

Deaf Chemical Kitchen Ambassadors

Derek Rodger shares his experience of Heathlands' "Kitchen Chemistry" project and how he worked to engage deaf children with learning chemical sciences

As a science teacher I am always thinking about how to make the science curriculum accessible for deaf children. Some of the considerations that I have included: is the language in the worksheet accessible and at the right level? What is the sign for this science term? How will I explain the concept? What resources will I use? Do I need to use video clips for demonstrations? Wait ... are they subtitled? Are the presenters easy to follow? Will the students be able to lip read them? Can they sign? Are there any deaf signing presenters? What about deaf role models?

A lot of work goes into the preparation of science lessons. As a deaf young person, I only remember meeting two deaf scientists; they were excellent role models and made a lasting impression. There are more deaf role models now; there are a couple of TV programmes involving deaf adults demonstrating experiments which is really good. I do think that it would be good to have deaf children presenting. I often get frustrated at watching really exciting science demonstration clips that are badly subtitled or do not have subtitles at all. On several occasions I have interpreted the clips to deaf children because the language was inaccessible; this has happened many times during my teaching career!

I discovered the Royal Society of Chemistry community grant; I thought that this would be a good opportunity to secure funding for a small project to enable deaf children to present science demonstrations in British Sign Language. My application for the 'Deaf Chemical Kitchen Ambassadors' project was successful. The project team involved Dr Audrey Cameron, a Deaf Chemist/Lecturer



from the University of Edinburgh and delivery took place over four school days at Heathlands School. Most of the Key Stage 3 and 4 students participated.

During the first two days of the project we developed:

- Risk assessment
- Principles of kitchen chemical sciences
- Kitchen chemistry workshops
- Observations and demonstrations

The last two days of the project focused on filming students presenting science demonstrations.

The main aim of the project was to enable young deaf students to engage in learning about the principles of chemical sciences through carrying out a variety of experiments. Through conducting the experiments they had many opportunities to work together as a team. This helped to facilitate teamwork and communication skills. Over the four days students gradually developed the skills required to be presenters and demonstrators; their confidence and presentation skills also improved. They had opportunities to develop their filming and photographic skills; this is important as not all students feel comfortable being in front of the camera. The students were extremely positive about the learning experience. They worked very hard during the project and produced a series of kitchen chemistry video clips. These are fully accessible for deaf children



who use British Sign Language and can be accessed on our school website:

www.heathlandscomputing.co.uk/kitchenchemistry

All of the students were involved in directing the experiments. As a result they were very aware of how crucial it is to capture all the important meaningful moments. The clips were created for educational purposes as well as showing fun memories. Some footage and photographs were added to the clips to show what went on behind the camera. It is important when doing a project involving making video clips to have someone who has good ICT skills and knowledge of BSL, and the role of our ICT teacher was crucial.

The experiments had a strong link to kitchen chemical sciences. Learning about chemistry was maximised throughout this process. The teaching of chemical sciences, workshops and demonstrations was specifically tailored for deaf children as these were delivered by Dr Audrey Cameron and me. Dr Cameron has an exemplary knowledge of science signs; she was involved in the production of BSL STEM Glossary at the University of Edinburgh, the Scottish Sensory Centre.

<http://www.ssc.education.ed.ac.uk/bsl/about.html>

Dr Cameron was able to give really good examples of how to use the right signs when explaining scientific concepts. On a personal level, having a chemist involved has been a good professional development for me as a science teacher; it has enabled me to learn more about innovative experiments involving chemistry.

Dr Audrey Cameron provides an evaluation of the project:

At the end of the project, it could be seen that the students' confidence in explaining scientific concepts and demonstrating different experiments soared over four days. At the start, there would be hesitation when trying



to explain but by the end of the project, they were demonstrating confidently eg how to make sherbert! Making a film-canister rocket; elephant toothpaste; making rubber chicken bones; filling a balloon with carbon dioxide. Their multimedia skills also improved over the four days. All students worked hard together to produce informative and engaging BSL videos.

Editing BSL demonstration videos:

Students themselves edited their demonstration videos with aid from the ICT department. They edited the films and included photographs, subtitles and funny comments from the skeleton and anatomy model (at the back of the shot) and bloopers. Their editing skills were amazing.

Student feedback:

Students were invited to fill in a questionnaire after the project and the findings from their evaluations are as follows:

Knowledge, Understanding and Personal Development

- Most of the students enjoyed learning the principles of kitchen chemistry and doing practical work.
- They felt that the project helped their practical, communication, presenting and filming skills.
- They also thought that carrying out the demonstrations helped them to increase their confidence in scientific enquiry and understanding scientific concepts and keywords/BSL signs.
- They enjoyed working cooperatively as a team to make the BSL videos.
- They also liked discussing the scientific concepts behind the



experiments and learning new keywords/BSL signs.

- They liked having different roles: cameraperson, demonstrator, feeder, photographer and presenter. They appreciated learning how to communicate effectively, to present or to demonstrate in front of the camera.

Additional information

I returned to Heathlands School for Deaf children in February 2019 to work with Derek Rodger and the lower school as part of British Science Week. A group of students from the Kitchen Chemistry project were involved in helping and they guided the younger students on how to carry out a series of experiments. They were confident and knowledgeable because of their involvement in the Kitchen Chemistry project carried out eight months previously.



Conclusion

This Kitchen Chemistry project was a great example of interdisciplinary learning – science, literacy, multimedia and ICT. Students increased their confidence in understanding science in their preferred language – British Sign Language. I would recommend a project like this to any school.



Derek Rodger is a Teacher of the Deaf/Science, Heathlands School for Deaf children

Dr Audrey Cameron is Deaf chemist and tutor on PGDE Secondary Education (Chemistry with Science) and MSc Inclusive Education (Deaf Studies), University of Edinburgh.



Paul Simpson – BATOD Magazine editor 2007-2019

Paul Simpson commenced the role of magazine editor for BATOD in 2007. His first issue was on the theme of 'Numeracy'. Fast forward 12 years, 63 editions and a minimum of 4000 published pages later, Paul's last editorial magazine was fittingly, and coincidentally, themed 'Past, Present and Future of Deaf Education'.

We take this opportunity to share the news that Paul has agreed to co-ordinate, in future BATOD magazines, an archive page. He will reflect on some past articles that he recalls from his long serving period as magazine editor.



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