Exploring design and innovation – using Millennium Products as case studies with A' Level students

Abstract

The Design Council's search for Millennium Products has provided a collection of innovative products of British origin. The stories behind how these products were developed are now available on a web site and provide a valuable educational resource. To disseminate information about the products and case studies, a booklet called Exploring Design and Innovation was published and distributed to both universities and schools. The paper examines how the booklet has been used in A' Level classes, with the results of a short questionnaire. Plans for further work including more in depth contact with teachers and expansion of the booklet's contents is also examined.

Introduction

Prime Minister Tony Blair launched the search for Millennium Products in 1997, to identify the most innovative and well designed products and services in the UK (Design Council, 1998). Over the next three years the Design Council organised the search and identified just over 1000 products, which were awarded Millennium Product Status. This enabled then to carry the Millennium Product marque and raised the profile of the products and companies involved.

The Design Council's work did not stop with identifying the products, they went on to research the stories behind the products from the people most closely associated with them. The result of this research is now available on the Design Council's Sharing Innovation web site (Design Council, 2001). Each case study examines the inspiration, implementation and the impact of the products. Statistical data is also provided to key questions in each of the three headings such as 'What came first: the idea or the technology?'

The Sharing Innovation web site therefore contains valuable case study information on current products that can be used in an educational context. To disseminate information on the web site and raise awareness of the site in the tertiary education sector the Department of Design at Brunel University published *Exploring Design and Innovation: fresh ideas for creative curriculum development* (Tabor *et al*, 2000), funded by the Design Council. The content is also available on the web (Brunel University, 2001).

After publication, the Department felt that the booklet could also be a valuable resource for A' Level students and with further funding from the Design Council, over 2000 copies were distributed to heads of design and technology in UK schools.

This paper will examine the development of the booklet and look at the results of a survey of its application in schools. This focused on its use with AS and A/A2 students.

Programme development

The project to develop the booklet started in early 1999. The aim was to find ways to demonstrate the educational benefits and potential applications of the Millennium Product case studies. It was not intended to be prescriptive in the information provided but rather to open up ideas and avenues to explore around the design and innovation process. The work started with examining the Millennium Products and the case studies that were being written for them. The work was running in parallel with the Millennium Product programme as awards were still being announced, so the product list grew as work progressed.

At the same time there was an examination of innovation issues from the literature (e.g. Henry and Walker, 1991;Taylor, 1996; Ellyard, 1998) and of the products themselves. What was it about these products that made them innovative? Was it their technology?, materials used?, their niche in the market place? or the way that they were developed?

As these questions were gradually answered the way to structure the booklet started to emerge. It was to be divided into three main areas:

- the evolving design process
- designing the future
- learning from the past.

The evolving design process

Why evolving? Because the design industry does not stand still, it is always looking at ways to improve both products and processes. It has to react to new agendas such as design for sustainability or inclusive design. In all, 12 areas are discussed in the booklet (Table 1). This is by no means a complete list of issues, but rather a reflection of those that came to the fore with the products that were being considered.

Under each topic there is a short piece of descriptive text, in the order of 250 words, providing an outline of the area. A project trigger then follows this. This is intended to provide a springboard for further work that could be carried out by students. Alternatively, teachers can adapt the triggers to provide alternative project work.

Most of the sections also provide a list of keywords that can be used to find appropriate Millennium Product case studies from the Design Council web site. A few topics do not

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RESEARCH

The Evolving Design Process

Design for sustainability is a reality.

Measuring for a product's aesthetic value.

Design for human use.

Design for manufacture.

Market research as a design tool.

Idea generation.

What does it take to be a successful innovator?

Team dynamics.

Financing the innovation process.

Technology push or market pull innovation?

Quantifying the risk of innovation

Incremental innovation or radical innovation?

Table 1: Contents of The Evolving Design Process.

list these products as the project trigger exercise is focused around students finding their own selection of products.

Finally, under each topic is short list of further reading that the enthusiastic student could follow. As far as possible these texts are mainly from books, though a few also include journal papers.

Designing the future

Technology, the market place and society are always changing and this provides the future drivers behind innovative products. This section examined a further 12 areas looking at new technologies and cultural shifts that are influencing today's products and will have a impact on the products of tomorrow (Table 2).

Table 2: Contents of Designing the Future.

The topics are handled in the same way as the first section, with a brief text, project trigger,

Designing the Future

Micro and mano technology.

The digital revolution, software, dematerialisation and product convergence.

Smart materials and intelligent fabrics.

Internet and online communications.

Biotechnology.

The 24-hour society.

Demographic change.

Design for disability.

Globalisation and cultural diversity.

Product differentiation and customisation.

Safety and usability.

Care for the environment.

example Millennium Products and further reading.

Learning from the past

Like today's products those from past years were often developed from emerging technologies or reflected a change in society. It is therefore a valuable exercise to examine how products have developed over the years. This last section includes a time chart called 'A Century of Innovation' looking at some of the key events, design movements, technology and infrastructure, and products of the 20th century. It can be surprising to find out when some products were first developed. For example, the steam iron was first produced in 1926, but did not gain wide use in domestic situations until many years later (Hillman and Gibbs, 1998).

Three topics are then covered in short essays to provide examples of how to examine the development of products through technological or social changes.

Application in schools

Over 2000 copies of this booklet were distributed to schools and as a result many requests for further copies were then received at the Department of Design. These additional copies were forwarded at the end of March this year along with a short questionnaire for the teachers to complete and return. At the time of writing this paper, 40 questionnaires had been returned. Table 3 (see overleaf) shows the questions and the responses received. This indicates the use of the booklet in the classroom and as a support in teaching the design and technology syllabus both for the AS Level and the A or A2 Level groups. The results also indicate that the resources in the booklet are being applied, such as the project triggers, keyword links to products and the references.

Personal discussions with a few of the teachers have indicated some of the main areas of use. Firstly, the topics discussed in the booklet help to make students aware of the wide-ranging and diverse areas that have to be considered by designers. Secondly, it is a useful starting point for students in the individual product studies that they conduct. The time chart in the 'Learning from the Past' section has also been praised for summarising events and movements in product design over the last century.

The dissemination aspect of the booklet has also been successful bringing both Millennium Products and the Sharing Innovation web site to the attention of teachers. The response to the booklet has been generally very positive and this is helping to drive future developments.

Further work

Our research work is continuing in two directions. Firstly more areas of the design process and drivers of innovation are being investigated to author additional brief texts and project ideas. At the same time the Design Council is extending its Sharing Innovation Project, this includes searching out the latest innovative products that are being developed or produced in the UK. As information about these products becomes available this will be incorporated in Exploring Design and Innovation, ensuring that it remains up to date. It is planned that these texts will initially be added to the web site (Brunel University, 2001).

The second phase is to establish more direct links with secondary teachers to establish further ways and methods that may be developed to produce material that will be of assistance in contributing to teaching of design and technology at AS and A2 Level. This will examine the need for any further printed material or whether such resources should be maintained on the web site.

Conclusion

The booklet has been successful in bringing to the attention of teachers the potential of Millennium Products and the Design Council's Sharing Innovation web site as a teaching resource in AS and A/A2 design and technology classes. In particular, it is helpful for the product study that students are expected to carry out. The content of the booklet is also available on a web site and it is intended that this will be expanded in the future to cover additional areas of interest in the design process and drivers of innovation. It is also planned to develop further resources with the co-operation and input of secondary teachers.

References

Design Council (1998) *Millennium Products: setting the new agenda for innovation*, London: The Design Council

Ellyard, P. (1998) *Ideas for the New Millennium*, Melbourne: Melbourne University Press

Henry, J. and Walker, D. (1991) *Managing Innovation*, London: Sage and OU Publications

Hillman, D. and Gibbs, D. (1998) *Century Makers: One hundred clever things we take for granted which have changed our lives over the last one hundred years*, London: Weidenfield and Nicolson

Tabor, E.C. *et al* (2000) *Exploring Design and Innovation: Fresh ideas for curriculum development*, Egham: Brunel University

Taylor, E. (1996) *Innovation: Design, Environment and Strategy. Block 1: An Introduction to Innovation*, Milton Keynes: Open University

Web sites

Brunel University (2001)
www.brunel.ac.uk/research/exploring

Design Council (2001)
www.designcouncil.org.uk/sharinginnovation

Table 3: Results of a questionnaire asking teachers how they are or how they plan to use the Exploring Design and Innovation booklet with their sudents.

Question	Yes (%)	No (%)	Blank (%)
Use with AS Level student?	97	3	0
Use with A/A2 students?	97	3	0
Booklet is used for class based discussion?	88	3	10
You are using the project triggers as the basis for coursework?	50	38	12
Students are encouraged to look for the references?	88	5	8
Recommended as essential reading?	58	25	18
Recommended as background reading?	65	10	25
Students are encouraged to look for the Millennium Products on the web?	78	18	5
Students have access to world wide web in school?	95	5	0
Had you heard of Millennium Products prior to receiving this publication?	58	43	0
Had you heard of the Design Council's Sharing Innovation web site prior to receiving the publication?	12	88	0