Technology Fair Projects

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Abstract. *This is a brief outline of the Technology Fair projects undertaken by pupils of Lycavitos Primary School of Nicosia, Cyprus in collaboration with pre-service teachers at the University of Cyprus. The Technology Fair projects were designed to focus on the technological problem solving process and to offer students and children an opportunity for extensive collaboration around a single project. The Technology Fair took place on the school grounds in November 2004. During the fair pupils presented their work to fellow pupils, pre-service teachers, teachers and parents in an open school exhibition.*

Keywords: Design and Technology, Problem-Solving, Decision-Making, Technology Fair.

1. Introduction

The Technology Fair is a new idea derived from Science Fair projects that have been taking place for many years in the Learning in Science Group at the University of Cyprus. Technology Fair initiatives encourage students to explore their technical environment in a systematic manner. The underlying principle is that participation in a Technology Fair stimulates student interest in science and technology while simultaneously promoting the development of technological problem solving and decision making as important life skills.

The project took place in the context of a compulsory University course in Design and Technology and a collaboration framework that this course has set up with local schools. Eighty two (82) primary school students from a local school with the assistance of (82) university students, studying to become teachers, were responsible for identifying a human need, formulating a technological problem, collecting information and developing an appropriate solution. Each university student was responsible for collaborating with one primary school student on a single technological project.

In this context, Technology Fair projects provide an opportunity for interaction between undergraduate student teachers and elementary school students so that they can work as a team with shared but different goals: the child aims to solve a problem and present both the problem and the solution during the Technology Fair; the student – teacher aims to use the interaction as a process for helping the child develop problem-solving and decision making skills through a systematic approach.

2. Technology Fair requirements

During the fair, each pupil with his pre-service teacher displayed a poster describing the design process (see figure 1 for an example)

Figure 1. Typical poster shown the design process in the technology fair

Pupils and pre-service teachers also presented the artifact they constructed as a solution to the technological problem (figure 2)

Figure 2. Solution for a reweable energy house

Additionally, the children engage the public in a specific aspect of their work through a specially design interactive exhibit (see the photograph in figure 3).

Figure 3. Children interaction during the Technology Fair

3. Technology Fair projects

The children and pre-service teachers worked in an one to one collaboration for the solution of their chosen technological problem. Below we describe some of the solutions presented during the Technology Fair.

3.1 Solar Car

The design brief required children to design and make a solar car. The car should be powered with a small photovoltaic cell. The artefact should be constructed with lightweight and cheap materials. The solution given by one child is shown in figure 4.
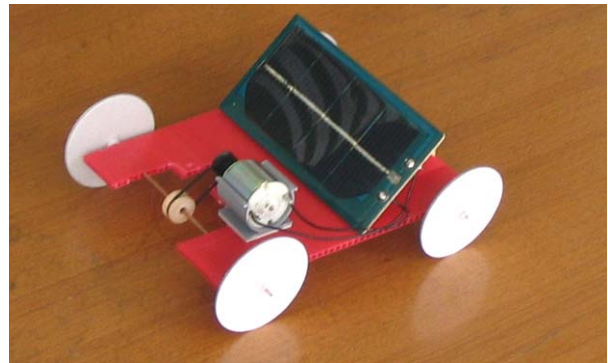

Figure 4. Solar car

3.2 Model of Bridge

The design brief required children to design and make a simple model of a bridge. The model should be able to allow small boats to pass below its surface. The solution given by one child is shown in figure 5.

Figure 5. Bridge model

3.3 Catapult

The design brief required children to design and make a simple catapult. The catapult should be able to throw light materials to a minimum distance of 2 meters. The solution given by one child is shown in figure 6.

Figure 6. Catapult model

Figure 8. Traffic lights model

3.4 Electronic quiz game

The design brief required children to design and make an electronic quiz game. The game should be constructed using cheap materials and simple electric circuitry. The game should be interactive and have an educational purpose. The solution given by one childr is shown in figure 7.

3.6 Windmill model

The design brief required children to design and make a model of a windmill. The model should be built following inspiration from a real windmill. The solution given by one child is shown in figure 9.

Figure 9. Windmill model

4. Conclusions

The purpose of the Technology Fair is to enhance technological problem solving skills. This particular fair centered around a University – school partnership and hence this raised the level of complexity both with administrative and scientific issues. The end result of such partnerships is that schools have the opportunity to demonstrate an educational innovation to their staff and the university teacher preparation program benefits from the contact with children afforded to students. The partnership also creates

Figure 7. Electronic quiz game

3.5 Traffic lights model

The design brief required children to design and make a model of traffic lights. The model should be built using simple electric circuitry. The solution given by one child is shown in figure 8.
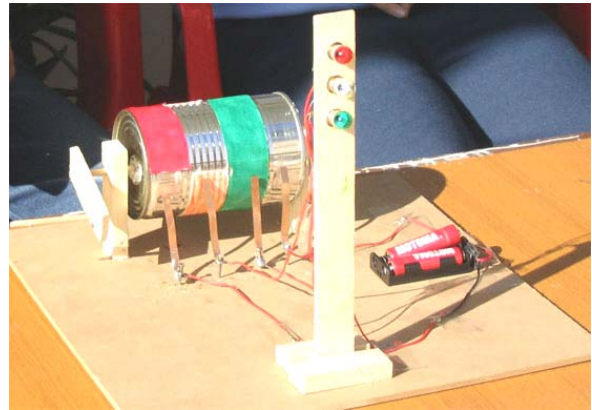
opportunities for educational openness and research.

A separate research study was carried out to examine the influence of the Technology Fair on pre-service teachers' and primary school pupils' cognition and emotions. The analysis of the results indicates that the Technology Fair has a significant influence on improving students' understanding and application of problem solving and decision making strategies within the area of design and technology. This study is reported in more detail elsewhere in this volume.

Important factors that emerge from previous research on the Science Fair and are confirmed by this study for the Technology Fair are the enthusiasm and the motivation that this kind of education conveys to students.

Further research will include the design of teaching material to support the Technology Fair activities.

REFERENCES

[1] Information and relevant curriculum materials can be found at http://lsg.ucy.ac.cy/techfair/index.htm (accessed on 1 June 2005)