

Evaluation - Robot Thought

Techniquest / Open University

Successes, challenges and recommendations

This document summarises the successes and challenges in developing, delivering and evaluating the *Think Robot* show, from the perspectives of the project partners. The show was developed following collaboration between Techniquest science centre in Cardiff and the Open University Robotics Outreach Group, as part of the *Robot Thought* project funded by EPSRC and coordinated by Graphic Science Unit at UWE, Bristol. The results of the audience evaluation are provided in a separate document.

Successes

Activities were delivered during half-term between 17 and 25 February 2007. Techniquest staff and Open University roboticists identified a number of successes associated with the project:

The shows

- Over 30 shows were performed, reaching c. 4,000 people.
- Additional events included robot animation workshops; Lego mindstorms; robot K'NEX; make and take activities; and Open University displays.
- 'Robots' was an immersive theme during the half-term, which is Techniquest's busiest week of the year.
- Techniquest recorded its highest visitor numbers for a February half-term Thursday on one of the days *Think Robot* was performed.
- The show was very popular with audiences. Extra performances were added to the programme on several days.
- *Think Robot* was a catchy name that was chanted throughout the performances, encouraging audience participation.
- The quality of the cartoon graphics was excellent and created a professional impression.
- The electronic voting pads were popular. Their integration into the show encouraged audience involvement throughout and enabled instant feedback on audience opinion.
- 'Robots' was an interesting theme which managed to engage adults and children alike.
- The 'make and take' activities were extremely popular.

Promotion

- Radio advertising was successful in attracting interest, with several visitors commenting they had heard it.
- One of the Open University roboticists was interviewed on Radio Wales on the Monday evening. He mentioned *Think Robot* during the programme.

Project structure and coordination

- The initial brainstorming workshop was good for generating ideas.

- The Graphic Science Creative Director provided valuable input at the initial brainstorming and acted a good sounding post for ideas, even though it was mutually agreed that Techniquest did not need to use all of the support days offered.
- The Techniquest marketing team's input on naming and promotion was very valuable.
- UWE provided film footage and additional expert advice used in the show.

Techniquest Team

- The project provided a good learning experience for the Techniquest project manager.
- Ten members of staff were trained to present *Think Robot*. UWE's input during rehearsal and presenter training was very useful.

Roboticists

- The roboticists' display was very busy throughout the four days they were present.
- One of the roboticists took part in a live half-hour radio programme on BBC Wales. This raised public awareness of the Open University outreach group as well as generating publicity for *Think Robot*.
- The roboticists are interested in working with science centres in the future.

Challenges

Although, overall, the project was felt to be a success, some challenges were encountered:

The shows

- Audience noise levels were very high meaning it was sometimes impossible to hear interaction between the audience and the presenter. Those presenters who coped best with noise were able to project their voices and time their input to coincide with noise dying down.
- Children and adults were observed becoming restless after 30-35 minutes. There were several leavers in each performance.
- Each show lasted 40-50 minutes and sometimes the pace and energy fell away.
- Real robots such as the Mars Rover, as opposed to fictional ones such as R2D2, could have been more prominent on the stage, helping the audience to understand the nature of robots in the real world.
- Presenters thought that some of the audience tasks required very specific movements from the volunteers. These were difficult to achieve with young children, meaning extra care had to be taken with volunteer selection. An example included ant swarming, which required extremely precise and clear instructions and exact interpretation of those instructions.
- The intensity of performing so many shows over nine days did not allow for adjustments to be made to the script or demonstrations between shows. This was exacerbated by the limited time allowed for rehearsal and piloting.
- The show was quite complex and long, and not thought to be particularly presenter-friendly. Energy levels and audience engagement benefited from experienced presenters.

- Some of the cartoon characters reinforced gender stereotyping.
- The final task (arrangement of coloured boxes to read "THE END") only worked properly when the volunteers moved exactly as specified by the presenter.
- Some presenters were disappointed in the props. They expected more following enormous pre-show publicity i.e. the radio advertising.
- Presenters and the TQ project manager felt the show worked better either side of half term, when audiences were more receptive to a show of longer format.

Project structure and coordination

- It is difficult for Science Centres to fully trust academics with whom they have not previously collaborated. The academics' possible input into some of the other Robot activities, especially the Lego Mindstorms, was not fully exploited.
- There was insufficient time to rehearse and revise a brand new show before the first performance. The presenter training took place only three days before the first performance. It was originally scheduled to take place five days early but was cancelled due to adverse weather (snow).
- There was also very little time between performances to make any changes.
- Maintaining intensity and energy for the duration of the show was challenging, especially for less experienced presenters.
- The Lego Mindstorms workshop was deemed to be one of the most difficult ever done at Technquest. The OU and/or UWE roboticists possess experience that could have informed the design of this workshop.
- Staff availability limited the number of activities that could be run and thus made it difficult to create a truly immersive programme.
- Presenter training for a separate project (Gene Machine) was also booked to occur during half-term, which further reduced staff availability.
- The OU activity did not appear to be linked to 'Think Robot'.
- The delay in presenter training meant there was only one rehearsal performance, which took place only two days before the first advertised show. Insufficient time was allocated for an internal rehearsal, which could have helped with presenter involvement.

Recommendations

1. Allow **a longer period for training and rehearsal** to ensure more effective piloting of the show. This would have enabled script amendments to take place before the first performance. Involvement of the roboticists in the piloting could have provided an added dimension of input. Involvement of the presenters in more piloting/rehearsals would also help to increase their ownership of the show.
2. **Engage the assigned roboticists in more frequent communication.** This would have ensured full use was made of their expertise and experience. It is suggested that a timeline for their involvement is agreed between the Science Centre and the experts at the outset of a project to

ensure the availability and accessibility of both parties and help to establish a working relationship.

3. Secure **greater buy-in from presenters**. This would be possible if they were involved in the planning and preparation. In this case it may also have flagged-up sooner the show's unsuitability for less experienced presenters and enabled earlier discussion about its appropriateness for half-term audiences.
4. Use **the whole network of experts**. The contribution of UWE was very valuable.
5. Consider using **a less busy period to introduce a completely new activity and plan time for review and rewriting**. This would enable some of the improvements identified by presenters to be included in the show.
6. Ensure **colleague project managers are kept informed about progress and plans**. This should help to minimise the likelihood of conflicting activities taking place at the same time, e.g. Gene Machine training which reduced numbers of staff available to carry out some of the immersive activities. It could also enable the experience of those colleagues, e.g. about shows for half-term, to be included in the development process.