



Tomorrow's Engineers: Energy Quest 2015 Evaluation – Key Findings

Prepared for EngineeringUK

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INTRODUCTION

The Tomorrow's Engineers programme seeks to inspire more young people about engineering. With Shell's investment, Tomorrow's Engineers has launched a new school programme – The Tomorrow's Engineers Energy Quest. With a focus on energy, the programme helps teachers deliver the science and maths curriculum in a fun and engaging way. Students benefit from hands-on engineering experiences, learn about engineering careers and work with engineers and scientists from their local community. It comprises of two parts.

Part 1: Energy Quest Energiser Event - The Energiser Event is a half day workshop with a mix of practical and paper based activities. It is delivered by an experienced Tomorrow's Engineers presenter typically working with a STEM Ambassador.

Part 2: Energy Quest Energy Challenge - The Challenge comprises of a series of classroom-based modules that help students explore the different forms of energy and how technology is helping the world create more energy whilst limiting carbon emissions. Participants who take part in the Challenge have participated in the Event. This part of the project is still ongoing at the time of this report being written.

The overarching aim of the Energy Quest is that of Tomorrow's Engineers. It aims to give 11-14 year olds in the UK hands-on engineering experiences with employers, backed up with information on the range of opportunities a career in engineering can provide, so that an equal number of girls and boys aspire to become engineers.

The impact of programme is evaluated and where possible compared to the "KS3 UK" responses identified through EngineeringUK's annual Engineers and Engineering Brand Monitor (EEBM).

This report summarises the key results from the post event survey completed by students and teachers after participating in the Energiser Event and Energy Challenge activities. The numbers of those that took part in the evaluation are detailed at the end of the report. There is a separate impact evaluation report for the rest of the Tomorrow's Engineers activities.

For the Tomorrow's Engineers programme 2015 the objectives of the evaluation were:

- to understand student knowledge, perception and likely future choice of STEM subjects
- to ascertain the level of desirability of knowledge of science, technology and engineering careers and aspirations towards them
- to determine how much students know about where to find out more about engineering careers.



The research was designed to evaluate the activities in terms of overall perception and knowledge of engineering and attitudes towards engineering as a career amongst both young people and teachers, so that we could ascertain:

- the perception and knowledge of engineering that young people have following the activity
- the level of desirability amongst young people and recommendation amongst teachers of engineering careers
- how attitudes towards engineering amongst young people and teachers compare to those surveyed in the EEBM

From the Energiser event 2709 responses were collected from Key Stage 3 students (1542 female and 1074 male). From the Energy Challenge 575 responses were collected (318 female and 244 male). Responses were collected from 186 from their teachers. Because of the nature of the programme, those who responded from the Energy Challenge took part in the preceding Energiser event. They are likely to have also responded to the survey of those participating in the Energiser event. These responses were collected amongst the estimated 7000 who participated in the Challenge and approximately 16,000 who participated in the Event.

KEY FINDINGS

- There is a balance to be struck between activities being long enough to deliver salient learning points but not so long that pupil engagement and interest wanes.
 - Both the Energy Quest Energiser Event and Energy Challenge were found to be enjoyable and rated better than a normal lesson.
 - However, four in ten pupils found them to be too long.
- Critically, the activities have encouraged pupils to view engineering and STEM subjects in a more positive light, as a result of taking part in the activities pupils have:
 - A more positive view of engineering.
 - Greater knowledge of what people who work in engineering do.
 - An understanding that engineering is suitable for both boys and girls.
 - The knowledge of next steps to take in order to become an engineer.
- There is definite merit in the two part approach to the Energy Quest activities with greater positivity amongst those that took part in the Energy Challenge after completing the Energiser Event, specifically with regard to:
 - increased positivity towards engineering
 - greater likelihood to study STEM subjects at a higher level
 - heightened desirability of engineering as a career
 - better knowledge of what people working in engineering do

ACTIONS

In response to these findings we have identified the following actions:

- Deliver additional training for all presenters to improve pace of delivery and student engagement at the Energiser Event and rework the content to have fewer PowerPoint slides and more interactive opportunities.
- Delivery Partners to share good practice to improve standardised, high quality delivery.
- Update Classroom Challenge instructions to advise teachers on how to divide the Energy Challenge activities up to suit smaller groups
- Include updated careers materials.
- Ensure Energiser Event presenters introduce STEM ambassadors and allow ambassadors sufficient time to talk about their careers and journey into engineering.
- We need to drive uptake of the Energy Challenge by showcasing evaluation impact and including an incentive such as a competition.