- Do physics textbooks offer students open problems or problems with multiple solutions?

For further information, please email to: jslisko@cfm.buap.mx

Activities of GTGs at the GIREP Conference in Sicily in July 2014

GTG on Energy

The Energy Working Group's main activity at the GIREP/MPTL meeting in Palermo was a workshop-style session devoted to discussion of assessment. The main goal was to compare ideas about **how to evaluate student and teaching understanding of energy**. Many aspects of the teaching and learning of energy were discussed, but a focus on assessment was maintained. In particular, much of the discussion concerned the design of questions that, if asked of students or teachers, would reveal what they had (or had not) learned about energy.

Participants were divided into groups according to their main interest: primary school students and teachers, or secondary school students and teachers. Participants found the session stimulating and commented that it helped clarify their own thinking about how their learning goals for energy are implicitly expressed in the types of questionnaire items they design. Although some progress was made toward mutual understanding, there is clearly a great deal of work that needs to be done before any consensus on how to assess student or teacher learning can be achieved.

Contact: Paula Heron, University of Washington, Department of Physics, USA (Leader of GTG Energy, email: pheron@uw.edu)

GIREP Thematic Group: Mathematics in Physics Education

The GTG Mathematics in Physics has organized a symposium on "The Interplay of Mathematics and Physics from a Teaching Perspective"

There were contributions by four working groups from **Italy, Germany and Israel**.

The topics were the development of models of the interplay between mathematics and physics focusing on aspects relevant for teaching and learning. Two contributions centered around a first exploration of teachers' ideas and knowledge about this interplay. Other contributions dealt with students' ideas and knowledge about the connection of physics concepts and mathematical formalism. The symposium was well attended and there was an intensive discussion.

Contact: Gesche Pospiech, TU Dresden, Germany (Leader of GTG Mathematics, email: gesche.pospiech@tu-dresden.de)

GIREP Thematic Group: Physics Education Research at University (PERU)

The GIREP thematic group PERU invited to the symposium on "Investigating physics teaching and learning at university" at the Palermo conference.

Most of the initiatives taken by the European Community and by other countries internationally in the field of science education refer to Elementary and Secondary levels of education, but few reports have analysed the state of science education in Higher Education. However, research in science education, and in particular in physics education, has shown repeatedly that the way teachers teach in elementary and secondary school is strongly influenced by their own prior experience as university students. The education that future professionals, such as scientists, engineers and science teachers, receive at University is very effective, both for its duration and as it takes place in a period of full maturity. Given this situation, it seems appropriate to identify, analyse and provide solutions to **the problems of teaching and learning related to the university physics curriculum.**

The symposium aimed to describe and discuss some studies of the current state of the teaching and learning of this specific topic at university level, such as the limitations of the learning achieved by students, teaching strategies and problem-solving. In particular, two of the research issues we address are concerned with the students' learning of conceptual knowledge in topics of electromagnetism and modern physics (**Lana Ivanjek and Kristina Zuza**). The other study looks at students' mathematical abilities for deriving meaning from physics equations (Stephen Kanim). **Paul van Kampen** presented an overview of the state of the art on PER at advanced university level. Finally, **Mieke de Cook** posed question about the development and future of PER, such as the necessity for PER beyond introductory level at university, the definition of theoretical framework of learning physics or, the contributions of discipline-based educational research to PER.

Contact: Jenaro Guisasola, University of the Basque Country, Spain (Leader of GTG-PERU, email: jenaro.guisasola@ehu.es)

GTG on Physics Preparation of Teachers in Grades K-6

The Thematic Group on Physics Preparation of Teachers in Grades K-6 sponsored an Invited Symposium at the GIREP-MPTL 2014 International Conference in Palermo. The invited speakers and their titles were:

David Hammer (Tufts University, USA): An account of elementary teachers' epistemological progress in science. Dr. Hammer stressed that preparing elementary teachers to engage students in science as a pursuit, in addition to science as a set of products of knowledge, is necessary for all teachers, and especially for elementary teachers.

Josip Slisko (Benemérita Universidad Autónoma de Puebla, Mexico): Physics concepts and processes in Mexican primary school textbooks: An analysis from inquiry-based learning perspective and implications for teachers' education. Dr. Slisko's presentation identified systemic issues with the prevalence of incorrect or misleading curricular pieces that elementary teachers are obligated to use and discussed obstacles that need to be overcome for significant change in the way science is taught at the elementary level.

Nikos Papadouris & Costas P. Constantinou (University of Cyprus): Utilizing physics as a medium for promoting integrated learning in elementary science: an example in the context of energy. Dr. Papadouris presented an instructional sequence that interweaves content (energy) with epistemological questions (How do scientists make progress? What is the role of invention of concepts in science? Is there room for creativity in science?) and shared very promising student learning results, for both elementary teachers and elementary students.

Alberto Stefanel, Marisa Michelini (University of Udine, Italy): Research based activities and school-university cooperation in teacher professional development on optics. Dr. Stefanel noted that the preparation of teachers in primary school should include not only substantial science content but also how that content can be proposed to children in the form of games, including explorations based on conceptual challenges. He illustrated his point in the context of an investigation involving Kindergarten, elementary-level, and lower secondary-level teachers teaching optics.

This GTG requests proposals for topics to be addressed in future conferences. Please send your ideas for topics and nominations of speakers.

Contact: Stamatís VOKOS, Seattle Pacific University, USA (Leader of GTG Preparation of Teachers in Grades K-6, email: vokos@spu.edu)

GTG on Evaluation of Learning and Instruction (ELI)

The Evaluation of Learning and Instruction (ELI) is a thematic group within GIREP, formed by physics education researchers and teachers who are working on methods and techniques to evaluate students' understanding and the process of instruction. The main goal of ELI is to collaborate with and disseminate research methods for evaluation among the members of GIREP.

Activities of ELI at the GIREP-MPTL 2014 Conference

During the conference in Palermo, ELI offered the workshop "Assessing students' conceptions and instruction in physics courses" which presented some innovative techniques used in the field of Physics Education Research: item response curves and concentration analysis. During the workshop it was presented that both analyses use multiple-choice questions as the assessing instrument. The 17 participants of the workshop learned that item response curves and concentration analysis not only evaluate whether students choose the right answer, but also analyze the alternative conceptual models students have. In particular, they learned that item response curves can help us to test the effectiveness of a question and assess the result of the instruction by comparing the curves before and after the instruction, and that concentration analysis can help us to analyze more than gain since results include whether an incorrect conception is prevalent after instruction. The participants, not only listened to the presentation of the main aspects of the techniques, but also, worked with real experimental data to obtain results they could take home. Participants commented that they enjoyed the workshop and learned the use of these techniques.

Future activities of ELI:

- Webinars. During the beginning of 2015, ELI will start organizing webinars to present topics that are of interest to the community. Webinars are conferences mediated by internet in which several people of different locations are able to connect and watch the conference. This is a great way to present conferences and to communicate at low cost. The plan is to have at least one webinar every three months with different topics for the community. If you would like to participate as a presenter, you are welcome, please communicate with Genaro Zavala.
- Collection of tools. We plan to set a webpage in which GIREP members could have access to different assessing tools such as concept inventories/tests and evaluation physics learning and instruction reports. Once the webpage is setup, we will announce it to members through this newsletter.
- Research ideas. We are inviting GIREP members who are interested to form a research group to study evaluation of learning and instruction. The first step will be to form a group within our community. The objective of this group will be to share ideas and decide on research topics. Then later we will divide the group with different research projects. All ideas and results of this work will be shared with the GIREP community through this newsletter. If you are interested to participate in the first group, please contact Genaro Zavala.

Contact: Genaro Zavala, Tecnológico de Monterrey, México (Leader of GTG ELI, email: genera.zavala@itesm.mx)

Report: Activities of the GIREP Committee

The GIREP Committee had 2 face-to-face meetings and 2 online meetings in 2014. In the following you can find a summary of the most important issues and discussions going on.

GIREP Statutes

The issue of GIREP becoming a legal entity is a long pending one. GIREP is not a legal body, so it is not possible to take part e.g. in European projects (see HOPE project). One problem related to this issue of legal entity is the outdated statutes of GIREP. One big goal of the GIREP Committee is to change the statutes according to European guidelines and reach a proper legal status for GIREP. Wim Peeters presented intended changes in the statutes at the General Assembly in Palermo. The members of GIREP will be asked for their ideas concerning the intended changes. A document presenting these changes is available at the member section and can be commented can be commented from November 15th 2014 on until February 15th 2015.

Future initiatives

At the General Assembly of GIREP in Palermo the following issues centering around future initiatives were proposed:

One idea for future initiatives is to re-introduce the concept of GIREP seminars with a first day of presentations and 3-4 more days dedicated to in-depth discussion on a concrete physics content topic and its educational implications.

For the 50th anniversary of the foundation of GIREP in 2016 the president of GIREP proposed the idea of an international GIREP seminar for teachers. As a topic "innovations in physics teaching and learning" was suggested, addressing 2 facets: content and methods. This idea was also supported

Leos Dvorak expressed the wish of the present ICPE commission to cooperate with GIREP closely and wherever possible.

REACTIVATION of the GIREP MEDAL

Marisa Michelini initiated the reactivation of the GIREP medal for persons with exceptional contributions to the PER / PE community. The medal will be rewarded at maximum every second year, following a procedure based on criteria focusing on excellence. The medal was designed by our former Vice president, Ian Lawrence.

Service for GIREP members: print certificates of membership

If you are a paying member of GIREP you can print a certificate of membership for the present year – provided you have paid the annual fee.

GIREP a supporting partner of HOPE

GIREP proposed to support the initiatives of the HOPE project.

GIREP Book – Proceedings of Reims 2010

In August 2010 the city of Reims and its university organized the international conference "Teaching and Learning Physics Today: Challenges? Benefits?" with the Groupe International de Recherche sur l'Enseignement de la Physique (GIREP), the International Commission on Physics Education (ICPE) and the group on Multimedia in Physics Teaching and Learning (MPTL). These three bodies share very important goals, such as contributing to improve the teaching/learning of physics at all levels, campaigning for the exchange of information covering all aspects of physics education, supporting innovation in teacher education methods in order to take advantage of the progress of the research in physics as well as in physics education.

The conference was supported and endorsed by International Union on Pure and Applied Physics (IUPAP), European Physical Society (EPS), the University of Paris Diderot Paris 7 and its Laboratoire de Didactique André Revuz (LDAR), the Société Française de Physique, the French Union des Professeurs de Physique et de Chimie (UdPPC) and the laboratory GRESPI.

The organizers of the conference were fortunate to benefit from the combined experiences of over three hundred participants from all over the world, representing researchers in various fields of physics, physics teachers of all levels and PHD students from fifty countries. The challenges in teaching and learning physics today, referred to in the title of the conference, were described, compared and carefully examined. The subject of benefits of teaching and learning physics also produced 230 contributions of great interest. A broad range of pioneering proposals and physics education research originated suggestions aimed at helping teachers in improving their work by developing scientific reasoning using simple experiments, exploring existing (free or easily available) multimedia resources, as well as taking advantage of fascination of science and using history of science as a means of including physics in general human achievement.

The richness of contributions presented and the help of the University of Udine allowed GIREP to produce **selected paper web proceedings**, available in GIREP web site, and a selected **paper book with selected papers** presented. Long and detailed was the peer review process to produce this book. It opens with an overview of the multimedia resources for physics teaching and continues with the detailed analysis of IBSE (Inquiry Based Science Education) projects, where the results do not always match the intentions of the supporters confidently expecting the increase of children's interest in science.

In the first chapter "Background aspects", the reader will find some of the nine plenary talks of great interest. The second chapter "Special aspects" contains the contributions to the three Symposia held in the Reims conference, selected by an external reviewer and by each Symposium's Chairperson. The third chapter "Topical aspects" contains the oral contributions presented in seven times seven parallel oral presentations sessions and some awarded poster contributions, each selected by two reviewers. The fourth chapter "Thematic analysis" is dedicated to the contributions emerged from the nine Workshops.

We thank the anonymous peer reviewers, whose important help may not always be evident, but is fundamental. It goes without saying that we are very grateful to all the participants for stimulating discussions, important advice, constructive criticism and patient encouragement.

We hope that this book will be useful to those involved in physics education research, as well as those who practice the teaching of physics every day.

Wanda Kaminski and Marisa Michelini

Conferences

The **GIREP-MPTL International Conference** on Teaching/Learning Physics: **Integrating Research into Practice** was held **at University of Palermo, Italy** in **July 7-12, 2014**. <http://www.unipa.it/girep2014/>.

We have to thank Claudio Fazio and Rosa Maria Sperandeo-Mineo for the good organisation of the conference. According to feedback of the participants and the organisers given at the General Assembly the conference turned out to be a great success. First evaluation gave hints for future conference organizers: there were several voices for reducing the number of parallel sessions and instead increase the number of the posters.

GIREP MEDAL 2014: awarded to Jon Ogborn (Laudation by Ian Lawrence)

This is a précis of the oral laudation of Professor Jon Ogborn, on the occasion of the presentation of the GIREP medal in Palermo, July 2014.

Sometimes there is a need to celebrate one of our own community: to say that this is someone special. That's just what the GIREP medal is for. There are some criteria which will help shine some light on some of the contributions of Jon Ogborn.

Amongst the criteria for the award of the medal, there are a few that we will highlight, to give an indication of why we consider the celebration appropriate.

In many of the first GIREP conferences, Jon shared some of the seminal work that informed the Nuffield projects: for example the graphical solution of second order differential equations, how to teach about bound states in the hydrogen atom to students in their final years of schooling, and the introduction of statistical mechanics thinking for the later years of schooling. Much later, at the world conference in 2012, some decades later, we still find Jon

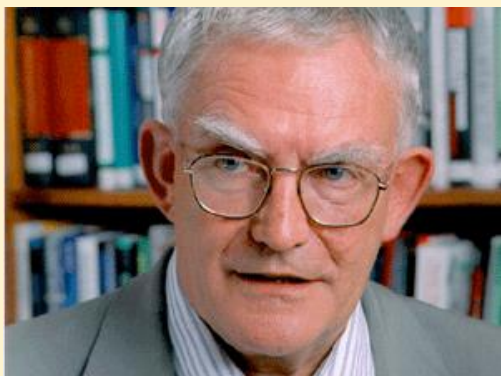


Figure: Jon Ogborn <https://web.phys.ku.edu/~JOPF/Media/Citations/ogborn.pdf> (26.10.2014)

helping us to think again about how we approach thinking about teaching physics in a thought provoking plenary. So it is clear that he has been active in GIREP at many levels, for several decades. His leadership of research groupings, such as the London Mental Models group, which remains significant in thinking about introducing computational thinking to students in physics, and the academic grouping which resulted in work on constructing explanations using many modes of communication in the classroom. Less immediately teacher-focused, but no less essential for the community, are many thoughtful research papers, such as one that explores reasons for believing that children might well give accounts of processes in ways that have more in common with Aristotelian rather than Newtonian thinking.

Jon has developed the teaching of physics in well-founded and long-lasting ways, for example in co-leading the Nuffield Physics project, which truly deserves the epithet seminal. And there were a series of developments, often working with teachers, for example taking second law reasoning to the lower secondary school with the Energy and change materials. Then, much later there was another significant project, led with insight and encouragement that became Advancing physics. This combined Innovative approaches, with an innovative publishing model.

In spite of these significant works, Jon has been well involved in GIREP conferences, you could have noticed him as a plenary lecturer, as an insightful member of a seminar table, presenting workshops on many paths approaches, collaborating with, and encouraging, colleagues from two continents. But you would also find him in workshops, contributing to seminars run by others, listening to parallel session oral talks, engaged and accessible over coffee and other breaks.

In all of this life in GIREP, Jon has had a real concern to allow others to have a better time in explaining physics: that is, he has been essentially, not peripherally, concerned with physics pedagogy. There can be no doubt that he has had a demonstrable impact, both nationally and internationally, across both pedagogy and content knowledge and so is of high standing with their colleagues. If you want a thoughtful, careful and considered, quintessentially honest opinion, here is your man. Even down to 'I don't know'.

Others have written of Jon: "His influence on physics education has been second to none".

But this is our chance to say thank you to Jon, from this community, in the confidence that many things he worked on and cared about have taken root in many people in this room, and that's a good way to end such a celebration. We say: "His influence on us has been second to none".

Upcoming Conferences

GIREP – EPEC 2015 Conference/Seminar (Wroclaw, Ewa Dębowska & Tomasz Greczyło)

The GIREP – EPEC Conference will be held in Wroclaw from 6-10th of July, 2015.

Further information can be found: www.girep2015.ifd.uni.wroc.pl

WCPE 2016

WCPE 2016 will be held in São Paulo (Brazil) as a joint conference by several institutions (GIREP & ICPE plus endorsing organizations).

What's going on? – Newsflashes from GIREP countries

This section of the GIREP newsletter is meant to inform GIREP members what's going on in the GIREP member countries. We would like to encourage you to contribute to this section.

Science in motion!

Péter Mészáros (professional and metodological leader), Mobilis Science Center, Győr, Hungary

Mobilis Science Center in Hungary, Győr is the only transportation themed science center in Europe, which was founded in 2012. Mobilis concentrates on vehicle industry and traffic, in a wider sense on motion and mobility, presenting the laws of natural sciences and their practical application in a playful and colourful way.



The Mobilis is more than a science center! 74 exhibits are displayed on an area at about 1200 m² to be tried which encourage everyone to play. There are spectacular and entertaining experimental presentations several times daily, with irregular natural science lessons, temporary exhibitions and several exciting programmes either for the young and the old, for school groups and families. Every year there are 40.000 visitors in the

Center and in outreach programs 60.000 visitors.

Nowadays it is a big problem that the students do not like learning physics at schools. However the developments in economics or technical sciences require the knowledge of physical basics. Thus the most important challenge is to make the students love sciences, especially physics. Especially the primary students are deeply influenced by the adult's stereotypes. Parents and teachers needs to be motivated by Mobilis. This project also helps students in their vocational orientation and approach shaping.





various areas of their research to secondary school students. We organize roadshows in schools together with other automotive companies.

School's possibilities are limited (money and time). It is needed to give methodological assistance to the schools and teachers. Mobilis is a place for national and regional competitions. Here tasks about 6 themes of physics and chemistry are organized. Students are also prepared for the physics A-level in another study group. There are conferences for high school and university teachers about how to support their talented students, study groups and about physics teaching. In cooperation with the Széchenyi István University, we are developing the science communication subject. We also support the local science teacher training.

Schools do not have the right devices to find their talent students and improve them. We try to develop these methods and possibilities in cooperation with other schools.

We were mentoring a high School student at an international innovation competition (a vehicle made by superconductor). Camps are organized where children learn how to research and experiment. There are tenders for university students to make more experimental tools. Children between 13 and 16 can take part in talent study groups in cooperation with their own schools. Mini Science Picnic is also one of our events, where talented high school students together with their teachers present experiments all day long. With the sustainable transport in focus we have E-gokart study group, too.

Need to think in a bigger system, it is important to confirm the connection between the public education, universities and economy. It is realized in special themed events with custom-developed tools.

One part of the big interactive exhibits were made by own ideas, other part of them were developed. On the air-cushion table we presented the aquaplaning phenomenon in a TV show which is about the Formula 1 physics aspects. All of the hands-on-experiments are developed by our team. Some of them won awards just like the fire tornado, which has two variations. There is a regular experimental demonstration in the Mobilis Center, and we present interactive internet mediation, we also present our experiments in outside organizations. Our toolbar is also improved in cooperation with companies (eg. Lenz-cannon). For the thermal experiment we use thermo-camera. At the tinkering workshops those who take part can take home the products they made. The experiments present the physics- and chemical side of the vehicles and transportation.



Mobilis on the web: <http://mobilis-gyor.hu>, https://www.facebook.com/mobilis.gyor/photos_stream

Austria: University of Graz establishes department for Didactics of Physics

Starting with the winter term 2014/15 the University of Graz has established an independent organizational unit for the Didactics of Physics (PER). So within the Institute of Physics, Didactics of Physics is now located on one hierarchy level with the departments of Experimental Physics, Theoretical Physics and IGAM (department of Geophysics, Astrophysics und Meteorology). Next to this rise in hierarchy on the level of organizational affairs, the department of Didactics of Physics is now also based in its own premises, it is located in a separate wing of the physics building. In addition, a tenure track professorship was created for Didactics of Physics which is held since October 2014 by Claudia Haagen.



Figure: Team members of the department of Didactics of Physics (Mathelitsch (1st l), Rechberger (2nd l), Aldrian (4th l), Haagen-Schützenhöfer (1st r), Deputy Assistant undersecretary Nekula (3rd l) and Vice-Rector for Research Scherrer (2nd r).

These steps make the position of Physics educational Research at the University of Graz outstanding compared to all other didactics working groups within the University of Graz. With exception to the Austrian educational Competence Centre¹ for Physics, the Graz department of Didactics of Physics is one rare example of a full functional working group in the field of physics education research operating as a department of its own.

This upgrading of didactics of physics continues a long tradition of the Styrian location as THE active and innovative hot spot within the scene of physics didactics

in Austria. Promoted by single players like A. Hohenester and L. Mathelitsch the numerous activities related to didactics of physics became for the first time visible on an organizational level when the Regional Educational Competence Centre for Physics was founded at the University of Graz in 2006. Then it was the first centre of this kind, nowadays it is a model for many similar centres all over Austria. Hopefully this increase in importance of physics didactics and physics educational research at university level will continue in Austria and many more departments in this field will flourish.

TalkPhysics.org

(IAN LAWRENCE, Institute of Physics (IOP), UK)

The Institute of Physics have supported email distribution lists for physics teachers since last century. By 2009 with the advent of Web 2.0 and the development of the Supporting Physics Teaching resources a more flexible platform was needed. Elgg was chosen and 'talkphysics.org' was launched in 2010. The site was relaunched in 2012 using Drupal to facilitate development.

There are currently 8731 registered users (accesses from 143 countries since 2012) and discussions range from urgent cries for help to convoluted threads with passion and humour. There is an increasing use of images and video and live streaming of video tutorials has recently been successfully piloted. The latest development is a monthly digest which is emailed to all members (here is a sample: <http://iop.msgfocus.com/q/1m5WH1X09wolJreBaguX/wv>).

The Supporting Physics Teaching resources, from the Institute of Physics, have been used for teacher development and education within the UK for nearly a decade (from trials), and were first published in 2006 on CDROM. That they've been subject to continuing refining, and are now available as web resources, may make them of interest to colleagues. You can access the 12 topics (covering the core ideas in the teaching of physics for those 11-16 years old) from <http://supportingphysics.net>, from where you'll find your way to individual topics, (each with their own URL e.g. <http://supportingphysics.net/FmHome.html>). Every topic is backed up by supporters materials and discussions, which have a home at TalkPhysics.org.

The Stimulating Physics Network

The Institute of Physics is leading the running of the Stimulating Physics Network (SPN). The SPN is a national programme supporting the teaching and learning of physics in schools across England. The aim of the SPN is to improve pupils' experience of physics whilst they are 11-16, as measured by an increase in the number of pupils choosing to study post-16 physics, particularly girls. SPN works with schools where these progression rates are very low; typically, these are also schools with high indices of pupil deprivation.

¹ There is one Austrian Educational Competence Centre per school subject.

The SPN is based around a team of 35 Teaching and Learning Coaches (TLCs) who are all highly experienced and successful physics teachers; each TLC provides a bespoke programme of teacher CPD and pupil engagement activities for 12 Partner Schools for a period of two years, at no cost to the school.

Since 2012, the SPN has facilitated over 80,000 teacher-hours of physics CPD and over 60,000 pupils have experienced SPN engagement activities.

Over the next two years, the SPN will also be running a new pilot project called 'Improving Gender Balance' (IGB). A team of specialist Project Officers will work intensively with 24 schools for two years, to identify and resolve the issues surrounding the disproportionately low number of girls studying A-level physics, including girls' confidence and resilience, teachers' classroom practice, and whole-school issues of gender stereotyping.

More at: www.stimulatingphysics.org

Iranian Physics

I am Soleiman Rasouli, the president of Scientific Advisory Committee of "15th Iranian Physics Education Conference (15IPEC)". 2014 Iranian National Physics Education Conference took place at the University of Modares- Farhangiyani in Sanandaj on 24-27/August /2014. Farhangiyani University is a special university for teachers in Iran.

The beginning of educational and scientific activities in "Sciences Education" of Iran started at 1932 and developed at 1961. In 1978 different communities of Physics, Chemistry and Mathematics established in most states of Iran. This was the beginning of the process that ended by establishing "Union of Iranian Physics Teachers Societies" (UIPTS) which developed not only in Tehran, but also in all 30 states of Iran. Nowadays there are "educational and scientific Societies of Physics Teachers" in all states of Iran that all together make UIPTS. Now UIPTS has more than 1500 members in Iran and held an annual conference called IPEC.

I should mention that UIPTS is an NGO in which the president and 6 other people are chosen in an election for 2 years to manage the UIPTS and its scientific and educational activities and researches like: holding conferences and congresses and workshops, publishing educational magazine, updating UIPTS website (www.uipteachers.com), etc as UIPTS committee. The office of UIPTS is in Farhangiyani University of Tehran .

We are interested to be in connecting with GIREP, especially for 15IPEC Conference. We tend to have at least a video conference with the expert professors of Physic Education chosen by GIREP to inform the participants of 15IPEC about standards and final developments of Physics Education in all over the world. We have an experience of videoconference with CERN last year in 14IPEC that benefited physics teachers. Of course it will not be the end, but a beginning to have warm relation between GIREP and UIPT.

Best Regards, Soleiman Rasouli

UIPTS committee member, Union of Iranian Physics Teachers Societies

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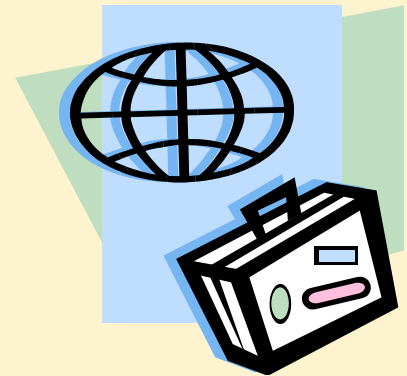
POST-DOC Position: University of Vienna (Austria)

At the Austrian Educational Competence Centre at the University of Vienna, the position of a senior scientific assistant ("post-doc", 100%) for a 6 year fixed-term appointment is offered.

Job description: Research and development in physics education research, teaching duties in physics education as agreed upon in the collective contract of the University, participation in administrative and organizational aspects, independent lecturing and publication activities. We are looking for an experienced researcher to join the Austrian Education Competence Centre Physics. This position provides a multifaceted environment for science education research and practice. While conducting research projects, you will jointly mentor and advise master thesis candidates, teach physics education at bachelor and master level (the number of hours/week will be based on your salary agreement) as well as assume administrative and coordinative duties/responsibilities. Your individual ideas and research focus will be valued and very welcomed as an addition to the centre.

You can find the complete job offer (also in English language) at <https://univis.univie.ac.at/ausschreibungstellensuche/> with the identifier 5354

Deadline for Application: November 25th 2014



GIREP Membership: renewal & fees

We want to thank all members for supporting GIREP in 2014 and hope for further support. Fees for GIREP membership are again due at the beginning of 2015. Payment information can be found on the GIREP homepage (<https://www.girep.org/information.html>)

We also invite everybody interested in physics teaching and learning as well as in physics education research to join GIREP. You can become member easily. Just follow that link: <https://www.girep.org/register.html> .

As a GIREP member you have **exclusive access** to the digital proceedings of the past GIREP conferences. In addition you can get a **reduced registration fee** for GIREP conferences and for conferences of our partner organisations.

*Become member of
GIREP or join the GIREP
mailing list by registering
electronically*

Please send contributions for next GIREP Newsletter to Secretary Dagmara Sokolowska ufdsokol@cyf-kr.edu.pl till January 31, 2015!