

## Fountainneers

Fountainneers is engaging pupils and staff in a primary school as co-designers of an interactive and programmable water fountain. As people pass by, the intelligent fountain will respond to their behaviour in different ways using programs created by pupils. In both its design and use, the fountain will enable children and adults to engage with and learn from their environment; learn between lessons and across spaces; and take part in a range of collaborative learning experiences.



### Team

Stakeholder Design  
Luckwell Primary School  
Futurelab



### Outline

Fountainneers is a collaborative project between Futurelab, Stakeholder Design and Luckwell Primary School. Together we are designing a programmable and interactive fountain to be built in the grounds of the school. The pupils will own the fountain – deciding how it is used, programming it to behave in particular ways for specific purposes, and organising its use, management and maintenance. In time, the fountain will become part of everyday school life and a powerful resource. Children will increasingly direct their own learning and continue to invent ever more creative ways of using it.

With current debates about what a 21st century education should look like and £45 billion earmarked for the Building Schools for the Future programme, Fountainneers aims to demonstrate that children and teachers have enormous scope to influence the reconfiguration of their buildings and outdoor spaces - and particularly to use the environment to model new learning habits and more adventurous, curious mindsets.

Children are encouraged to work together in a problem-solving manner as they figure out how to manipulate the fountain. They will use information from across the curriculum – science, dance, ICT, drama, citizenship – to create

programs that enable the fountain to perform and interact with people. Pupils may decide to program the fountain to be entertaining one day and to enforce rules or gather information the next.

The Fountainneers project has three equally important aspects. The first is the design process in which we follow a new approach to participatory design, using an exploratory process developed by Stakeholder Design. We are working with all teachers and all pupils to ensure that everyone has a voice, and that disparate ideas are able to be effectively combined and distilled into a workable and coherent fountain design brief.

The second is the development of the fountain itself and of its control system. It is vital that the fountain has a variety of inputs and outputs so that it is flexible, able to be used for many things and reprogrammed in multiple ways. For instance, it may be programmed to respond to people's speed and movement or to represent the opinions of pupils. The third aspect is the ongoing integration of the fountain in and out of lessons. The management of its use is to be supported by teachers, but ultimately owned and led by the pupils. The development of these new ways of working together will be a key part of the design process.

### Scenario 1

It is break time and children will soon be running to get out to the playground. As the first ones run past the fountain, they see that it has dwindled almost to a trickle. They slow down and the fountain perks up. Seeing what has happened, the next group of children come to a standstill, hoping to see the fountain really gush. However, the fountain quickly returns to a trickle. The children learn that there is an optimal speed at which to walk if they want the fountain to perform for them. Later, an individual walking past it finds that the fountain's water follows them from left to right. If they clap, it responds. It actively helps children to interact with their environment and take part in collaborative experiences.

### Scenario 2

It is the Year 6 school leavers' concert. The children have written and choreographed a performance piece they've called 'The Fabulous, Fantastic Fountain'. As they sing, the fountain performs along with them. It has stereo sensors so it can tell which section of the choir is singing and has volume recorders so it can reach for the heights during the loudest sections. As the dancers sway to the left it goes with them and when they bounce up and down it does the same. During the drum solo it has water triggers linked to particular sounds. A symbol 'crash' fires a water bullet from left to right; a drum roll triggers a domino-like cascade. At the end, the audience claps and the fountain responds by using a spray effect to simulate the sound.

## Learning Research Objectives

Futurelab's aims in developing both the co-design process and the construction of a multi-input, multi-output (MIMO) interactive fountain are:

- to investigate different ways of working in partnership with a whole school and establish methods and processes for combining design ideas
- to provide a focus for teachers and pupils to learn together, establish new relationships and provide opportunities for team working, authentic problem-solving experiences, and mixed-age collaboration and negotiation
- to learn and share lessons (that may have policy ramifications) about the use of outdoor spaces as effective and learner-directed learning environments
- to build on research into children's programming of virtual worlds and robots (constructionism) with a specific focus on the merging of technology and the natural world.

## Research and Development Process

Fountainers is currently at an early stage of the development process. To date, we have run initial focus groups with teachers and pupils and held two days of exploratory design workshops with the whole school (208 children aged 4-11 and 14 teachers). In these initial workshops we ran exercises in which everyone had to work together; gave the children opportunities to be tour guides of their school (telling their own stories - good and bad - about different locations around the school grounds);

and validated the concept of working together as a whole team to design and build an interactive fountain. Children then brainstormed the pluses, minuses and interesting points of having a fountain at school, and began to externalise their ideas in diagrams, drawings, poetry, dance and digital art.

The collaborative design process is integral to the project, with pupils, teachers and the Futurelab team researching different aspects of fountain design, combining findings and developing agreed outcomes. We are working with the teaching staff to develop the 'Fountaineering Curriculum' which will engage the children in investigative tasks and creative activities that will move the whole school towards a brief for the design of the fountain. Once there is a clear consensus on what the school wants from their fountain, the whole team will work with a professional fountain design company to develop those ideas into a detailed specification.

Alongside Futurelab, children and teachers will be invited to document the process throughout using the 'Fountaineering Wiki', the physical 'Fountainers Thinking Wall' in the main hall in the school, video diaries and written logs. It is hoped that findings from Fountainers will be used to inspire other head teachers, governors, teachers and policy makers to further engage with students and think more adventurously about learning opportunities there may be in their new learning environments.

This idea was submitted to Futurelab's Call for Ideas programme by Sean McDougall, Stakeholder Design.

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