# **Summary of BERG Day – ASE 2023**

The Annual ASE conference returned to its in person format at Sheffield Hallam University in January, which meant the return of BERG day, an opportunity for members of the Biological Education Research Group (BERG) to come together to present and discuss their work. BERG day was well attended and seven talks were presented in total, as well as a networking lunch.

A broad range of topics were presented across the day, demonstrating the rich diversity of the research interests of the BERG membership. Presentations included a research review on the power of plants to enrich biology teaching, rethinking genomics teaching as well as discussions around curiosity and big questions, making biology more accessible for young people in urban areas, as well as a presentation on the impact of the Moss Safari initiative.

**Speakers and programme**

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| Alistair Moore, Dan Jenkins, University of York and SAPS | Research review - The power of plants to enrich biology teaching and learning |
| Keith Chappell, Aryn Litchfield Canterbury Christchurch University | Transitioning observation in science into thinking about the nature of science |
| Chris Graham, Hills Road Sixth Form and SAPS | The importance of embedding plants throughout A-level biology |
| Mina Cullimore, Sherralyn Simpson, Canterbury Christchurch University | Curiosity and Big Questions: Primary Biology and cross-curricular learning  |
| Sue Dale Tunnicliffe, UCL IOE and CASTME | Biology for all, but is it?  |
| Francesca Gale and Jeremy Airey Wellcome Connecting Science and UYSEG | Rethinking our approach to genomics teaching |
| Andrew Chandler-Grevatt, University of Brighton | "I'll never look at moss in the same way again" Moss Safari and STEM |

Below is a short summary of some of the talks:

***Research review - Power of plants to enrich biology teaching***

In this session Alistair Moore and Dan Jenkins discussed some emergent themes from a rapid evidence review of the research literature, conducted by SAPS and the University of York Science Education Group. From this some key questions were raised (and are still being considered) to offer an evidence based approach to support science teachers embedding more plant science in their teaching.

Key issues around negative attitudes towards plant biology include a lack of engagement and understanding around plant science and plants more generally. This is in part to “zoocentrism” or plant blindness.

Common misconceptions around plants can contribute to the issue, one being “plants are not living things” often hooked onto idea that living things move. Suggestions for resources such as ‘plants in motion’ were discussed to address this.

***Curiosity and Big questions***

In this session Mina Cullimore discussed how applying a “way of knowing” approach with discussion card activities can facilitate children to make connections between biology/science topics, expanding opportunities to bridge disciplines and create linked learning journeys across primary stages.

The session encouraged discussion of what made science distinctive in a primary setting context including processes, methods, norms of thought and preferred questions. There was also examples of “Big questions” from students e.g. “What is Life” and Why does life exist” and discussion of how they could be approached as multidisciplinary questions as well as science questions. Taking a multidisciplinary approach enables students to develop epistemic agency – the ability to select and choose information from which to make informed decisions.

***Biology for all but is it?***

Sue Dale-Tunnicliffe presented a thought provoking session on how we should rethink our approach to biology teaching at primary. The session posed the questions ‘Do we as teachers portray an idealised and, for some children, an unrealistic approach to biology?’ and ‘Is there a risk of inequality in biology teaching (exacerbated by the pandemic)?’. For example, some children attend schools with grounds, or live-in homes with gardens, and some read ‘nature focused’ books with their family and for themselves. Others, however do not: they live in high density urban areas, high rise flats or terraced houses with yards and occasionally a small piece of grass. Their natural world is paved streets and tarmac. Would it be more impactful to make examples use more relatable to examples they are likely to encounter such as plants growing through pavements, pigeons and domestic pets?

***Rethinking how we teach genomics***

Fran Gale and Jeremy Airey presented a research review on the genomics education landscape and some of the key findings and thoughts.

The issue of the effectiveness and sequencing of teaching genomics has been discussed for well over two decades but relatively little has changed in that time. Research has shown that student understanding is still weak when it comes to genomics, ideas can be formed early, can be influenced by family and culture and these misunderstandings can be hard to change.

There was a discussion of teaching molecular biology before Mendel and how this can help in students understanding.

Recommendations included:

* More empirical research into this area especially around learning progression and sequencing of teaching
* Build a consensus around the aims of genomics education for different groups of learns
* rethink pedagogy – supporting teacher PCK about misconceptions, teaching genomics at a younger age and model learning progressions
* Resourcing – more access to high quality resources, collaborate with authors and diversifying the type of resources used beyond explanation and elaboration.

***Moss Safari***

Andy Chandler-Grevatt presented on the Moss Safari project (mosssafari.wordpress.com) and how the approach can be used to introduce, enthuse and teach about the microscopic world.

Using the 'Big Five' safari approach makes the moss organisms such as tardigrades, rotifers, nematodes, gastrotrich and mites accessible to primary, secondary and adult audiences. Each organism holds a story of ecological, scientific and global significance.

Evaluation of the sessions showed that teachers were more likely to use moss and microscopes in their teaching. Key stage 3 students surveyed after a Moss Safari enjoyed the session, learnt something new and would recommend to others. The session raised aspirations for some wanting to study at university based on real life examples discussed.

**To view some of the presentation slides, please visit the BERG myRSB page.**