Longitude Explorer 2017

Teachers Notes

Welcome to the Longitude Explore Prize, which has been developed by Nesta to enable students aged 11-16 to bring together the Internet of Things and their imagination to create new and exciting ideas to help improve our health.

Nesta is the UK's Innovation foundation whose mission is to help people and organisations bring great ideas to life. Our partner IBM strives to stimulate innovation that matters for the world.

Aim

To support young people to develop scientific and technological skills, and enhance their aspirations and career prospects in STEM.

Further information: *Further case studies and other sources of information can be found online at:* *www.longitudeexplorer.challenges.org*

Get involved in this competition to:
• Inspire your students with science and technology
• Stretch and challenge your students
• Provide opportunities for cross-curricular learning
• Raise the profile of science and technology in your school
• Relate science and technology to the real world

The Challenge

The Internet of Things has the potential to make us happier, healthier and more connected, transforming the way we live. We challenge young people to develop innovative, practical solutions that uses the Internet of Things to improve health and well-being of people in the UK.

Areas of particular interest include childhood obesity, physical activity, mental health and pollution, but ideas can relate to any other health issues.

Childhood Obesity

Physical Activity

Mental Health

Pollution

Key Stage 3 and 4 Curriculum links and learning outcomes

There are a range of learning outcomes directly linked to national curricula requirements that working on this project can help towards achieving.

Key Stage 3

Mathematics

- Making and testing conjectures about patterns and relationships; looking for proofs or counter-examples.
- Learning to speak clearly and convey ideas confidently using standard English.

English

- Write clearly, accurately and coherently, adapting their language and style in and for a range of contexts, purposes and audiences.
- Using standard English confidently in a range of formal and informal contexts, including classroom discussion.
- Giving short speeches and presentations, expressing their own ideas and keeping to the point.
- Learning to justify ideas with reasons; ask questions to check understanding; develop vocabulary and build knowledge; negotiate; evaluate and build on the ideas of others; and select the appropriate register for effective communication.

Computing

- Designing, using and evaluating computational abstractions that model the state and behaviour of real-world problems.
- Understanding how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally.

Science

- Students should be encouraged to relate scientific explanations to phenomena in the world around them and start to use modelling and abstract ideas to develop and evaluate explanations.
- Developing understanding the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases.
- Asking questions and developing a line of enquiry based on observations of the real world, alongside prior knowledge and experience.
- Interpreting observations and data, including identifying patterns and using observations, measurements and data to draw conclusions.

- Presenting reasoned explanations, including explaining data in relation to predictions and hypotheses.
- Learning about the composition of the atmosphere.

Design and technology

- Identifying and solving their own design problems and understanding how to reformulate problems given to them.
- Developing specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations.
- Using a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses.
- Developing and communicating design ideas using annotated sketches, detailed plans, 3-d and mathematical modelling, oral and digital presentations and computer-based tools.

Key Stage 4

English

- Learning to give well-structured descriptions and explanations and develop their understanding through speculating, hypothesising and exploring ideas. This will enable them to clarify their thinking as well as organise their ideas for writing.
- Writing clearly, accurately and coherently, adapting their language and style in and for a range of contexts, purposes and audiences
- Selecting and organising ideas, facts and key points, and citing evidence, details and quotation effectively and pertinently for support and emphasis.
- Working effectively in groups of different sizes and taking on required roles, including leading and managing discussions, involving others productively, reviewing and summarising, and contributing to meeting goals/deadlines.
- Planning for different purposes and audiences, including selecting and organising information and ideas effectively and persuasively for formal spoken presentations and debates.

Science

- Using a variety of concepts and models to develop scientific explanations and understanding.
- Explaining everyday and technological applications of science; evaluating associated personal, social, economic and environmental implications; and making decisions based on the evaluation of evidence and arguments.
- The use of conceptual models and theories to make sense of the observed diversity of natural phenomena.
- Developing understanding that change is driven by interactions between different objects and systems.

- Developing understanding of the nature, processes and methods of science, through different types of scientific enquiry that help them to answer scientific questions about the world around them.
- Developing and learning to apply observational, practical, modelling, enquiry, problem-solving skills and mathematical skills, both in the laboratory, in the field and in other environments.
- Developing students' ability to evaluate claims based on science through critical analysis of the methodology, evidence and conclusions, both qualitatively and quantitatively.

How do I deliver the competition?

The competition has been structured in three stages to simplify and support students in their entry.

Phase one challenges pupils to come up with their idea and phase two and three include support to help students make their idea a reality. Therefore, no previous technical knowledge is required. This competition is designed to support young people to develop their scientific and technological skills, and to enhance their learning and future STEM aspirations.

To help you launch the competition with your students we have provided a short introductory PowerPoint presentation for use in class or assembly which can be downloaded online.

Further information about the competition can be found on the website, along with some additional information sheets on:
- The Internet of Things
- Childhood obesity
- Mental Health
- Physical Activity
- Pollution
- Design Thinking

The entry form is simple and can be completed online at:
www.longitudeexplorer.challenges.org

Prizes

The winning school will be awarded **£10,000**, plus individual prizes for participants.

There are also two prizes of **£1,000 for the runner up schools**.

Participants will also have the opportunity to attend events at IBM in London in 2017 and a prestigious awards ceremony.

Judging criteria

Entries will be assessed based on following criteria:

Innovation	Is the idea new or an innovative adaptation?
Health issue	Is the idea backed by research into health issues?
Use of data	Has the group identified what devices will be connected and what data will be collected and/or shared?
Concept into reality	How has the group developed their idea?
Application	How has the group considered the practicalities of their idea, including who will use it?
Teamwork	Has the group shown effective teamwork skills?
Communication	Has the group considered the most appropriate way to communicate their idea?

Stages

The Longitude Explorer Prize is a staged process.

Stage One: Submit your idea

Who can enter?	What happens in this stage?	When do I need to submit?
The challenge is open to young people aged 11-16 years. The challenge is open to groups of up to five. An adult must be responsible for each group and enter on their behalf.	At stage one students just need to submit their idea based on what how they would like to use the Internet of Things concept to address health issues and why. All entries will be assessed based on the judging criteria and around 10 finalists across the UK will be selected.	Submit your entry online before **3rd March 2017**

Stage Two: Finalists developing your ideas

What do I need to do in this stage?	Key Timings
Shortlisted finalists will be asked to develop their ideas and create prototypes of their innovations. Finalists will be invited and subsidised to attend an Induction Event at IBM in London on 28th April 2017 where they will meet the other Finalists and receive masterclasses and guidance to set them on their way to making their idea a reality. Expert guidance, mentoring support and resources will be provided to support the development of the ideas.	Submit your entry online before **3rd March 2017.** **Induction Event on 28th April 2017**

Stage Three: Final Presentation and Award Ceremony

What do I need to do in this stage?	Key Timings
Finalists will be required to submit their final proposal (Workbooks) and demonstrate how their prototypes work. The Finalists will be invited to present their entries at a final presentation and awards event on 13 July 2017.	**Final award ceremony on 13th July 2017**