

Pondering Pond Life - Easter Bush Science Outreach Centre (EBSOC) at University of Edinburgh

Overview

EBSOC developed a microbiology toolkit and professional learning session, working alongside RAiSE to ensure these were delivered to school communities throughout Scotland. The initiative was made possible thanks to a successful funding bid by Dr Laura Glendinning to the Microbiology Society.

Primary Science Development Officers (PSDOs), Science, Technology, Engineering and Maths (STEM) leads, and teachers took part in a two hour-long professional learning session with members of the EBSOC team to understand how to deploy the resources. This learning is now being cascaded throughout the country with different learning opportunities evolving to suit context.

30 sets have been made available which include microscopes, slides, pond life samples and teaching resources. The teaching guide is [freely available](#) and is focussed on ages 9-13. It gives young people the opportunity to investigate the links between environmental conditions and the growth of microbes from pond water.

Rationale

Dr Laura Glendinning grew up loving pond dipping and she wanted to bring this joy of discovery to young people, supported by a robust learning opportunity. *“The main goal of this project is to show pupils that anyone can do science, that microbiology can be fun and can give them the opportunity not only to use their logic and reasoning skills, but also their creativity.”*

Surveying undertaken pre-professional learning identified that 95% of teachers wanted to do more hands-on science but saw time and equipment (both in terms of availability and the confidence and expertise to use it) as barriers. They were attending the session to gain fresh ideas and confidence.

The toolkit links science to the outdoors and creates an engaging and exciting learning opportunity for young people to develop their science capital.

EBSOC partnered with RAiSE due to its deep involvement and reach with school communities throughout the country and commitment to cascading and contextualising learning.

This case study has been prepared by The Wood Foundation. The views contained in this document are those of the author and do not necessarily represent those of the RAiSE Education Scotland, and/or The Wood Foundation.

Who is this for?

Practitioners keen to support young people understand the scientific method through a contextualised, engaging learning opportunity.

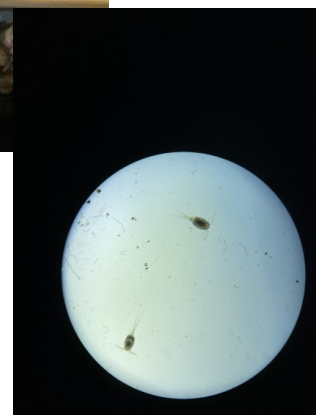
What does it cost?

This is a free resource. The profiled schools received a free discovery pack from EBSOC. These materials could be borrowed from local sources or purchased online.

Where can I find out more?

The materials are available to download [here](#).

Contact your local PSDO, or STEM lead, for professional learning and support. Details available [here](#).



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Approaches

Schools are working closely with their PSDO to identify the most impactful learning experience for their students based on the training and resources. While there are similarities between the approaches and the associated experiences and outcomes, the below offers inspiration about the opportunities for contextualisation.

Falkirk: In Falkirk, the PSDO worked with a Primary 4 class were working on the topic 'Living Things'.

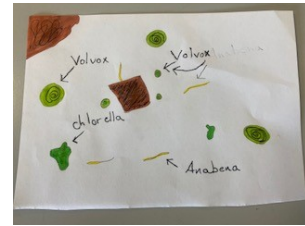
The EBSOC opportunity brought the 'mini beasts' part of their topic to life. The pupils decided to investigate what happens to the organisms when they have no light. They kept a logbook of their findings.

They visited the local Jupiter Wildlife Centre to do some pond dipping from source.

Pupils were very eager to find out what they would see and catch, using small magnifying pots to look more closely at the parts of the mini-beasts and an identification chart to identify each one. Being in the habitat brought the learning to life for the children.

North Lanarkshire: The PSDO worked with a Primary 5 class to share how the microscopes work and more about the world of micro-organisms. The pupils were very engaged with the learning and shared videos to relay their experiences.

The PSDO also trained Active School Coordinators who were managing activities in the summer holidays in Strathclyde Park, giving young people the chance to investigate the habitat. They used the EBSOC microscopes, as well as borrowing additional kit from the local secondary school.



Western Isles: In the Western Isles, students connected the lessons to the world of work and learned more about microorganisms' role in the local fish farming industry. They captured samples in a loch by the school. The resources were translated into Gaelic.

Orkney: Primary 4 to 7 pupils developed their control of a dropper through the challenge of how many drops they could fit on a 2p piece. This provoked engaging conversations and ideas for future investigations. They took part in a quiz about microbes and shared facts about Tardigrades.

The PSDO worked with the class on how to use the microscopes. The school has since used the kit once again, creating additional drop slides from remaining pond life samples.

West Lothian: The PSDO worked remotely with a class (due to Covid restrictions) to support the use of equipment in an additional support needs setting. They had a pond nearby and were very engaged in developing slides for the pond water investigations.

In West Lothian, the literary pedagogy team will work with the PSDO to apply literacy skills through the scientific method approach demonstrated by the kit and there will be a cluster professional learning event with teachers who will weave aspects of the experience through the curriculum throughout the year.

Clackmannanshire: Primary 7 pupils designed their own investigations, developing skills in scientific inquiry. The kit will be a central resource and particularly beneficial to schools who have access to ponds to better understand their local habitat.



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Impact

277 pupils reached in initial phase

Potential reach to exceed 1000 pupils

Teachers:

"From my perspective the Pondering Pond Life was genuinely one of the most interesting and useful CLPL sessions I've attended and the microscope will absolutely be used at every stage of our school to enrich our learning. Thank you for including us!"

"The resources are well thought-out and very detailed so a super resource to support teachers in their planning and delivery of this programme with confidence. It was a fantastic, hands-on session."

"I really enjoyed the project and so did the class. I wasn't confident in science. I didn't know much about microorganisms before the project and was unsure how it would work out. I now feel much more confident."



Pupils:

"It was exciting and interesting to see what they looked like under the microscope as I have had never used a microscope before! It was fun to count and see how many had survived in the salt water and the fresh water. I liked drawing the pie chart to show my results."

"I loved looking through the microscope and seeing the microscopic creatures squirming about. My favourite sample was definitely the protozoa as they looked like miniscule fish and they were mostly the same size, but some were about quintuple the size of them which looked awesome."

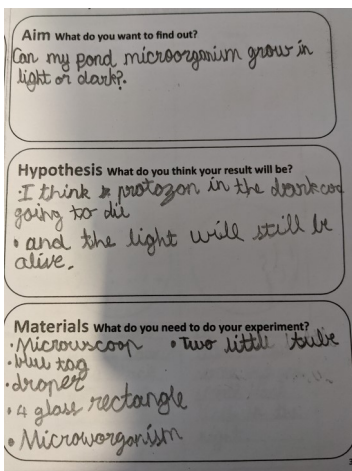
"I enjoyed looking at the different microorganisms under the microscope. I find it fascinating how there is a whole world of tiny things that are practically invisible unless under a microscope! I would like to look at more things in the future and hopefully be able to do more work on microorganisms."

"I wonder how many microorganisms are in that whole jar if this is what's in one tiny little drop."

"How is that possible? I can't see anything when I look at the drop of water but when I look through the microscope there's lots of stuff moving."

"Bha e math air cha robh mi air cluintinn mu dheidhinn microorganisms robh seo." (It was good because I had never heard of microorganisms before.)

Watch pupil videos from Ravenswood Primary School here—video [1](#), [2](#), [3](#).



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