Goose Fair Crumble Rides

Bringing computer programming and control to life in D&T with the Crumble controller.
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Figure 1 – Crumble controller was, the trainee teachers shared their rides with the children, which the children then investigated, evaluated-and-analysed (IEA) to help create their own design criteria.

Innovation part 1 – Mechanisms and Computer programming
Before the children came into NTU to design and make their rides, the trainees designed and made their own ride in pairs. Initially powered with motorised pulley wheels and reversible switches, that allowed the ride to change direction. The trainees were then introduced to Crumble through a focused task (FT). After learning the basics of programming the Crumble controller, they were then able to programme it to control the ride, which this time involved more options: change of speed, change of direction, sequences of flashing LEDs that changed colour (sparklies), as well as using sensors to trigger the ride to start. The trainees planned for the visit to include the three key D&T activities: investigate and evaluate (IEA), FT and DMEA activities, as well as experience many aspects of university life as part of the ‘Raising Aspirations’ project.

On the day: Setting the scene – Authenticity, User and Purpose
Initially I introduced the DMEA to the children, which clearly identified the user and the purpose (see Fig. 5) within a real-life authentic context – Nottingham Goose Fair. Once the children knew what the design problem

Figure 2 – The DMEA shared with the children

Figure 3 – Children carrying out an IEA on the trainees’ fairground rides

Figure 4 – Children programming the Crumble

Figure 5 – Children developing their making skills on various aspects of the ride

Figure 6 – The children with their final products

Project Summary
Children’s surveys completed after the experience gave very positive responses, particularly on the aspect of ‘working in teams’ and ‘exploring the rides’. Many children felt they had developed their skills in using D&T tools, teamwork and computer programming and that they had ‘learned a lot’ and ‘had lots of fun’. They also commented on how this project had helped them to learn other curriculum subjects, such as maths, art and science.

Class teacher Mr. Goff agreed that the children had enjoyed the project, and that it had ‘used and enhanced existing D&T skills, particularly focusing on the crucial initial design phases. It also gave them the opportunity to be innovative with more complex components such as Crumble. All the children were delighted with the outcome of a working fairground ride and talked enthusiastically about their experience for a long time afterwards.

Finally, the opportunity to work with children on this project was met with real positivity from the trainee teachers, with comments such as ‘a great opportunity to gain experience in our subject specialist whilst having the opportunity to put into practice our pedagogical skills and planning’. The link to computing helped us make cross-curricular links between subjects and also helped improve computing knowledge and ‘absolutely loved it! It brought everything together’.

Using Crumble controllers enabled the children to ‘apply their understanding of computing to program, monitor and control their products’. In an effective, engaging and primary-appropriate way. The low cost of the Crumble controller kits and the ease of use of the software (which closely matches the Scratch programming language) means that children will be familiar with means this approach has real potential for bringing D&T projects to life in many schools.

Primary Crumble Controller Starter Kits and Components packs are available from the D&T Association website. The ‘Primary Crumble Controller Starter Kit Bundle’ includes packs of two Projects on a Page Primary Crumble Planners: Years 3-6 Simple Programming and Control and Years 5/6 Monitoring and Control and the ‘Programming and Control at KS1’ article from D&T Primary #52.