

The Big Bang

A research report evaluating The Big Bang 2011
Prepared for EngineeringUK
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Executive Summary

The Big Bang was a highly successful event. Content, tone, balance and organisation were all praised. Attendees on all three days were impressed, and the event had a positive effect on children's knowledge of science and engineering and their desire to pursue these subjects in later stages of life.

1.1 Summary of key findings

Children gave highly positive ratings for enjoyment and overall experience of The Big Bang

The event was received positively and considered to be enjoyable by the vast majority of visitors who answered feedback questions towards the end of their visit. 99% of surveyed visitors aged 5-16, when asked how enjoyable they had found The Big Bang, answered either 'quite enjoyable' (12%) or 'very enjoyable' (87%). When asked how they rated The Big Bang overall, 97% of respondents aged five or older (including the adult visitors interviewed at the event), described it as either 'good' (32%), or 'very good' (65%).

Girls were more positive than boys

Levels of positivity were high amongst both boys and girls; however, girls were more likely to say The Big Bang had been 'very enjoyable' (92%) than boys (83%). Girls were more positive than boys in their rating of The Big Bang; with 74% of girls describing it as 'very good' overall compared to 55% of boys. When 5-11 year olds were asked to choose words to describe The Big Bang, girls were more likely than boys to select 'exciting' (93% vs. 81%), 'fun' (90% vs. 75%) and 'interesting' (85% vs. 72%).

Adults were very positive with the majority saying the experience had met or exceeded their expectations

Adult visitors, when asked in a post event survey, rated The Big Bang highly positively. 94% of all adult visitors rated it as 'good' (30%) or 'very good' (64%). Among the adult visitors, the proportions of 'very good' responses were marginally lower among teachers (60%) than among adults (mostly parents accompanying children to the event) from the general public (66%).

99% of adult visitors said that their experience of The Big Bang had either met or exceeded their expectations. Two fifths (39%) of adult respondents said that their experience of the event 'far exceeded' (39%) what they had expected.

The vast majority of Adults and children would recommend a visit to The Big Bang to others

Among children aged 5-16, 98% would be either 'quite likely' (49%) or 'very likely' (49%) to tell their friends to come to The Big Bang next year. The younger children were more emphatic about this, with two thirds (67%) of 5-11 year olds saying they would be 'very likely' to tell their friends, compared with just over a third (36%) of 12-19 year olds.

An overwhelming 97% of adult visitors said that they would be either quite likely' (14%) or 'very likely' to recommend a visit to The Big Bang.

Interaction with stand activities and exhibitor staff was a key factor in enhancing visitor satisfaction with the event

Alongside the offering of 'freebies' and competitions with prizes, the level of physical interaction that visitors could have with stands on the show floor proved to be a key factor in drawing visitors' attention and interest. 'Interaction' worked on two levels:

- > Firstly, in relation to the opportunity for visitors to physically engage with experiments and other 'hands-on' activities.
 - o This kind of interaction was especially popular with younger visitors.
- > Secondly, in relation to the dialogue with staff manning the stands.

- This type of interaction was generally considered more important to older students, many of whom were looking for interesting and engaging staff able to answer their questions on science/engineering topics or regarding progression and careers.

The majority of Children said they learned a lot about science and engineering by coming to The Big Bang

When 5-11 year olds were asked at the event how much they had learned about science and engineering by coming to The Big Bang, 24% said they had learned 'a little' and 71% said they had learned 'a lot'.

Visitors aged 12-19 were asked whether they agreed or disagreed with a series of statements about The Big Bang. 95% agreed 'a little' (29%) or 'a lot' (66%) that they had 'learned something new about science at The Big Bang'. 85% agreed 'a little' (32%) or 'a lot' (53%) that they had 'learned something new about engineering at The Big Bang'.

12-19 year olds' understanding of science is greater than that of engineering

Visitors aged 12-19 were asked at The Big Bang how much they know about what engineers and scientists do. 16% said they 'know a lot' about what engineers do, whilst 24% said the same about scientists. These proportions were also reflected in the answers of adult visitors prior to their visit to The Big Bang.

The Big Bang increased visitors' knowledge of what engineers do

Adult visitors were asked pre and then post event how much they know about what engineers and scientists do. After the event, knowledge of both was higher, with 18% (up from 11%) knowing 'a lot' about engineers and 30% (up from 24%) knowing 'a lot' about scientists.

Some interesting differences are observed between teachers and the general public in this area. When looking at the 'top two box' score for how much is known about what engineers do, teachers 'scored' 36% before the event and 66% after the event, compared with the general public's 31% before and 42% after. This contrasts with knowledge of what scientists do, for which the 'top two box' score for teachers was almost unchanged before and after the event whilst the general public's shifted from 50% to 61%.

The Big Bang had a positive impact on how children view engineering

When asked at the event, 74% of boys aged 12-19 and 81% of girls of the same age said that the visit to The Big Bang had changed their view of engineering either 'slightly more' or 'much more' positively. 24% of boys and 11% of girls said that their view had not been changed by the visit; however, many of these were keen to point out that this was because they already viewed it very positively, rather than this being a reflection on the event itself.

The Big Bang had a positive impact on how likely children are to want to become an engineer

Three fifths of boys (61%) aged 12-19 interviewed at The Big Bang said that their visit had made them either 'a little more' or 'much more' likely to want to become an engineer. The proportion amongst girls of the same age was similar, at 58%. The strength of likelihood varied between the sexes though, with 31% of boys being 'much more likely' compared with 15% of girls.

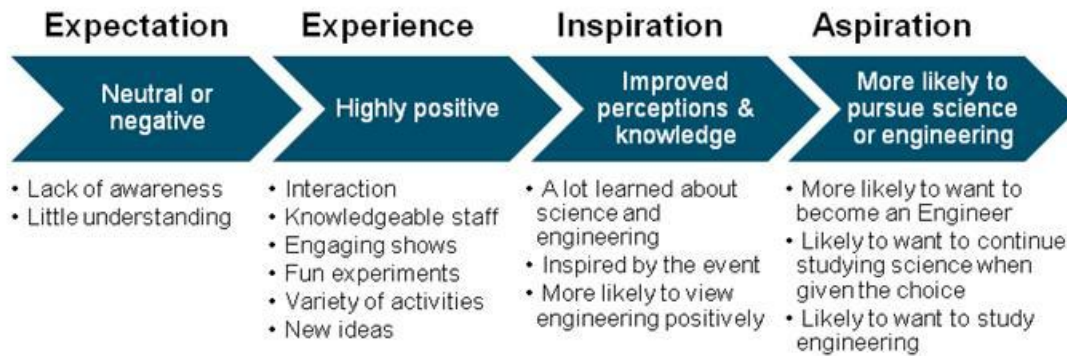
Adult visitors' views of engineering were positively influenced

Two thirds (64%) of adult visitors said their visit to The Big Bang had changed their view of engineering 'slightly more' or 'much more' positively. A similar proportion (71%) said that their visit had made them either 'a little more' (31%) or 'much more' (40%) likely to recommend a career in engineering to their students or children. The equivalent figure for recommending a career in science is 69%, with 26% of adults saying they are 'a little more likely' and 43% 'much more likely'.

1.2 The typical disengaged student Big Bang engagement experience

Whilst they may not themselves have made the decision to visit The Big Bang, our findings indicate that many children with initially negative or neutral perceptions of the event, on attending the event, did ultimately have a positive, learning experience.

The diagram below, based upon our survey responses, illustrates a typical 'journey' of student visitors who, prior to visiting the event, had relatively low engagement with science or engineering but at the end of the day left inspired by the event and more likely to consider science and engineering favourably.



1.3 Areas for improvement

While feedback across all areas of the event was overwhelmingly positive, there were some areas for improvement identified for forthcoming years. Recommendations for improvement broadly fell into one of two categories:

1. Higher level strategic recommendations which tend to be more fundamental in nature and contribute to longer-term quality improvements.
2. Specific recommendations of an operational, practical or tactical nature, some of which are likely to be reasonably straightforward to remedy.

1.4 Strategic recommendations

Use interaction (physical engagement and dialogue) as a device for enhancing learning and visitor satisfaction

Hands-on activity and experimentation lend themselves particularly well to science and engineering as ways in which young people can be introduced even to complex concepts and information. The majority of the feedback from visitors to The Big Bang has demonstrated that interaction is a key aspect of the successful stands and shows and this should be retained or enhanced wherever possible in future events. Interaction can be introduced in a number of ways: as well as activities and experiments for visitors to get involved with, it also includes communication with individuals manning stands or representing organisations. This personal interaction is a key element in the attraction, engagement and satisfaction of visitors.

Provide better opportunities for students to learn about careers in science and engineering

For some of the older respondents, obtaining careers advice, guidance on further education and information on internships was an important element of their visit to The Big Bang. Particularly in light of rising study fees and economic instability, these students greatly appreciate practical and relevant advice about a career in these sectors. Specific careers-focused stands should be clearly identifiable and targeted at relevant age groups; however, visitors' interest in careers information is not confined to the careers-specific areas of the event. Some visitors appeared to treat the event as a careers fair, looking to speak directly with exhibitors and employers about opportunities within their organisations. It is therefore important that staff manning exhibitors' stands are equipped to deal effectively with queries of this kind.

Differentiate 'calls to action' in the Big Bang marketing messages

Adults and children have different reasons for attending the event. Although EngineeringUK currently uses differentiated calls to action in its marketing activities there is scope for further refining these calls to action, particularly in relation to who (in schools) receives specific marketing messages.

Ensure that appropriate messages via parents, teachers and at the event reach the learner

The primary audience of The Big Bang is school-aged children, however, current marketing activities are directed primarily towards parents and teachers. Many students interviewed said they had known very little about the event prior to attending, and had often been less than enthusiastic about the visit. The current reliance on teachers and parents to initiate communication of information about the event does not therefore appear to be working as well as it might.

In order to enthuse children and increase their excitement about the event, marketing materials directed specifically at child/student visitors could be supplied, via the registering adults, (in order to comply with child protection regulations). Sufficiently compelling materials could help to reverse the current situation in which adults tend to be the drivers of the decision to attend, and could even encourage children themselves to persuade their schools, parents or youth groups to accompany them to the event.

Additionally, providing appropriate materials for teachers which relate to national curriculum topics but also address the key messages of The Big Bang, to introduce in the classroom prior to the visit, could also be an option worth considering. Another highly effective way of increasing interest amongst children and students might be to create relevant and entertaining viral web content which children will choose to share with their friends through social media channels, although clearly child protection regulations would need to be taken into account.

Target schools which are less engaged in STEM enrichment and enhancement activities

Through The Big Bang EngineeringUK has the opportunity to engage with schools which typically don't undertake STEM enrichment and enhancement activities. By showing teachers in these schools the benefits of these activities and by building links with interested teachers in these schools EngineeringUK has the opportunity to increase their involvement in STEM enrichment and enhancement activities.

Identify opportunities for embedding The Big Bang messages in schools

Teachers said that EngineeringUK could assist them in incorporating learnings from The Big Bang into their future lessons by:

- > Providing lesson plans
- > Creating a website of searchable resources
- > Running workshops in schools

By exploring existing offerings, such as those enabled via the Tomorrow's Engineers programme, EngineeringUK could identify ways of providing teachers with the materials and services they suggested.

1.5 Operational recommendations

Ensure that visitors know when the show floor closes on the Saturday

Discrepancies between actual closing times and visitors' understanding of these timings, particularly Saturday finishing earlier than expected, caused several research participants some irritation. The early finish created particular problems for groups with prior arrangements for transport pick-ups, for which they subsequently had to wait longer than planned.

Extend the opening hours on the Saturday

The Saturday was the day with the shortest opening hours and also the only day on which the event was open to the general public. Saturday visitors, typically parents accompanying children, were just as positive about the experience as the school group visitors on the first two days. However, some expressed frustration at not being able to fit in all they had wanted to within the shorter day. Some visitors said that the opening hours should be extended to enable

them to see everything and/or that access to the general public should be extended beyond a single day.

Encourage headline shows to select participants from the sides and back of the auditorium

Frustration was expressed, primarily by children, around the selection of audience participants during the live headline shows. It was perceived that respondents were only chosen from the central seating block, and some of those at the back and sides felt excluded. This affected their overall enjoyment of the show and, given the influence these headline shows appear to have had on students' overall experience of the event, on the day as a whole.

Tailor headline shows to under 12, 12-16 and 17-19 age groups

Whilst the headline shows were generally viewed very positively, cited by many as being the highlight of their visit, some disappointment was expressed by older children about the way in which the Bang Goes the Theory material was communicated. Some felt that the tone and language of this show, which attracted a wide range of ages, were aimed too much at the younger children and felt somewhat patronising. Suggestions were made that different showings could be put on in future, in which the content would remain the same, but the language used would be tailored to suit younger and older audiences separately.

Ensure that show floor zone branding is understood by all visitors

The majority of respondents did not think of the five themed zones of the show floor as distinct areas: more than half had problems recalling which zones their favourite stands were located in, and even when they could, they tended not to think of the zones as coherent areas. If The Big Bang wants to make more of the themed zone format, it would be worth considering clearer demarcation, greater consistency of stand appearance, more explicit illustration of how the stand activities or information relate to the zone theme, or some kind of 'introduction stand' to the zone, highlighting key themes and even signposting stands of particular relevance based on visitors' interests.

Ensure that all exhibitors are aware of how to maximise appeal and engagement of their stands for The Big Bang

While the quality of stands was generally very high, some could improve their provision in a number of ways. The Big Bang organisers may be able to bring all stands up to the same high level by encouraging exhibitors to:

- > Think carefully about how long activities last, to maximise participation and maintain interest of passers-by and observers
- > Plan how to keep visitors engaged while waiting to participate in activities
- > Have engaging and informative staff manning the stands
- > Have an appropriate number of staff manning the stand – too few can cause visitors to wait too long for attention, whilst too many can be intimidating for visitors to approach
- > Approach visitors walking past and encouraging them to take an interest
- > Use competitions, scoreboards and prizes, which worked well for many stands, to attract visitors rather than simply offering freebies
- > Feature some kind of interactive element – unless a stand is specifically targeted at attracting older students, for example a stand with a focus on careers or higher study information.
- > Ensure staff manning stands are able to interact with visitors of different ages. In particular, exhibitors should be prepared to discuss careers or progression opportunities.