

# primary science & technology bulletin

Ideas and inspiration for teachers in primary schools and S1/S2

- > Picture this - Photo orienteering in your school grounds
- > The Primary Science Teaching Trust (PSTT) - Why primary science?
- > SSERC professional learning courses



# Picture this: photo orienteering in your school grounds

Photo orienteering in your school grounds is a great way to develop learners' map reading skills while also encouraging attention to detail and providing a practical use of technology to capture photographs of aspects of their immediate environment.

Orienteering is an activity in which individuals or teams compete to find controls (stops or points) that are marked on a map. Usually competitors show that they have found all the controls by punching a card at each one. This means that the organiser sets out an orienteering course by placing a physical marker at each point marked on the map. Photo orienteering involves using a map to find the control points but the teams take a photograph at each control to show that they have found the correct place, so there is no need to place a physical marker at each control.

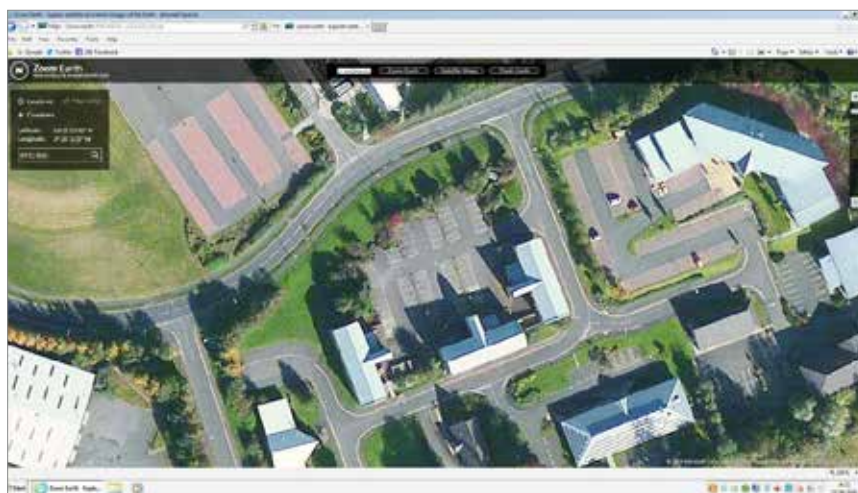


Figure 1 - Screenshot of image of SSERC taken from Zoom Earth.

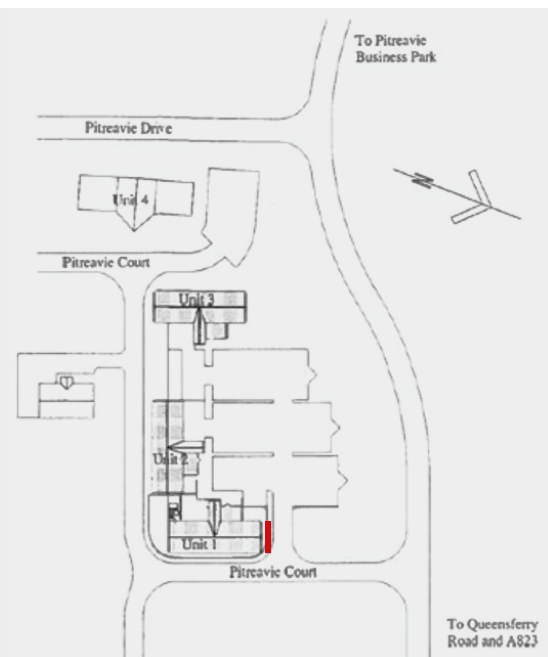


Figure 2 - Map of SSERC buildings (courtesy of Fife Council) showing which aspect of which building is to be measured to provide a scale (marked in red).

In preparation for this activity you will need a map of your school grounds. Many schools already have maps on file or can obtain a map of their building layout from their local authority. However, if you cannot easily obtain a map of your school grounds, then you can make your own and involve the learners in your class in the preparation. There are several online tools and websites which you can use to access an aerial photograph of your school and local area. These include Google Earth [1], Where's the Path [2], and Zoom Earth [3].

To make a map of your school grounds, type your school postcode into a website such as Zoom Earth, then adjust the zoom so that you have an optimum view of your school grounds. Now take a screenshot of this image and print it (Figure 1).

Using acetate or tracing paper, trace the outlines of the perimeter of the school grounds and the buildings, marking features such as gateways. Please be aware that the photo on Google Earth may not include any recent changes to your building structure. For example, we have worked with a school in North Ayrshire where Google Earth provided an accurate outline of school buildings and grounds but for a school in Edinburgh that was extended in recent years, the new buildings within the school grounds were not shown on Google Earth. Zoom Earth provides more up to date images but does not have labels or place names to help you identify features or places. >>



Whether you create your own map or use one provided by your local authority, remember that a good map includes a title, scale, orientation, and labels. Determining the scale for the map is a practical maths challenge for your class. Working in teams, the learners choose a clearly defined feature on the map, e.g. a particular building or a playing pitch. They then choose which aspect of this feature they will measure, e.g. the length of the main school building or the width of the playing pitch (Figure 2). Finally, the learners will need to decide what equipment would be best for measuring this in reality, e.g. a trundle wheel, a tape measure or a metre stick. Once this feature has been measured (Figure 3) the learners can then add their measurement to their map to provide a scale.



Figure 3 - Measuring the width of the building to provide a map scale.

To set up the photo orienteering activity, choose a number of landmarks in the school grounds and mark each on one map. This is the map that will show the location of all the controls (stops or points) on the orienteering course and will be kept by the co-ordinator (Figure 4).

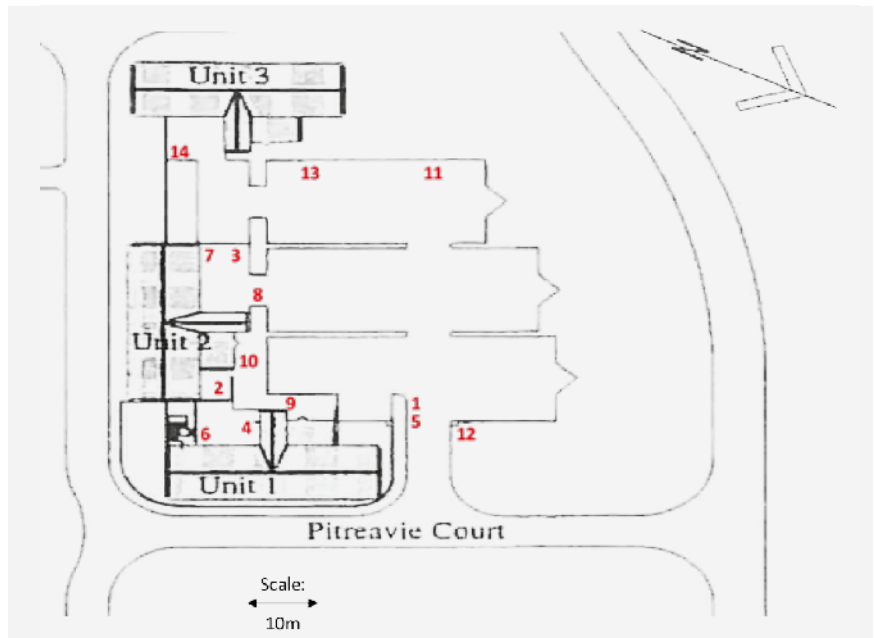


Figure 4 - Co-ordinator's map showing location of all Photo Orienteering control points at SSERC.

Take a photograph at each landmark. Depending on the age and stage of the learners who will take part, this photograph can be a straightforward representation of the landmark (Figure 5a), a detailed aspect of the landmark (Figure 5b, Figure 6) or can be taken at an unusual angle. >>



Figure 5a - Shark mural in a school playground.



Figure 5b - Shark tail detail from mural in school playground.

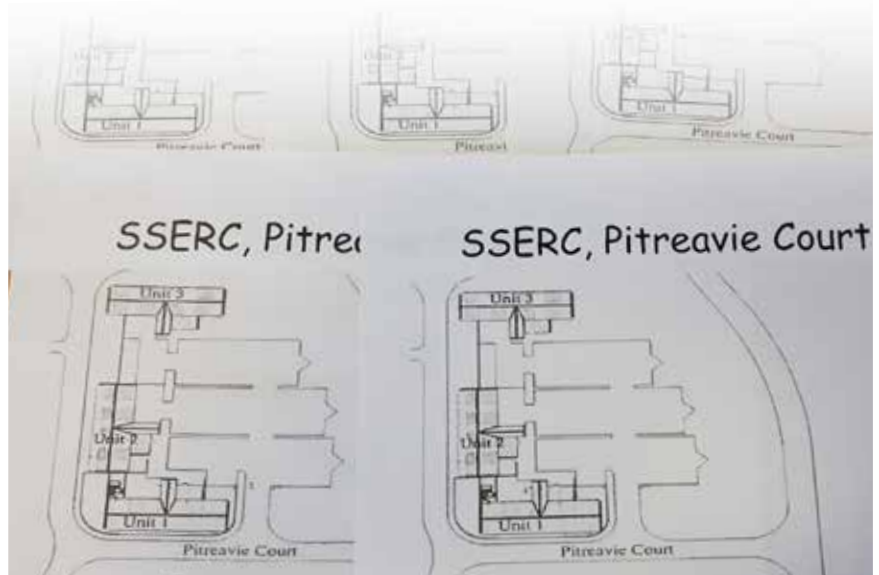


**Figure 6** - Photo detail on SSERC Photo Orienteering course.

You can choose to print the photographs in colour or in black and white depending on the level of difficulty you would like to set.

Print a separate map for each control on your orienteering course with each map showing the location of just one control (Figures 7a and 7b).

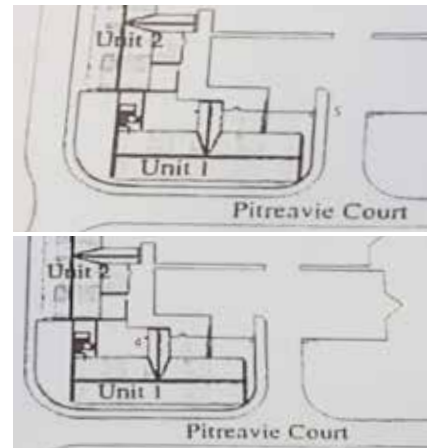
Print the photographs of each landmark indicated on the maps and pair the photographs with the appropriate map (e.g. Figure 8), then place them on a clipboard.



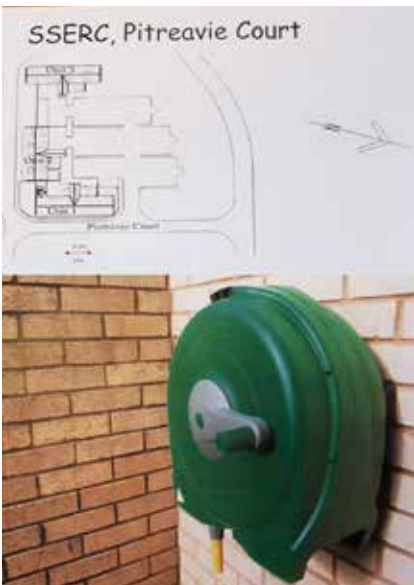
**Figure 7a** - Set of maps with each showing a separate control point on the orienteering course.

We have run this activity in the format of Star Orienteering, where the maps and photographs are clearly labelled and are all located centrally (Figure 9). Teams return to the central point in between finding each control. Controls can be visited in any order.

Each team chooses a different number. They then look at the map and decide where the marked point is within the school grounds. They then examine the accompanying photograph. They take the



**Figure 7b** - Close up of maps with each showing a different control point.



**Figure 8** - Map and Photograph for control point 4 on the SSERC photo orienteering course.



**Figure 9** - Photos on numbered clipboards, each with their corresponding map, ready for use in the Star Orienteering format.

printed photograph with them but leave the map at the central point. The teams then use i-pads, tablets or similar devices to recreate the photograph (Figure 10).

On completion of the task at one control point, the team return the printed photograph to the accompanying map at the central location and choose another number.

When running this with school groups, we have found it useful to provide the teams with a tick list of

the numbers of the controls so that they can keep track of which control points they have already visited.

Once the learners have participated in photo orienteering, an extension activity would be for them to set up a course for another class or for the next year group.

Thank you to Whiting Bay Primary on the Isle of Arran, Fox Covert Primary in Edinburgh and Castleview Primary in Edinburgh for testing this activity and providing feedback. <<



Figure 10 - Recreating the photograph at a control point on the SSERC course.

### References

- [1] Google Earth: <https://earth.google.com/web> (accessed June 2018). You may need to install additional software to use Google Earth.
- [2] Where's the Path?: <https://wtp2.appspot.com/wheresthepath.htm> (accessed June 2018).
- [3] Zoom Earth: <https://zoom.earth> (accessed June 2018).

### Experiences and Outcomes

I enjoy taking photographs or recording sound and images to represent my experiences and the world around me - *TCH 0-04b*.

I explore and experiment with the features and functions of computer technology and I can use what I learn to support and enhance my learning in different contexts - *TCH 1-04a/TCH 2-04a*.

Through practical activities which include the use of technology, I have developed my understanding of the link between compass points and angles and can describe, follow and record directions, routes and journeys using appropriate vocabulary - *MTH 2-17c*.

Having investigated where, why and how scale is used and expressed, I can apply my understanding to interpret simple models, maps and plans - *MTH 2-17d*.

Through activities in my local area, I have developed my mental map and sense of place. I can create and use maps of the area - *SOC 1-14a*.

To extend my mental map and sense of place, I can interpret information from different types of maps and am beginning to locate key features within Scotland, UK, Europe or the wider world - *SOC 2-14a*.



# The Primary Science Teaching Trust (PSTT) - Why primary science?

The PSTT is an educational charity and a strategic partner with SSERC.

Their vision: *to see excellent teaching of primary science in every classroom in the UK.*

**Research tells us that a learner can decide that science is not for them before they leave primary school.**

This presents a huge concern.

Whether a learner chooses a career in science or not, they still require a level of scientific literacy to make informed and responsible decisions about their personal health and well-being, and the important wider issues facing society. Furthermore, the future of the UK economy depends on a continuous pipeline of skilled scientists entering the workforce.

**A good primary teacher nurtures a learner's innate curiosity about the world around them** which is crucial for the development of scientific skills, understanding and positive attitudes towards science.

**This is no easy task and teachers need continued support.**

The PSTT seeks to provide this support through the offering of **free-to-access resources and lesson plans** [1]; by **collaborating with academic institutions** to ensure our materials are underpinned by substantiated research [2]; and by **recognising outstanding teachers of primary science** and awarding them Fellowship to the Primary Science Teacher College [3].

## CHAIN REACTION

An engaging, upper-primary STEM project [4].



Learners will have the opportunity to: design, test and refine their own chain reaction ideas, utilising both D&T and simple engineering skills.

They will explore the science of forces, simple machines and energy transfers. <<

The PSTT website contains a wealth of materials which are mostly free-to-access and ready for instant classroom use. Many can be adapted to different age groups, and to any of the UK curriculums.

The two featured above, may well assist you with lesson planning as you enter this new academic year. <<

## WOW SCIENCE

Links to the best primary science learning materials on the web, helping learners to enjoy science both inside and outside the classroom.

Covering a broad range of science topics, which are suitable for all primary ages, Wow Science offers links to games, activities, apps, experiments and videos - which have all been approved and verified by the PSTT.

**A one-stop, valid science web-shop** [5]. <<



## References

- [1] <https://pstt.org.uk/resources>.
- [2] <https://pstt.org.uk/what-we-do/academic-collaborators>.
- [3] <https://pstt.org.uk/what-we-do/primary-science-teacher-college>.
- [4] <https://pstt.org.uk/resources/curriculum-materials/chain-reaction>.
- [5] <https://wowscience.co.uk/>.
- [6] <https://www.primaryscienceconference.org/>.



## Interested in Primary Science CLPL?

The PSTT, in partnership with SSERC, are hosting an **International Primary Science Education Conference (PSEC)** in Edinburgh from **6<sup>th</sup>- 8<sup>th</sup> June 2019** [6].



# SSERC professional learning courses

Our professional development courses range from twilight workshops and one day courses, through to residential events lasting up to 5 days in total. As you may know, SSERC was formally awarded the ‘GTCS Quality Mark as a Professional Learning Organisation’.

GTCS noted that: ‘Evidence from internal and external evaluation shows that those who participate in SSERC professional learning change their classroom practice, with an associated positive impact on pupils’.

It is our belief that this endorsement by GTCS will give increased confidence to those involved in the management of professional learning of their colleagues. The award of the Quality Mark means

that courses offered by SSERC are deemed to be of a standard that meets GTCS’ criteria when teachers are completing submissions as part of their Professional Update. <<



Courses available for online booking include:

COURSE NAME	COURSE FORMAT	DATES	CLOSING DATE
<b>SSERC_Meet: Teddy in the Park</b>	On-line	13 November 2018	26 October 2018
<b>Super Science &amp; Terrific Technology</b>	2-part residential	16 -17 November 2018 & 22 -23 March 2019	12 October 2018
<b>SSERC_Meet: Light: Shades and Shadows</b>	On-line	19 November 2018	19 October 2018
<b>STEM CLPL for Early Level</b>	Day	23 November 2018	31 October 2018
<b>SSERC_Meet: Getting to Grips with Friction</b>	On-line	27 February 2019	1 February 2019
<b>SSERC_Meet: Microbes for Minors</b>	On-line	6 March 2019	8 February 2019

We are in the process of putting the final touches to our full programme of CLPL for the full academic year and details will be made available through a range of channels. Please check our website [www.sserc.scot](http://www.sserc.scot) for the most up-to-date details.

