

Dan Wharton- Bradford Central PRU

Bradford Central is an Assessment PRU (Pupil Referral Unit). It caters for 11-16-year olds, referred by their school or Local Authority, assessing them over the course of 8-10 weeks. They have a high turnover and try to model as much as possible the curriculum in mainstream high school. The day is divided into mornings of English, mathematics and practical subjects, and afternoons of non-core subjects including science, history, geography and PSHE.

For British Science Week in 2017 and 2018, Dan developed two sets of three practical lessons for students. For example, one session focused on explosions using Alka Seltzer tablets in water and butane canisters on barbecues. Another got young people building 30cm bridges with lollypop sticks and masking tape and then testing their strength by hanging weights from the centre. He used the BSA funding for equipment to create what he called "engaging hooks".

How did British Science Week funding help?

Organisation: The lessons that Dan developed are used outside BSW. The PRU's high turnover means they can repeat sessions more often than most schools. So, the curriculum development Dan created for BSW means that science is now a stronger part of their provision than it used to be. The teachers' priority is engagement, collaboration and learning in the challenging afternoon sessions and the science tasks are very effective. Members of staff **"love the sessions because they know it's going to be a good week, a positive week."** A few of them are scientifically minded and enjoy doing the sessions, so they've enjoyed the experience and they've learned as well'. Dan believes they will spread this enthusiasm.

Students: Dan wanted to include more science in the PRU curriculum because it's a subject students' have 'probably not had a lot of access to' in mainstream schooling due to poor attendance or their behaviour, leading them to be excluded from science practical's for health and safety reasons. But in their place, it's much more controlled. They're a smaller unit and any science practical was always a success because it was engaging. Describing the lesson on explosions, he says: **"the whole lesson was just consumed with wonder and awe and that's why they bought into it so well.** They just love building and creating, and if you get them motivated, they'll be just as good as any other kid in any other school". There's an equity dimension to his work because he identifies most of the people he teaches as being from 'lower' socioeconomic backgrounds.

Organiser: Dan trained and works as a science teacher so, in designing the six BSW tasks, he could draw on his science experience 'to cherry pick some good practicals which I could do within the confines of the PRU'. He also had the skills to create the necessary equipment, for example, to make boards as the base for a marble run. Developing the lessons involved 'a lot of thinking really and a bit of trial and error', online research, 'just chewing things over and having a go and trying it with a few kids'. As part of his research he went to a local STEM Conference and saw an engineering video featuring a range of projects including making buildings that can resist earthquakes, creating a robot that can swim underwater and wind-resistant construction (the latter was the inspiration for one of his BSW lessons). Through this film and related research, he has come to understand 'that engineering is involved in everything', 'it opened my mind', **'you don't really appreciate what engineering has**



gone into everything in the world and I kind of appreciate that a bit now'. He talks about this process as becoming 'worldly wise' and 'looking out[wards]' something which he feels didn't happen through his university science education: 'You're very focused on what you know and what you've read and what you've learned at university and how to pass an exam. ... I've only ever been in teaching'. He talks about a further shift following the BSA workshop where he took away a sense that 'STEM can be anything ... that will temper my views moving forwards on what you can do with STEM' and may lead to him exploring science through art at the PRU. It 'broadened my understanding of STEM I guess and realising it isn't just confined to doing a practical or building a bridge'. When I ask if he feels building relationships with scientists would be helpful, he replies: 'yeah, I think it would, never thought about that, because that would, that could be another way of supporting, couldn't it, STEM opportunities? To invite people in, create some sort of forum or activity for the scientists to work with the students'.

British Science Week is run by the British Science Association

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