

NON-SCHOOL GROUPS (CHESHIRE GIRL GUIDING)



STEM Ambassador Hub Merseyside & Cheshire

Context and Overview

Dr. Laura Randle is a Senior Lecturer and the Public Engagement coordinator at LJMU Department of Pharmacy and Biomolecular Sciences. She is also the Assistant County Commissioner for Cheshire Forest County Girl Guides and has been a STEM Ambassadors for many years.

In 2013, these two volunteering roles came together when Laura helped to run a **CSI-themed transition event** for guides and senior section members in Girlguiding Cheshire Forest. Following this activity, she was asked to help run the Science Zone at the **Chamboree** event in 2014 and has since begun offering her own science workshops to local Girl Guide units. She also works with **Skcin**, a national skin cancer awareness charity, to educate young people in sun safety through their **sun safe schools** initiative.

Impact on young people and youth leaders

The 2014, the international scout and guide Chamboree hosted 5000+ young people for a week-long camp, held at the Royal Cheshire County Showground. Laura developed and ran a forensics base where girls and boys aged 6+ were able to explore fingerprints, conduct white powder toxicological analysis, investigate hair and fibres under the microscope, analyse different types of dental, footprint and tool mark impressions, alongside scent and lipsticks analysis and blood splatter patterns.



Chamboree Science Zone - Forensic Station

Laura commented that:

The young people, and their leaders, really enjoyed the activities, as the interactive stations were very different to the experiments they had experienced at school. Everyone engaged with the stations, reading the instruction cards with interest and asking questions, with the freedom to explore at their own pace. I had taken care to ensure that my experiments were factually correct and as realistic as possible, using the appropriate scientific equipment, as I believe this enhances their learning experience. It is wonderful to see the children excited and buzzing about science. They had a look of wonder and amazement on their faces and I believe that this event made forensic science accessible to them.

Following her experiences at the Chamboree, it was clear to Laura that many unit leaders would not have knowledge, or access to the appropriate equipment, to conduct many of the activities that she had been able to provide as part of the event. Nor would they have sufficient quantities of equipment for each young person to participate on an individual basis. Whilst it had taken a considerable amount of time and effort to develop the resources for the event, she felt that more young people could benefit from these activities, so she began to develop and deliver **'Science Geek Workshops'**, offering informal STEM club activities and science badge workshops to Girlguiding and Scouting members.

Science Geek Workshops

To date, Laura has delivered workshops to over 1000 young people in the unit setting, working with young people aged 5 -18 years from a wide variety of social and economic backgrounds. The overall aim of her outreach activities has been to engage these young people with science in a fun, interactive and stimulating manner, in an attempt to fuel their inquisitive nature and show them how science impacts their everyday lives. The sessions play a significant role in developing the young people's **Science Capital**, enabling them to gain positive experiences of science and extending their knowledge and understanding of scientific concepts.

Just for Fun

The 'Just for Fun' sessions cover a wide range of topics including a chemistry-based 'Harry Potter Potions' session which explores fizzy potions, slime, UV and surface tension, as well as a potions demonstration including elephant's toothpaste, colour-changing flames, liquid, ghostly bubbles, a plasma ball and gyroscope.

Themed Activities

Laura has also supported unit leaders in providing science-based themed activities to fit with seasons, festivals or national days, for example Valentine Science and Xmas Xperiments, which makes STEM-activity an integral part of these celebrations. In 2016, Laura was asked to oversee the organisation of a space-themed camp, where the participants undertook activities such as astronaut training, rocket launches, building a moon habitat, understanding gravity and exploring the stars.



Space Camp



CSI activity

She has also developed an **immersive transition event** encouraging girls aged 13+ to consider becoming ranger guides, to engage them with STEM and consider a career in forensics. Young people taking part dress as Scene of Crime Officers and undertake a variety of CSI activities to help solve a crime.

Badge Activities

One of Laura's typical Brownie 'Science Investigator' sessions includes:

- Exploring chromatography with sharpie tie dye t-shirts
- An introduction to bacteria and the importance of good hand washing
- Investigating the uniqueness of our fingerprints
- Exploring alternative sources of energy and making hovercrafts

Guides and Rangers enjoy the CSI or All About Me sessions where they can:

- Explore the human body
- Learn about bones
- Look at x-rays
- Use a stethoscope
- Check their blood pressure
- Conduct biochemical analyses
- Look at their own cheek cells under a microscope
- Practice suturing

Sessions for younger children, Rainbows and Beavers, aged 5 - 7 years typically includes

- Making seed houses
- Meeting Boris the skeleton
- Enjoying rockets races
- Studying mini beasts
- Exploring light, colour, magnets, bubbles and slime etc

The cub scout badge requires members to

- Investigate the impact of exercise on the cardiovascular system
- Build wormeries
- Grow crystals
- Explore the solar system
- Use indicators to explore acid and bases
- Build and test simple electrical circuits

Laura commented that:

The young people really enjoy the sessions and I have received positive feedback and personal recommendations from leaders and parents both verbally, via email and social media (@SciGeekWorkshop). The sessions have been growing in popularity and I am often invited back to run sessions for another age group or on a different theme.



Chromatography T-shirts

Example Feedback

Feedback taken from Twitter illustrates the impact Laura's activities have had on the young people's interest, enjoyment and engagement with STEM with comments focusing on the fun, action and learning that had taken place.

369th Lpool Brownies@369thBrownies
(<https://twitter.com/369thBrownies/status/977099586018955264>)

Highly recommended, great activities! Our Brownies loved it and learned lots of new things!

369th Lpool Brownies@369thBrownies
(<https://twitter.com/369thBrownies/status/953724664148299776>)

Thank you to Laura @SciGeekWorkshop we had lots of fun tonight!

445th Liverpool @445liverpoolGG
(<https://twitter.com/445liverpoolGG/status/930786098850263041>)

This week was our rangers' turn with the @SciGeekWorkshop doing CSI training! We loved it!

445th Liverpool @445liverpoolGG
(<https://twitter.com/445liverpoolGG/status/920038457187106816>)

Brilliant night with @SciGeekWorkshop earning our science investigator badge! Such an action packed 1.5 hours!

Email Feedback

The comments from Guide leaders in their email feedback, illustrates the impact that Laura's work has on the girls' STEM aspirations. Leaders recognised the power of the sessions in breaking down stereotypes and providing a positive role-model, in addition to the benefits of the increased scientific knowledge that the sessions provided.

Hi Laura,

I just wanted to say thank you very much for the science session you ran with my Guide unit. They do science at school but not so much practical work, so having the opportunity to do little experiments in a more informal setting was really good for them. They particularly enjoyed looking through the microscope! Also, I think meeting a 'real life' scientist - especially a female one - is a good incentive for them to move forward with science!

*Thanks again,
Kingsley & Norley Guides*



Training peer educators in the UK to deliver health workshops

This second email also illustrates how the sessions enthused the Guide leaders themselves to continue the activities and try things for themselves. This is a really beneficial outcome of the activities. If leaders feel up-skilled to 'have a go' themselves, the number of young people engaged can be easily increased and the impact of Laura's initial contact with the group is amplified.

Hello Laura,

Thank you so much for coming to our meeting last night and giving the brownies such a good time. Do you do any meetings which tie into Autumn or Christmas themes? It doesn't need to be a badge night, just fun. Did you also say that methylated spirits can be sprayed on the t-shirts to make the colours spread? I would like to do some more and send them to you during the summer term.

Many thanks

1st Tarporley Brownies

Overseas Work

In addition to her Science Geek Workshops, Laura has also supported local Girlguides to engage in science-focused overseas projects. Working in collaboration with Gunjur Project Association (GPA, Joint Gambia and UK based charity) and Girlguiding Cheshire Forest, Laura has overseen the delivery of practical science sessions, malaria awareness campaigns and health and hygiene workshops to schools, colleges and community groups in Gambia. Her team has also trained peer educators, from UK Girl Guide units, to help train members of The Gambian Guide Association to deliver dental hygiene and hand washing sessions to Gambian community groups. This work has had positive impacts on the Girl Guiding members from both the UK and Gambia.

Laura said:

I have seen the young people grow in confidence, determination and enthusiasm since our first visit in 2014. Our fourth visit will be during Easter 2019.

During their visit, the group also delivered session in local schools. The extract below is taken from a letter from a high school in Gambia where Laura and her team ran a 'science made fun' session.

THE SCIENCE AND MATHS CLUB OF GUNJUR UBS/SSS WORKSHOP WITH THE GIRLS GUIDE

The workshop that science and math club of Gunjur UBS/SSS had with the Girls Guide of UK was a very very important, successful and educative. The benefits that science and math clubs have from their partners cannot be over emphasized. Some of the benefits are as follows

1. Science and maths club member of gunjur UBS/SSS learned for the very first time to use raw potatoes to make a digital watch to function. This was the first time for all the science and maths member including myself as the coordinator to see this happen.

2. The other benefit or interesting thing was the Corn flower flour power which when you put water on to it in the bucket it became solid but in our hand it became liquid. And for this we want to know the chemistry involved.

3. It also make the student to be creative. They were given a paper just a paper to create something out of it. They were able to create a tall tower out of it.

This are some of out of the many we learn and we are very grateful to Gunjur Project and our partners guide.

Summary

Laura's joint volunteering roles have enabled her to bring STEM activities right into the heart of a well-established youth organisation's regular activities. As a result, she has been able to support group leaders to bring a STEM-focus to their normal weekly activities, providing brilliant opportunities for young people to take part in scientific investigations outside of the classroom context. This has ensured that young people who may otherwise not have done so, have taken part in STEM-focused leisure activities, helping to develop their interest and enjoyment and providing access to experiences and knowledge they might not have gained. In addition, the activities have helped support, upskill and enthuse the group leaders involved, helping to ensure that they continue to look for opportunities to integrate STEM activities into their programmes, either by drawing on the expertise of others or by building on what they've learned themselves through their work with Laura in her role as a STEM Ambassador.

