Size Matters

Revealing the magic, wonder and awe of size, Size Matters provides new ways of seeing, imagining and understanding the world. It introduces the concept of size and scale to students in an engaging and refreshing way, linking the extreme known models of the universe, from nanotechnology to the cosmos.

Team
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Outline

The Size Matters prototype was designed to act as an interactive exhibit in science centres to be used alongside a range of hands-on activities, for children aged 11-14. The prototype was developed to explore whether an engaging series of simulations, that showed hamsters being enlarged to the size of a moon, and elephants ranging from pocket sized to 'ginormous', would trigger children to ask questions about how size affects structure.

Rather than 'telling' children about how gravity and centrifugal force play a role in these processes, the prototype provides a series of simulations and 'thought experiments' intended to trigger discussion amongst users, encouraging further play with the software and further experimentation with other resources along the same themes.

Learning Research Objectives

The focus for the development and research was on whether a visually engaging set of simulations, informed by key principles of physics, would be able, within a science centre or school setting, to:

1. Engage children with questions of size and scale.

2. Generate discussion, hypothesis formulation and reflection.

3. Enable children to apply ideas learnt through using the prototype in other areas.

Research and Development Process

The Size Matters software was developed in-house, with Andrew Lovelock, a partner who had initiated the idea for the software at Futurelab's Science Simulation Creative Incubation Lab, leading the prototype development. The software was trialled during June and July 2003 in a number of locations, including evaluations with families and school groups at Bristol's Explore Science Centre; with teachers and year 6, 7 and 8 children at Luckwell Primary School and Bedminster Down School, Bristol; with a group of physics undergraduates; and with teachers and researchers with specific interest in children with special educational needs.

Findings

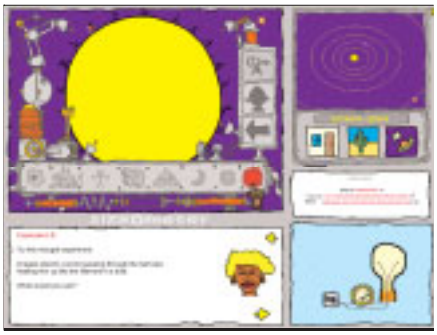
The research produced a series of key findings relating both to the specific software, and to the design and development of such resources in future:

1. Thought experiments are useful in triggering debate, although to maximise benefit of the prototyope, this sort of simulation and stimulation activity needs to be used in conjunction with other activities, such as expert mediation from teachers or others, or through hands-on activities using a range of other resources.

2. Verbal instructions and sound effects are demonstrably significant in triggering student attention and engagement. These may also play an important role in enabling students with special educational needs to engage with these types of resources.

3. Early involvement of target audiences and educational experts in the concept and early design stages is likely to play a significant role in improving the quality of educational resources.

4. Developers producing similar materials need to ensure that there is a clear 'fit' between the 'look and feel' of resources and the age groups for which they are designed in terms of educational content.



Screenshot of planet-sized hamster

Next Steps

Having completed the prototype design and evaluation phases, Andrew Lovelock is currently consulting with a number of partners to explore how the prototype might be taken further within a science centre setting.

Children at Luckwell Primary School, Bristol, using Size Matters

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