

SUPPORTING PUPILS WITH VISUAL IMPAIRMENT IN THE PRACTICAL SCIENCE

Biochemical Society – Diversity in Science Grant 2022



**BIOCHEMICAL
SOCIETY**

Aberdeenshire
COUNCIL



The Gordon Schools, Huntly
Aberdeenshire

Applicants are required to provide a post-activity report (500 – 1000 words) by 31 October 2022. This should give a brief overview of the project, including photographs where possible. The report may be posted on the Biochemical Society website and printed in The Biochemist, so all necessary permissions for the use of any supplied images and names must be secured before submission.

CONTENTS

What did we do?	2
How did we do it?	4
How do we know the training workshop was successful?	4
Participants Knowledge of Visual Impairments at the start of the workshop.....	5
Participants Knowledge of Visual Impairments at the end of the workshop	5
Feedback from participants was overwhelmingly positive	6
Conclusions.....	6

WHAT DID WE DO?

Pupil Support Assistants working at a remote rural school in Aberdeenshire were able to learn more about supporting pupils with visual impairment in the science classroom. Money from the Biochemical Society's Diversity in Science Grant was used to purchase a range of equipment, including a large print labeller, new goggles, measuring cylinders, food dye and waxed string sticks.



Figure 1 Pupil Support Assistants from Aberdeenshire Council taking part in a workshop on Supporting Pupils with Visual Impairment in the Practical Science Laboratory



Figure 2 Equipment purchased with the Diversity in Science Grant to enable Pupil Support Assistants to better support pupils with visual impairment in practical science labs



Figure 3 An example of the improved labelling made possible with the purchase of a large print labeller

HOW DID WE DO IT?

Staff participated in a one-hour workshop, to learn more about different types of visual impairment, including eye based visual impairments such as nystagmus and brain based visual impairments like CVI (Cerebral Visual Impairments). The pupil support assistants were able to get hands on and compare and contrast the new and old equipment while using a range of goggles modified to simulate different impairments such as a loss of central field, a loss of peripheral field or an overall reduction in contrast sensitivity.

HOW DO WE KNOW THE TRAINING WORKSHOP WAS SUCCESSFUL?

We asked the workshop participants how confident they felt at the start and the end of the workshop.

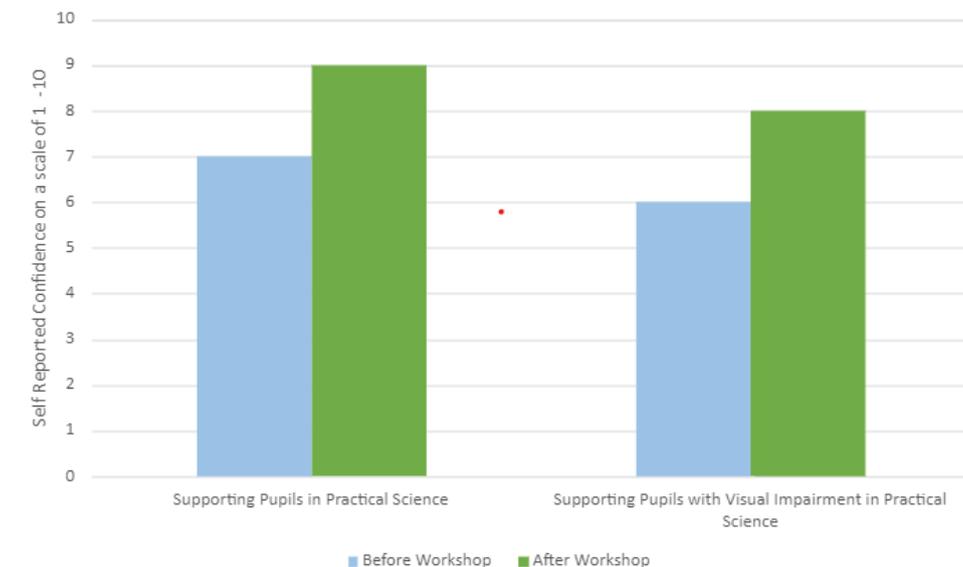


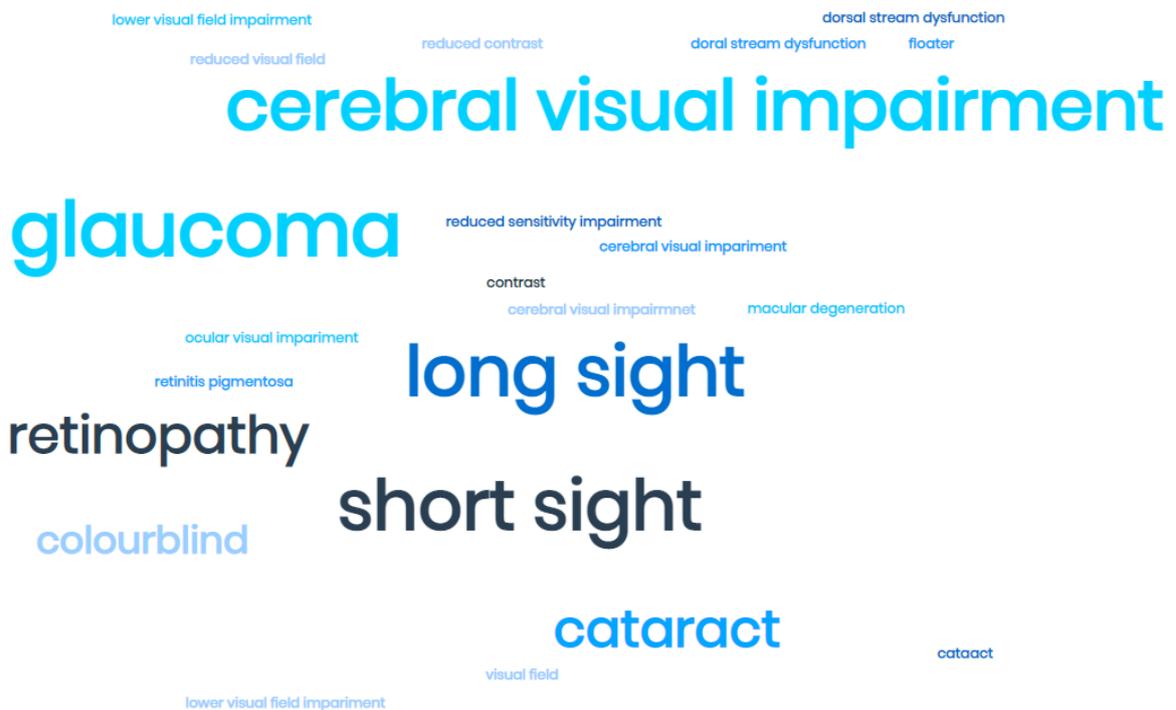
Figure 4 Graph to show participants self reported confidence at supporting pupils in practical science.

A questionnaire at the start of the workshop and at the end demonstrated the impact of the session, participants were able to name a wider range of visual impairments and had a greater awareness of the impact this could have on pupil learning.

PARTICIPANTS KNOWLEDGE OF VISUAL IMPAIRMENTS AT THE START OF THE WORKSHOP



PARTICIPANTS KNOWLEDGE OF VISUAL IMPAIRMENTS AT THE END OF THE WORKSHOP



FEEDBACK FROM PARTICIPANTS WAS OVERWHELMINGLY POSITIVE

“Very good! Very informative, made me think about pupils that may have conditions”

“Really informative, videos and using the visually impaired goggles really helped see from their perspective”

“I learned so much about different visual impairments”

“Very interesting, useful and thought provoking”

“I have learned lots from this session about conditions I was not aware”

“The new tactile measuring cylinders and waxy string were v. helpful”.

CONCLUSIONS

The workshop also gave PSA staff the opportunity to feedback to science staff about the importance of having support materials available. An unanticipated benefit of the workshop was that several PSA staff noted that they themselves have a visual impairment and that the resources that were beneficial for the pupils were also of use to them.

The improved resources are now in regular use in our science classrooms, benefiting teaching and learning in our science classes.

PowerPoint Presentation



Supporting Practical Science for Pupils with Vision Impairment

Pupil Support Assistants and Science Staff
The Gordon Schools – Huntly
2022



**BIOCHEMICAL
SOCIETY**

**Aberdeenshire
COUNCIL**





Universal Design

<http://cobodesigner.com/wp-content/uploads/2012/10/UD-Header.jpg>



**If you make things easier for one group of people,
you often improve things for others as well.**



Grant of £500 to purchase new equipment





Aberdeenshire Council - The Experts

Additional Support Needs, Inclusion, Equity and Wellbeing

Sensory Support Services

Aberdeenshire Sensory Support Service is a peripatetic service staffed by:-

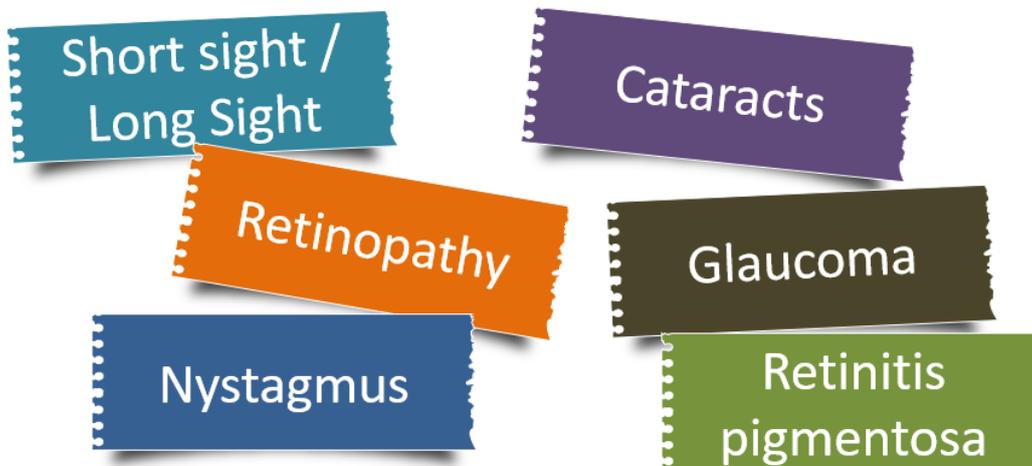
- Teachers who specialise in working with pupils with a hearing or visual impairment
- Communicators qualified and experienced in using either British Sign Language or Braille



<https://asn-aberdeenshire.org/sensory-support-services/>



Can you name any visual impairments?





There are 2 categories of visual impairment

Eye Based

Ocular
Visual
Impairment

OVI

Brain Based

Cerebral
Visual
Impairment

CVI



Different types of OVI's and CVI's



OVI (Ocular / Eye Impairments)

Short or Long Sight

Cataracts

Glaucoma

Nystagmus

Retinitis pigmentosa



CVI (Cerebral / Brain Impairments)

Lower visual field impairment

Simultanagnosia

Optic ataxia

Hemi-inattention

Reduced contrast sensitivity



Differences between OVI's and CVI's

	 OVI (Ocular / Eye)	 CVI (Cerebral / Brain)
1	Often Stays the Same	Changes minute to minute
2	Can deteriorate over time	Can improve over time
3	Easier to diagnose	Harder to diagnose
4	Increasing Text Size can help	Decreasing Text Size can help
5	Hearing can compensate	Hearing can be impaired
6	Pupil is aware of difficulties	Pupil can be unaware of difficulties



Science lab without visual field impairment



Science lab with a lower visual field impairment





Science lab with lower visual field impairment and reduced contrast sensitivity



Can you see who comes in the door?





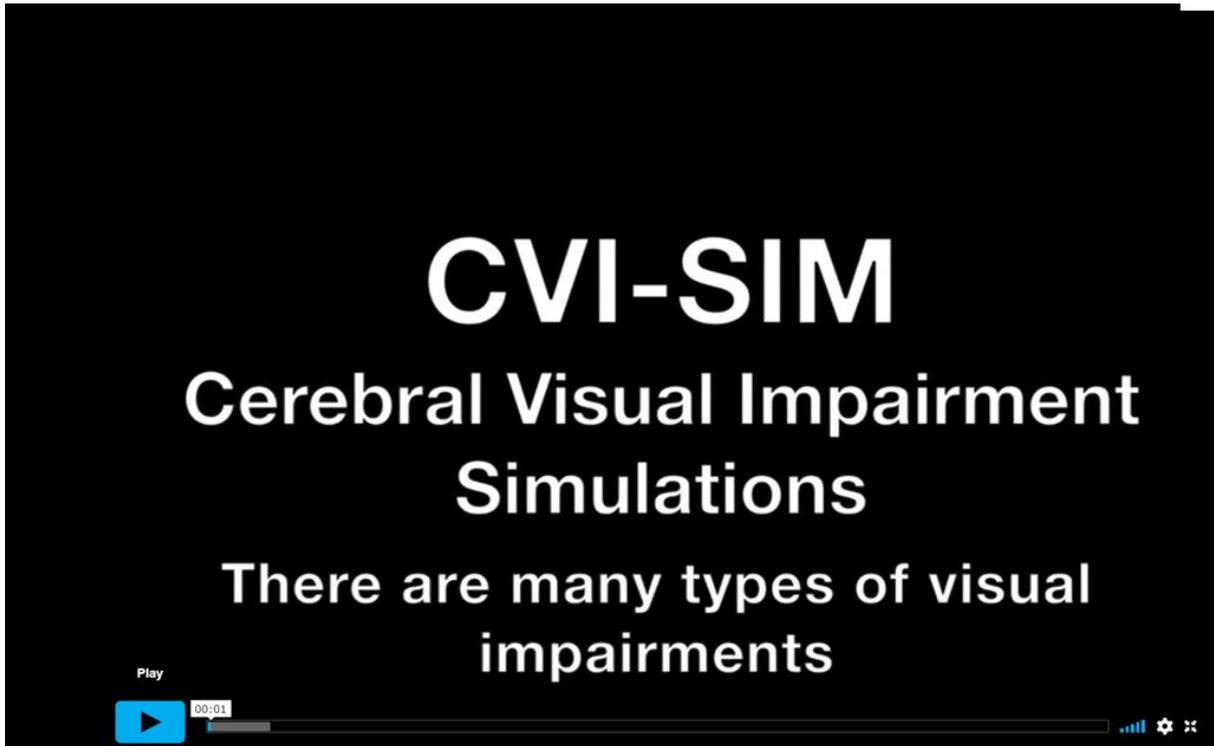
What if you could only focus on one object at a time?



In mainstream schools CVI is likely to be three times more common than **autism**.



<https://cviscotland.org/mem-portal/cvi-prevalence-paper-cvi-project-findings--31-03-2021>

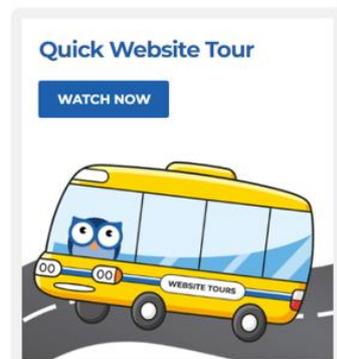


<https://vimeo.com/647187016>



CVI SCOTLAND

Sharing and Developing our Understanding of CVI





It's time to experiment!



It's **Feedback** time...





Thank you for your time

avril.morrison@aberdeenshire.gov.uk

gw19morrisonavril@glow.sch.uk



**BIOCHEMICAL
SOCIETY**

CVI SCOTLAND

Sharing and Developing our Understanding of CVI



Scotland has one of the most sophisticated systems for recording visual impairments in children in the world.

Approximately 0.07% of children in Scotland have a CVI diagnosis. That means, from these findings, that for every child in Scotland with a CVI diagnosis, there are likely at least fifty who remain undiagnosed.

From this study, we also learn that of these undiagnosed fifty, 40 (80%), are likely to be struggling at school.

<https://cviscotland.org/mem-portal/cvi-prevalence-paper-cvi-project-findings--31-03-2021>