

Children Challenging Industry

A study of the effects on industry-based science activities on the views of primary school children and their teachers

Executive Summary

North West Region 2003-2005

Classroom-based training consisting of three 2½-hour sessions, was delivered to primary school teachers and their Year 5 and 6 pupils. The children completed one of five topics on offer, chosen by the teacher. These were, *Water for Industry*, *A Pinch of Salt*, *Plastics Playtime*, *Exploring Colour and Industry* and *Kitchen Concoctions*.

The advisory teacher demonstrated how industry could be used as a resource, by providing a real and motivating context in which to teach science. The classroom activities were set within an industrial context, and the children visited an industrial site.

The advisory teacher conducted a 1½-hour training session on science-industry links for the whole staff in school.

The Children Challenging Industry (CCI) project aims are to:

- * Provide classroom-based training for teachers in aspects of the National Curriculum for science
- * Increase children's enjoyment of science
- * Improve primary school children's perception of the chemical and other science based manufacturing industries and their relationship with science
- * Improve teachers' knowledge and confidence of teaching science
- * Improve teachers' perception of the chemical and other science based manufacturing industries and their relationship with science.

Children's data

323 children completed questionnaires during the academic years 2003-2005, after completing the CCI project. They were asked questions regarding their awareness of industry and its relationship with science.

63% of the children said they enjoyed science more since the positive experience of the CCI project. The aspects of the project enjoyed the most were the practical investigations and the site visit. The children rated the project extremely highly with two thirds of the children giving it the highest possible rating. The vast majority of the children said they enjoyed the project because they learned something new and it was fun.

The children learned about the importance of science demonstrated by the fact that virtually all the children said scientific testing was important.

In addition to their increased enjoyment of science, the children increased their awareness of industry. After the CCI project, the children were able to describe modern industry more accurately.



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Children's drawings of their perceptions of industry were scored, with a positive score indicating a more informed image of industry as a result of the project. The children's drawings of the internal and external views of an industrial site were more detailed and accurate after the project.

The project also raised the children's awareness of the variety of jobs held in industry. The children learned about the importance of scientists and engineers and their roles on industrial sites. After the CCI project, the proportion of children who were aware that scientists and engineers worked in industry increased dramatically. More than two thirds (69%) of the children stated that scientists and/or engineers worked in industry.

When asked which job they would choose to do in industry, a third of the children chose scientist as a job they would like to do, a considerable increase on the 4% of children who were asked before the CCI project. The reasons the children chose to be a scientist were that it would be interesting or fun.

The number of children choosing to be an engineer also increased to 12%. They were far less likely to choose to be a 'materials handler'.

These results demonstrate how much the children learned about industry and the types of jobs in industry during the CCI project. By the end of the project, the image of scientists was immensely positive. If these views were sustained it would be expected that the number of children who wanted to work in science and industry would rise in the future.

Teachers' data

64 teacher returned questionnaires in the academic years 2003-2005, after carrying out the CCI project. A third of the teachers had not had recent science training and training related to industry was even less common.

Before they had any CCI training, only a quarter of teachers had received any information about the chemical industry through resources developed by industry, although many teachers did have links with the chemical industry. They usually stated they had never seen such resources. Teachers were four times more likely to use industry-sponsored resources if they had any industrial links. The teachers who had used resources were most likely to say that they did so because they were of good educational value. Teachers were more likely to teach about industry in the context of history, than science.

The feedback from the training was overwhelmingly positive. The sessions and site visits were of an extremely high standard and were highly rated by the teachers.

The aspect of the sessions most often cited as a strength was the practical science activities. Teachers who rated the visit most highly were twice as likely to say they would arrange a future visit.

The change in attitudes towards industrial links that occurred during the project was significant. 83% of teachers intended to re-use the CCI materials again in the future and 76% said they intended to repeat the industrial visit in the future.

In addition, all the teachers said they had learned something about industry or teaching science or, very often, both.

This study provides evidence that the CCI training has changed the attitudes of teachers. By the end of the training, the majority of teachers were extremely receptive to involving the manufacturing industry to teach science with a more practical approach.

