

SCIENCE ON STAGE: THE EUROPEAN PLATFORM FOR SCIENCE TEACHERS

D. Featonby

Science on Stage Europe, da.featonby@gmail.com



INTRODUCTION

Science on stage is a pan European **teacher network** established in 2000 as Physics on Stage which grew into Science on Stage in 2005. It is a non-profit association since 2011 with administrative headquarters in Berlin. We believe that living out its motto “From teachers for teachers” makes Science on Stage unique in Europe. By inspiring science teachers we provide inspiration for our students, and therefore will make a difference in the supply of motivated scientists in the future. The ultimate goal of science on stage is to improve science teaching by encouraging creativity in science teaching, with teachers sharing ideas that have worked for them in the laboratory and classroom. Through this we shall encourage more school children to consider a career in science or engineering by spreading good teaching practice among Europe’s science teachers.

Science on Stage has an expanding network of national committees (NSCs) in more than 25 european countries (1) who are responsible for selection national representatives for its festivals and promoting the good teaching ideas from these biannual festivals and consequently reaches about 100.000 teachers and teacher trainers each year. Each National Committee works independently following certain agreed guidelines common to all, is self funding from local industry, governments and educational institutions, and is supported from the Science on Stage office in Berlin.



Fig.1. Teachers sharing ideas at a recent Science on Stage Festival

Science on Stage has organised eight European festivals from 2000-2015, the latest being in London, and the next is planned to be held in Debrecen, Hungary in 2017.

We draw together teachers of school children of all ages to share experiences and work together on joint projects. We seek to promote science for young people via enthusiastic teachers and we encourage teachers as to their own value and promote high quality teaching, seeking to demonstrate the importance of STEM to children, to the public and to decision makers across Europe.

ORGANIZATION

Science on Stage is organized through an executive board

7 members, elected every 4 years by representatives of the National Science Committees. At the present time there are representatives from Cyprus, Czech Republic Germany, Spain, Sweden, Switzerland and UK. The board meets regularly in between festivals to plan and innovate for the future.

How does Science on Stage enable the international exchange from teachers for teachers?

Many people know of science on stage though its biannual festivals which are attended by delegates SELECTED by national Committees according to a quota system for each country depending on the number of inhabitants. We therefore maintain a high standard of presentation. Science on Stage festivals have taken place every 2 years at different venues throughout Europe bringing together up to 350 science teachers (primary to secondary level) from over 25 European countries. The national contacts can be found on www.science-on-stage.eu



Fig.2. Teachers at the recent Science on Stage Festival in London (2015)

FESTIVALS

Science on Stage Festivals showcase the work of the teachers with over 200 stalls showing a huge variety of projects from all STEM subjects. The Festivals are fully funded for participants by the host country and Science on Stage Europe, so teachers simply have to reach the venue. All else is provided for the 4 day festival. Follow-up activities are then encouraged across borders. All participants are selected through national events in each country. Each festival is carefully evaluated by recognized agencies, so that we can determine how successful the programmes have been. See the science on stage website for the most up to date information.

Evaluation

- 69% of the teachers attending said participation increased their motivation and joy in teaching
- 79% of participating teachers have incorporated ideas that were presented at Science on Stage into their own lessons

- 74% of teachers appreciated the opportunity to exchange experiences with cross border colleagues
- 50% of participating teachers have incorporated ideas from Science on Stage into teacher training events

(Reference: Evaluation Study carried out by Humboldt University Berlin)

The Science on Stage Festival is a platform for the exchange of **new ideas** and **concepts** in science teaching. The **follow-up-activities** ensure the development and sustainable spreading of these ideas and concepts.

First we encourage sharing ideas within one's own country

All participants are encouraged to take ideas from the festivals back home, to share

- i) within their schools and localities
- ii) through teacher training events and conferences

and we know that a massive 50% of participants use ideas in training events to share with others

Then we encourage sharing ideas and working across Europe and beyond

All participants are encouraged to make lasting friendships at the festivals which in turn lead to working relationships and sharing of fresh ideas. 50% of participants maintain 5-9 European contacts after festivals

INTERPLAY: MY OWN STORY



Fig.3. The author

I first encountered Science on Stage in 2005 when I was privilege to be selected by the UK National Science Committee to attend the Science on Stage Festival in Geneva. This was for me, like others, a great eye opener, to meet with so many like minded, enthusiastic teachers from a wide range of different backgrounds and countries. After the conference, where I presented some ideas on using magic to engage children, (that is magic that is based on scientific principles rather than deceit) I came home with my head buzzing with ideas.

Two years later the festival in Grenoble gave me the opportunity to represent the UK again and present a workshop "What Happens Next?" and meet up with colleagues from the previous festival. Several took up the idea, and we shared some ways in which the workshop could be extended.



Fig.4. Large and small balloons. When joined the smaller balloon inflated the larger one.

*One such idea was the “Two balloon experiment” where a less inflated balloon will blow up, (surprisingly) a connected larger one. A discrepant event to many, Zuzana Jesková, a colleague from Slovakia, used this idea with her students, and together were able to publish an article in the journal *Physics Education*, “Balloons Revisited”. I was able to visit Zuzana in Kosice, Slovakia and present the workshop there, and this led to further friendships, and even now, in 2015, a joint article published in *Physics Education* with a colleague of Zuzana. The workshop has since been presented in The Netherlands, Czech Republic, Poland, Ireland, Scotland, Belgium, Italy to my knowledge, and maybe other countries too, as the ideas now feature regularly in the journal of the Institute of Physics, *Physics Education*. Whilst I write the column, several colleagues from *Science on Stage* have been able to contribute.*



Fig.5. The author with students at staff in Kosice, Slovakia.

*More recently I was elected to be a member of the *Science on Stage Executive* and this has given me the privilege of serving the community more*

widely, helping with decision making on matters of policy, and supporting new members of science on stage, We are a growing community and I fully expect that the 2017 festival will see the largest number of participating countries so far in Science on Stage's history.

And finally I can honestly say I have friends and colleagues all over Europe now that I didn't have 10 years ago, a greater understanding of the different educational systems, and more than that a greater insight into the current situations around our continent and history of each nation.

In addition Science on Stage encourages its own follow-up projects alongside the education festivals.

Teacher training events and travel scholarships

Workshops with international festival projects take place in every Science on Stage country. Teachers can get scholarships for further exchange with their colleagues, to develop project ideas together.

Science on Stage Europe provides funds to encourage...

“taking a workshop“ to another country

19 WORKSHOPS were formally funded across borders between 2013 and 2015, and others took place informally. Many workshops were repeated in home countries and participants used the ideas from workshops at the festivals to devise their own.

“working together on teacher initiated joint projects“

10 travel scholarships were formally funded between 2013 and 2015 and several more have already been instigated following the 2015 festival covering a huge range of topics. These enable teachers who participated in the festival to meet again and continue their work and to develop new projects.

Development of teaching materials

Groups of international teachers from Science on Stage develop teaching materials together. Results are published and spread Europe-wide; e.g. **Smartphones in Science Teaching** (2014). The latest pan European is a group of 20 teachers from 16 countries developing materials and a stage booklet on „**science and football**“ sponsored by Science on Stage Germany due to be published in June 2016.

Some countries produce their own publications for European distribution both in print and on line For example the Irish Science on Stage team have produced 5 booklets ,

300 in each print run and now on line, detailing some of the demonstrations shown at the festivals. Free downloads can be accessed from <http://www.scienceonstage.ie/> where videos of the experiments can also be seen.

In fact since the 2013 there have been over 85 publications in different journals etc. Check your own country's website to see those in your own language!

FUTURE FESTIVAL

Countries bid with each other in order to be selected to host the next festivals, and at the recent festival in London, Hungary was chosen to host the festival in 2017. It will take place in the beautiful city of Debrecen between June 29th and July 2nd 2017.

The festival will take place at the Kölcsey Convention Centre in Debrecen, organised by Science on Stage Hungary, the University of Debrecen and the MTA Atomki Institute in cooperation with Science on Stage Europe.



Fig.6. Debrecen cathedral

Meanwhile, **selection events** are taking place in all member countries; **follow up** meetings are happening across Europe; cross border exchanges are being planned; **significant internet cooperation** is ongoing every week; **joint papers** are being prepared and published; **good practice** is being shared, and all this from practicing teachers to other practicing teachers.

We know we are making a difference to STEM teaching across Europe and beyond.

BECOME PART OF THE INTERNATIONAL FAMILY

You can check the website at

www.science-on-stage.eu

Get in touch with Science on Stage in your country

Read our Newsletter via

www.science-on-stage.eu/newsletter

The European platform for science teachers



Science on Stage Europe e.V.

Poststr. 4/5, D-10178 Berlin, Germany

info@science-on-stage.eu

The European Office in Berlin is mainly supported by the Federation of German Employers' Associations in the Metal and Electrical Engineering Industries (GESAMTMETALL) with its initiative think ING.

Member Countries of Science on Stage Europe (in population size order) are:

Germany, Turkey, UK, France, Italy, Spain, Poland, Romania, Netherlands, Greece, Belgium, Portugal, Czech Republic, Hungary, Sweden, Austria, Bulgaria, Switzerland, Denmark, Slovakia, Finland, Ireland, Slovenia, Cyprus, together with Canada, (special arrangement). Further European countries with membership pending and to be ratified. Ukraine, Macedonia, Latvia, Norway, Iceland.

