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Building Future Engineers with LEGO

This LEGO Hydrogen Project was rewarding. It was devised to support PGT students—particularly those new to the College of Science and Engineering—in developing their communication and confidence skills. Collaborating with Dr Euan McGookin from the James Watt School of Engineering, we recognised teamwork and problem-solving in a competitive setting as a powerful tool for learning.

We adapted the Hydrogen Challenge Ltd, originally aimed at high school pupils, to suit our postgraduate cohort. The idea of designing and building hydrogen-powered LEGO vehicles brought a hands-on, engaging element to the learning experience. By training undergraduate engineering students to deliver the workshops, we also created a valuable opportunity for them to enhance their presentation skills and learn to engage effectively with international students.

The project fostered a dynamic, collaborative, inclusive, and interactive environment that encouraged growth on multiple levels. PGT students appeared more confident communicating within their project groups and with academic staff. The engineering principles behind the LEGO vehicles, combined with the challenge of maximising their travel distance using green hydrogen technology, made the activity practical, challenging, educational, and enjoyable.

From a pedagogical perspective, the project struck a perfect balance between fun and function. The competitive element added urgency, the possibility of catastrophic failure, and excitement, while the problem-solving aspect encouraged students to collaborate, think critically, and apply their knowledge in real time. Watching students thrive in this setting—laughing, learning, sighing, and innovating—was a clear reminder of how experiential learning can transform education. The positive impact of Lego on learning is demonstrated by Ferreira et al. (2024), who showed that a fun, engaging activity can enhance teamwork and the learning experience of PGT students.

This approach is one in which CoSE can thrive, helping to create a positive, inclusive, and challenging learning environment for all students.

Student Feedback –

I think this event was very interesting because using hydrogen as a power source was something new for us. The atmosphere at the venue was great, filled with the tension of competition, and everyone was fully engaged when we calculated the distance our car had travelled together. In the end, it was really unexpected and made us very happy—and proud—that our team's car achieved such a good result. 62 meters is the furthest in the UK ! ***Xin Zhao***

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