

Primary Science & Technology *Bulletin*



Ideas and inspiration for teachers in Primary Schools and S1/S2

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No. 68 - Winter 2014

©SSERC 2014 - ISSN 1775-5698

Laser pointers

Winter is coming and with dusk falling earlier in the evening our thoughts often turn to stargazing activities. You may have the opportunity to take part in a star gazing activity run by an astronomer. We are aware that professional astronomers sometimes use a laser pointer to indicate the position of constellations - but is this something a teacher should replicate?

Most laser pointers actually give out less light than a torch. However, the power is concentrated over a very small spot. Just as a person who isn't very heavy can hurt your foot if (s)he stands on your toes when wearing stiletto heels, some lasers can cause eye damage even though they aren't very powerful.

Lasers are classified according to the power they give out and the type of light. The only lasers recommended for use in schools are Class 1 or 2. Nothing else, not even the similarly-labelled Class 1M and 2M are suitable. Laser pointers are only allowed as pointers - they should not be used in experiments in either primary or secondary classes.

Primary children should not handle lasers of any type. If a laser beam entered your eye, your natural aversion reflex – shutting your eyes and turning away – would kick in, typically in around a quarter of a second. For Class 1 and 2 lasers, this time is too short for eye damage to occur. Other classes are either too powerful or give out invisible light that doesn't trigger your aversion reflex. They must not be used.

At this point, it would be good if we could say, "So if you want to use a laser pointer to indicate constellations, make sure it is Class 1 or 2." Unfortunately, it's not that simple. Firstly, tests have been run by ourselves and by government safety laboratories that have shown that a large number of laser pointers are wrongly labelled as Class 2. They can be 9 times more powerful than they should be. Secondly, that bright object that you are pointing at... are you sure it is a star because if it is an aeroplane you could be in serious trouble. Thirdly, it is fairly easy, in the dark, to accidentally point a laser beam at a person or car, either directly or due to a reflection.

Some astronomy websites recommend circling an object with the laser beam rather than pointing directly at it. These sorts of measures make the activity safe in the hands of an astronomy professional but this is not an activity we can recommend to teachers.

If you have access to a smartphone or tablet, there are a number of apps that will help you identify stars. Some are very good indeed. These apps can sense the direction you are looking in and show you the stars you should see. ◀



Image taken from <http://www.telegraph.co.uk/lifestyle/pets/>

Reptiles in schools

A recent enquiry about reptiles in the primary classroom has been referred to us here at SSERC. Advice from a number of sources (detailed below) indicate the unsuitability of reptiles as classroom pets but we know that a number of organisations offer to bring animals, including reptiles, into primary classrooms. The concern on this occasion was the potential risk of *Salmonella* infection from the visiting reptile.

Infection by *Salmonella* from reptiles is through a hand to mouth oral route. Handling reptiles, cleaning cages and vivaria, contact with water from swimming species can all result in *Salmonella* shed in reptile faeces contaminating hands. Transmission of *Salmonella* can be controlled by effective hand washing and hygiene measures. Soap, running water and disposable paper towels is the preferred means of hand washing, wipes and hand gels are not an acceptable substitute for proper hand washing.

Reptiles are a class of vertebrates that include snakes, lizards, terrapins, turtles and tortoises. It should be assumed that all reptiles carry *Salmonella* in their intestines - so having a reptile in the classroom will present a potential *Salmonella* hazard. Practitioners therefore need to establish the risk of harm and decide if the risk can be reduced to an acceptable level through a risk assessment - providing a suitable and sufficient set of control measures.

The Health Protection Agency (HPA) in its *Guidance on infection control in schools and other childcare settings* [1] states that "reptiles are not suitable as pets in schools and nurseries as all species carry *Salmonella*". Health Protection Scotland (HPS) in its equivalent guidance [2] makes no reference to reptiles although it is reasonable to assume that if asked they would concur with the advice from HPA.

SSERC's *Code of Practice Materials of Living Origin* [3] states that reptiles should not normally be kept in

schools. However we do appreciate that there may be sound reasons for arranging a visit from a reputable educational provider. If reptiles are to be brought into schools then *Materials of Living Origin* requires three considerations to be taken into account. These are:

- There should be sound educational reasons for having the animals in school.
- A responsible adult (either a member of staff or member of the visiting organisation) must have an understanding of the biology and natural history of the animal and thus be able to cater for its needs and ensure its well being during the visit.

- Any hazards associated with having the animal in school must be identified and a suitable risk assessment carried out by the school (in conjunction with the visiting organisation) and the control measures applied.

Reptiles should not be allowed to roam freely, and surfaces that have been in contact with reptiles should be cleaned with an appropriate surface cleanser containing a disinfectant. Useful advice on preventing *Salmonella* infection from reptiles is provided by the Health Protection Agency [4] and the British Veterinary Zoological Society [5].

Salmonella presents a serious hazard to under-fives and individuals whose immune systems are compromised. Careful consideration should be given to the assessment of risk and suitable control measures put in place if such categories of pupils are likely to be involved. Please contact us here at SSERC [6] if you have any questions.

References

- [1] Guidance on infection control in schools and other childcare settings, Health Protection Agency (2010), www.hpa.org.uk.
- [2] Infection prevention and control in childcare settings, Health Protection Scotland (2011) www.hps.scot.nhs.uk.
- [3] Materials of Living Origin - Educational Uses SSERC, (2012), www.sserc.org.uk.
- [4] Reducing the risks of *Salmonella* infection from reptiles, Health Protection Agency (2009), www.hpa.org.uk.
- [5] *Salmonella* guidelines for reptile owners, The Royal (Dick) School of Veterinary Studies, www.DickVetExotics.com.
- [6] sts@sserc.org.uk.

Gas masks and Brodie helmets

When exploring a particular topic in school, artefacts and historic items are often offered by parents and grandparents to support the learning experience.

We are aware that there may still be a number of WWI and WWII gasmasks and helmets in circulation so we were interested in some recent findings by The Health and Safety Executive (HSE). HSE has found that most Second World War gas masks contain asbestos, often in the more dangerous blue form.



There is no easy way of determining whether or not a gas mask does contain asbestos, so the following advice is given:

- Children and teachers should not handle gas masks.
- If you have gas masks in school, they should be double bagged

and sealed with tape, labelled and securely stored.

- Disposal should be at a local authority licensed site. Alternatively, a licensed contractor can be employed to make the artefact safe for display.
- The majority of World War One "Brodie" helmets have also been found to contain asbestos. They should be treated in the same way as outlined above.
- Replica gas masks and helmets that do not contain asbestos are available.

For more information about asbestos, visit the HSE's website [1]. ◀

Reference

- [1] <http://www.hse.gov.uk/asbestos/index.htm> (accessed September 2014).

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