

Robot Thought evaluation summary 5

Venue:	W5, Belfast
Robot experts:	Open University
Dates:	Launch 18 & 19 May 2007, public show ongoing as part of the summer programme
Number of shows:	As of 20 May: 1 <i>The trouble with Robots</i> schools show, audience ~ 160 13 and 14 year-olds 2 <i>The trouble with robots</i> public (floor) shows, total audience ~ 55 visitors 2 schools LEGO workshops run by OU, audience ~ 160 (same as show audience) 1 public drop-in LEGO workshop, audience ~ 50 visitors
Audiences:	160 school students and 50 visitors saw the show in the first 3 days of the programme The same 160 students and a further 50 visitors participated in the LEGO activities
	Total audience size ~ 260

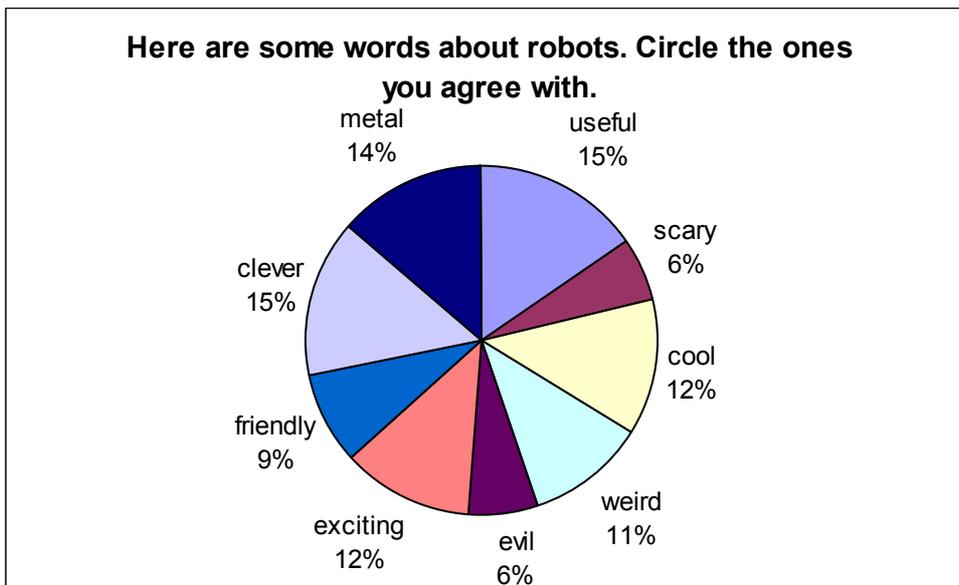
The schools events

The schools events took place on Friday 18 May. Students were asked to evaluate the show using both the long and short questionnaires to gather a mixed set of data. A total of 90 questionnaires were completed; 46 long questionnaires and 44 short questionnaires.

The respondents' ages ranged from 12 to 14. Most of the students were 13 (79%), 8% were aged 12 and 13% were aged 14. The gender balance in the sample was 49% male 51% female.

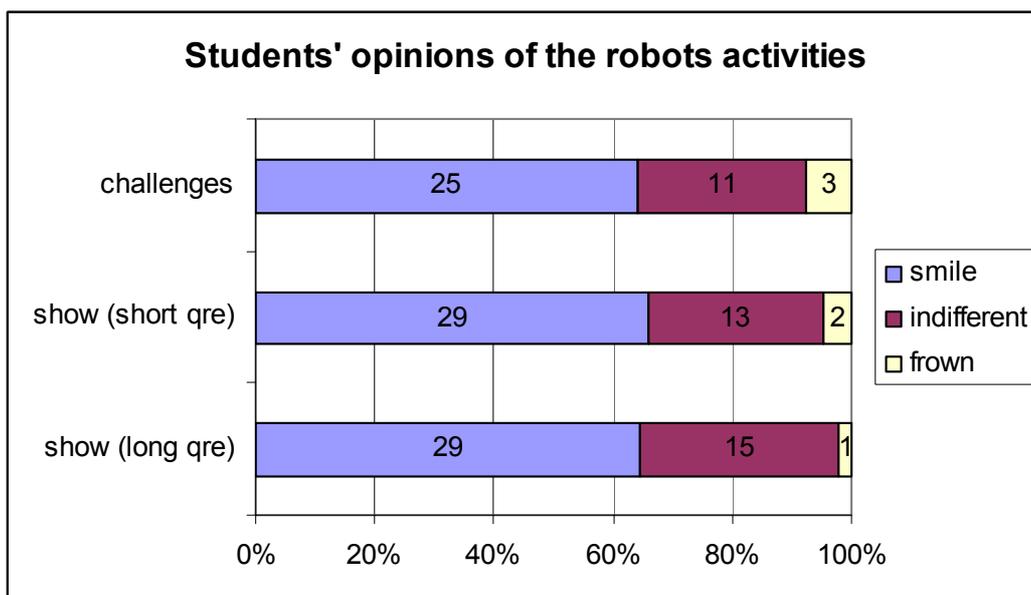
The short questionnaire asked students to comment on the show and the LEGO challenge activities. The long questionnaire focused solely on the show. The students completed the questionnaires during the LEGO workshop. Three teachers also completed teacher questionnaires and gave opinions about the show and the workshop.

Students that completed the short questionnaire were asked to circle the words they thought were linked to robots. The results are given below:



Some respondents to the short questionnaire also added extra words, all but one of which were positive.

The graph below shows what students thought about the show (data presented from the long and the short questionnaires) and about the LEGO challenges (short questionnaire only).



Responses to the long questionnaire have been pooled; 40% of long questionnaire respondents rated the show as 1 (show was good) on a scale of 1 to 5, and 24% rated it as 2.

From the graph it appears that the show and the challenges were roughly equally well-received, despite the deliverers' difficulties in running the challenge for such large groups. This indicates the students' enjoyment of the more interactive challenge activities.

Comments on the show and challenges were positive. They included:

"It was fun to watch and the presentation and try and build the robots" (13 year-old female)

"I thought today's event at W5 was very exciting" (13 year-olds male)

"It was super neat and it gave me an expert understanding of the world that is the robot" (13 year old, gender not given)

There was only one negative comment ('not good') in the 41 comments made about the day in the short questionnaire. Three respondents said the day was 'OK', although one of these also said he liked the workshop.

Additional findings from the long questionnaire are summarised here:

- When asked to describe the show, 74% of the words written down were positive. Only 4% expressed an ambivalent or negative response to the show (e.g. 'OK' or 'patronising'); the remaining 19% were neutral descriptors such as 'robot' or 'science'. The most common positive words were 'fun' or 'funny', 'interesting' and 'good'. This finding is a stronger indication of the show's success than the rating scale, where 65% (on average) of respondents rated the show as 'good'
- Two thirds (65%) said that the science was pitched at the right level, although nearly a third (30%) felt it was too easy.
- Half (52%) felt that the language was at the right level. However nearly as many felt it was too easy (41%).
- The demonstrations were most often cited as the best bits of the show, notably the Hoover, the ping pong and the balloon-popping. Several students said they liked the demonstrations because 'we got to see how robots work'. Several students commented that 'making the robots' was their favourite part of the day. One student said this was because 'you got to do it yourself'.
- Several respondents commented on a part of the show they liked the least, but there was no one element that stood out so this probably reflects personal preference. There were three mentions of the string demo, three mentions of making the robots and two mentions of the movie.
- Nearly a third of respondents (29%) said they were likely to continue to discuss robotics after the show.
- Respondents' prior knowledge of robotics varied, but most felt they had little prior knowledge. On a scale of 1 (lots) to 5 (nothing), 17% rated their knowledge as 1 or 2, 24% as 3, and 49% as 4 or 5.
- Respondents were asked to rate how much they had learned about robotics on a scale from 1 (lots) to 5 (nothing). Over half (57%) rated their learning as 1 or 2, with a third (33%) rating their learning as 3. 7% felt they learned nothing.
- Lots of learning points related to robots were given when asked in the questionnaire, some of which were contradictory (e.g. 'robots are smart'; 'robots are stupid'). Many students said they learned about what robots are or what they do and some picked up more specific points such as 'robots can't tie knots'. Many also mentioned that robots have sensors.
- The clarity of learning points that came out from the questionnaire was very good compared to shows in previous venues. This is likely to be due to the structure of the show in reiterating the characteristics of a robot, so reinforcing the definition discussed at the start of the show. However, it may also be because this audience are slightly older than audiences at previous shows, so perhaps their understanding is more sophisticated.
- Over half of the audience (61%) rated their prior interest in science as 1-3 on a scale of 1 (really interested) to 5 (not at all interested). Nearly a third (27%) rated their prior interest as 5.
- 39% said that the show had made them more interested in science, with just under half (48%) reporting no change.

Responses from teachers

Three teachers completed questionnaires about the schools activities. They were asked to rate their overall impression, the show and the challenge activity. On a scale of 1 (very good) to 5 (very bad), the results were as follows:

Overall impression: 1, 1, 2
Show: 1, 2, 2
Challenge: 1, 1, 2

They felt that the show was good, interactive and funny, and that the challenge activities were hands-on. One teacher said that the workshop *'suits some students better than others'*, and another felt it was *'too complicated for some students'*. Despite this, both activities were rated highly.

All three teachers felt that the science was pitched appropriately, which contrasts somewhat to the students, a third of whom felt it was too easy.

Two of the teachers said they felt their students had learned that *'science can be fun'*. When asked whether they felt that activities such as these make science more exciting for students, all three agreed. Interestingly, two of the three said that it was the hands-on element that was effective in this regard. When asked about other impacts, teamwork and *'leadership skills in unexpected students'* were mentioned. The key suggestion to improve the activities was *'more LEGO!'*

While this is a small sample, the findings reinforce the positive impact of the show and the workshops. While it is clear that students learned a considerable amount about robots while enjoying the show, teachers picked up on the workshops as a useful way of engaging students with science and helping them develop transferable skills such as teamwork.

The public show

The public show was delivered on the science centre floor rather than in the lecture theatre like the school show. It was very similar, except a bit shorter in length and less formal due to the venue. Due to low attendance of around 20 on the day it was delivered and the very young age of some audience members, only six completed questionnaires were returned.

Of the children that completed the short questionnaire, two circled the smiling face and one the indifferent face. The three respondents described the show as 'cool', 'interesting' and 'amazing'. The adults also described the show in positive terms, and it was rated as a 1, 2 and 3 on a scale of 1 (show was good) to 5 (show was bad). They felt that the science and language were pitched appropriately, and that the show had educational value.

The plan is to collect more feedback about the public show as it is delivered over the summer period.