Investigating Values in Secondary Design and Technology Education

Abstract

This article will first set the context of the values debate by briefly tracing the history of writing on the subject in design and technology. It will then examine the results of two questionnaires: one to academics, the other to teachers in secondary schools. The research is designed to answer four basic questions:

To what extent do design and technology teachers place importance on the teaching of values issues?

How much values-related teaching actually takes place at present?

What are the methods used to deliver values-related teaching in design and technology?

Are certain values more commonly included in design and technology teaching rather than others?

This article addresses the sometimes contentious issue of values which has been much discussed recently in the field of design and technology. It has been the experience of the authors that values in design and technology have been an important, but at times misunderstood, part of the subject. From the time of the abortive first attempt at a National Curriculum (DES 1990), values have been a difficult and confused part of design and technology. At times, organisations such as the Design and Technology Association (DATA) and the Intermediate Technology Development Group (ITDG) have supported attempts to improve the profile and esteem of this part of design and technology teaching, such as a special edition of the DATA Journal (DATA 1993). However, due to some of the pressures from both design and technology teachers and external forces such as the Engineering Council (Smithers and Robinson 1992), the place of values within the design and technology curriculum has never been clearly defined. At the time of the review of the National Curriculum which resulted in the current Department of Education and Employment document (DfEE 1995b), there was much concern that, in an effort to make it more manageable, values would be dropped from the design and technology curriculum (Kimbell 1993, Prime 1993). Since then, various organisations – such as Values in Design and Technology (VALIDATE) – have attempted to increase the amount of values-related teaching in design and technology, but the success of these efforts is unclear. To date, little has been said by the practitioners, the teachers themselves. A clear picture of the opinions and practices of design and technology teachers would, therefore, go some way to discovering the extent to which values currently constitute a part of design and technology teaching.

Values: some recent developments

The importance of values

Teaching about and examining values has a two-fold relevance. Firstly, along with other transmitters of values such as parents, the media and peer groupings, schools have a strong influence on the development of individual values in young people. However, unlike the former, schools can influence pupils in a generally more uniform manner if the underlying values to be imparted to the pupils are enshrined in schemes of work and curricula. The National Curriculum has the potential to impose such uniformity at a broad level since the educational aspirations it formulates on behalf of children are enshrined in law to ensure their propagation. Secondly, this does not necessarily mean that the values of society are rigid and unchanging, but that they can be slowly altered over time to reflect new concerns and pressures. An example of this is the 'progressive' movement towards comprehensive education in the 1960s which reflected a more meritocratic value in society at the time. This double-edged nature of values in education is supported by the views of the National Commission on Education which, in outlining its vision of education for involved and effective citizens in the next century, produced the following opinion of the system as it exists:

> "It is the role of education both to interpret and pass on the values of society and to stimulate people to think for themselves and to change the world around them." (Inman 1995, p.6)

Such an important transmitter of values as the education system will obviously be under great pressure from groups who wish to influence the values passed on to future generations. Influences might be conspicuous and public, of the kind frequently exerted, for instance, by the Engineering Council (Smithers and Robinson, 1992). However, values are also transmitted by what is termed the 'hidden curriculum', whereby the ideological interests of different groups – parents, employers, parents, politicians – are transmitted in a more covert way and 'schools can become the battleground where groups with different values priorities vie for influence and domination' (Halstead 1996, p.3). Since the election of the Labour government in May 1997 there has been much greater emphasis on the explicit and overt teaching of values and clear evidence of a reappraisal of the place of values in education comes from a consultation document produced by the DfEE. Here, among the six factors considered to be important in

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shaping the Government's policy decisions was 'the increasing emphasis on values', occasioned by:

> "a resurgence of concern about morality and integrity in society and business and about the importance of responsibility as well as rights, and the re-assertion of the efficacy of public service".
> (DfEE 1997, p.6)

Clearly, from the very top of the education system, a new emphasis is being placed upon values issues and this will manifest itself in demands that teachers reflect current values-related concerns in educational practice. It may be argued that design and technology teachers are in a unique position to partake in the delivery of an effective values education and certainly several leading writers have made much of the potential of the subject to do so (See Layton 1993, Kimbell 1996 and Eggleston 1996). Before progressing, however, it is necessary to define fully the nature of values, and the closely related issue of value judgements.

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What are values?

In the context of this article, the term 'values' is generally taken to mean principles, criteria or beliefs that underpin personal choice and action. Values are at times seen as good qualities that may exist as abstract concepts, such as loyalty, love, truth and honesty; they have a rational character that sets them apart from preferences, and are related to some sort of objective quality or truth:

> "...certain values, such as animal rights, patriotism, equal opportunities or bravery, have some kind of objective quality, insofar as some social arrangements and patterns of behaviour promote well being more than others".
> (Beck quoted in Halstead 1996, p.6)

However, values are also changeable or subject to conflict with each other. Better definitions take into account the importance of personal or social preference – the notion that one set of values held by an individual or group, may be different to another. Values are also defined as:

> "...principles, fundamental convictions, ideals, standards or life stances which act as general guides to behaviour or as points of reference in decision-making or the evaluation of beliefs or action and which are closely connected to personal integrity and personal identity".
> (Halstead 1996, p.5)

Values are sometimes confused with morals but the term has much wider implications: values may include an element of moral judgement, but are broader in definition than moral beliefs:

> "[Values] can include our preferences in cultural, aesthetic, political and economic aspects of life as well as our moral and social preferences."
> (Gatherer 1997, p.6)

Values, then, might be personal, but they provide a basis for choice, decision making and action in a wider context. Values are often strongly held, but may be changed over time or may be superseded by other values, as may be evidenced by the recent intervention of environmental factors in the field of economics. It is in such circumstances that different values systems might conflict. People may hold strong beliefs about the environment, but economic values might prove more durable when decisions are to be made about the 'worth' of products: for example, economic considerations might lead individuals to buy a cheaper washing powder, which is less friendly to the environment, rather than a more expensive 'greener' product.

Value judgements

Values are both shaped by society and in turn affect social values through the choices made by individuals and wider groupings. These latter may be termed 'value judgements': that is, the individual decisions or choices which make the values of people explicit. Within education, certain subjects will make more demands on the pupil to make choices than others. As design and technology is heavily reliant on decision-making it must also include the making of value judgements at many stages of the design process. These judgements will help to make the pupils' values more explicit and create an awareness of their own beliefs. The value judgements used can also be tested by their application to design and technology project work, thus making pupils justify and question the values they hold. The unique nature of design and technology, whereby pupils make an artefact that exists in the real world as a response to a perceived need or opportunity, allows value judgements to be made much more meaningfully than when general values dilemmas are considered in the abstract.

Indoctrination of values

According to Glenda Prime, discussions of values education tend to concentrate on the issue of indoctrination, the inculcation of specific values and beliefs by schools (Prime 1993). This raises the question of the extent to which schools transmit the prevailing values of society as compared with how far pupils are

taught to examine and make their own decisions about those values.

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The method by which schools instil an approved set of values in their pupils, is sometimes called 'character education' (Lickona 1996, quoted in Halstead 1996, p.9). This is achieved through such means as prescribed curricula, nationally organised initiatives or the use of specified criteria in the assessment or inspection of schools or pupils. As an example, the National Curriculum for design and technology encourages the valuing of accuracy; higher levels of achievement are awarded for more precise and better measured work.

In addition, an approved set of values for dissemination to pupils has sometimes been recommended by politicians. John Patten, former Secretary of State for Education, during his address to the Oxford Conference on Education (5 January 1994), listed a series of specific values that he wished pupils to be taught in all state schools. These included:

- regard for proper authority
- unselfishness and the need for self restraint
- loyalty and fidelity
- the readiness to stand up for what one believes in
- respect for rational argument
- independence of thought
- readiness to resolve conflict without resort to violence. (quoted in Haydon 1997 p.7)

However, an alternative approach to values education encourages pupils to explore and clarify their own views of the values they hold. This is based on two assumptions:

> "...that children will care more about values which they have thought through and made their own than about values simply passed down by adults; and that it is wrong, particularly in a pluralist society, to seek to impose values".
> (Halstead 1996, p.10)

Halstead further argues that this approach has rarely been advocated in the UK, but it may underlie many curriculum developments; in fact, a variety of approaches using both forms of teaching about values is common. If this is the case, then design and technology teachers should also be using a range of techniques to consider values issues with their pupils.

Values in relation to design and technology teaching

There has been a wide discussion of the place of values in design and technology education, both in the literature of the last five years and in the previous history of the subject, before the advent of the National Curriculum in 1990 (See Kimbell 1996, Eggleston 1996, Layton 1993). It was evident that the writers of the Assessment of Performance Unit (APU) had identified values as an important part of technology capability as early as 1981, and in April 1988, when the Working Group on Design and Technology was established to advise on the content of the first National Curriculum, it was clear that value judgements were again seen as an important part of pupils' design and technology experience (See APU 1981; Layton 1993, p.21).

The Working Group received submissions from many interested groups and organisations: one of the more constructive papers submitted from a consortium of voluntary agencies working in the field of overseas development '...provided a valuable reminder ... of the need for any technological development to fit into a system [which] contains social, cultural and environmental factors'. (Layton 1995, p.101)

After the National Curriculum became law, Curriculum Resources produced by the National Curriculum Council (NCC) to aid teachers' understanding of the new subject included a unit on the importance of values (NCC 1991). The expectation of teaching about values was defined at the following 'key stages':

- at Key Stage 3, pupils should be taught to recognise potential conflicts between the needs of individuals and of society
- at Key Stage 4, pupils should be taught to recognise the social, moral and environmental effects of technology
- pupils can develop an understanding of the importance of values in design and technology through considering the dilemmas arising from conflicting value judgements. They can think about the values that they themselves adopt in pursuing their own design and technology tasks. (NCC 1991, p.17)

However, despite the inscription of such principles, difficulties were soon encountered when it came to their implementation. Teachers were finding the National Curriculum too difficult to cope with and criticism was aimed at the 'Blue Peter' nature of much of what was being taught. Pupils were no longer learning skills, instead they were experiencing 'Mickey Mouse Technology' (Layton 1995, p.108). The curriculum itself was felt to be over ambitious and too assessment-driven and it had been difficult for many teachers, particularly those not from a CDT background, to cope with its delivery. A review was begun by Her Majesty's Inspectors who issued a statement entitled 'Characteristics of Design and Technology in Schools' to aid a process of consultation. As the consultation neared its end, it was clear that the priority previously given to values issues had diminished. Those, such as the Engineering Council, who held out for a more vocational and skills based approach were rewarded while others who saw a wider view of technology and were concerned with encouraging technological literacy were disappointed:

> "This was something less than consideration of how a product had affected people's work, life styles and values, and what unintended consequences had arisen. Such issues, like those of recyclability and disposability, even financial and environmental cost, seemed to have dropped down, if not from, the agenda."
> (Layton 1995, p.110)

The 'wider view' was that encouraged and fostered by the special interest group already alluded to known as VALIDATE, set up by Ruth Conway in 1990, which was dedicated to developing a strong values input within design and technology. It felt that the emphasis placed on examining values and making value judgements as part of the National Curriculum was diminished by the review of 1992 and that design and technology was not realising the full potential of a values input (Prime 1993, p.34).

Recent influences on values education

However, despite the low priority given to values in the 1992 review, two major factors have recently rekindled an interest in values issues in education. The first of these is the expectation that values issues should be examined as part of a school's OFSTED inspection process:

> "The resurgence of interest in values education in the UK owes much to the statutory requirement that the spiritual, moral, social and cultural development of pupils should be subject to official inspection." (Halstead 1996, p.11)

It is expected that a school should show evidence of how it encourages the development of pupils' values through the use of both specific policies and PSRE (Personal, Social and Religious Education). Design and technology departments would be able to contribute to this by producing policy statements and clearly defining how values education is included in their design and technology work. The second factor which has enhanced values education, particularly since the election of May 1997, is the new emphasis placed on values education by the DfEE (DfEE 1997) and this is likely to manifest itself in the increasing demands on teachers to develop a stronger values base to the delivery of their curriculum.

Within the subject itself the profile of values issues in design and technology has been continually raised by VALIDATE. Pressure from members of this group has resulted in greater emphasis on values issues in curriculum materials and the production of documents such as the Guidance Notes produced for DATA and the support material 'Looking at Values through Products and Applications' from the DfEE. (DATA 1997a; DfEE 1995a). This booklet, produced in collaboration with the Nuffield Design and Technology Project and the DfEE, encourages the consideration of values especially in relation to product evaluation. Less evident, however, are examples of how to include values issues in pupils' own 'design and make' practical projects.

DATA has demonstrated its enthusiasm for values issues through its support for VALIDATE and in some of the documents it has produced. Perhaps most important of these is the consultation document written as DATA's contribution to the review of the present National Curriculum (DATA 1997b). Values play an important part in the document which sets out DATA's vision for the future of design and technology as part of the National Curriculum.

> "A crucial part of preparation for citizenship in a technological society will be a citizen's capacity to assess products and to contribute to society's decisions about the future of our environment. Design and technology should increase its emphasis on developing skills associated with citizens formulating values related to themselves and others, from a considered position of analysing and appraising the context, the effects of specific actions and relating this to the quality of life."
> (DATA 1997b, p.14)

The DATA document will, thus, put strong pressure on the writers of the revised National

Curriculum due for implementation in 2000 to include greater teaching about values issues in design and technology.

Views from teachers of design and technology

One factor which seems to be missing from the views of all the individuals and organisations so far mentioned are the views and opinions of those who deliver a values input to the pupils, the design and technology teachers themselves. If, as seems possible, design and technology teachers are to be required to teach a values input as part of a reviewed National Curriculum, it is important to examine how they feel at present in order to assess exactly what types of values are being included in both product evaluation and 'design and make' tasks and to measure the importance placed by them on this aspect of their teaching. For values-teaching to be implemented successfully, the views of design and technology teachers need to be canvassed so that discrepancies in views can be identified, and a realistic picture produced of the ability and enthusiasm of design and technology practitioners to teach about values.

The research

In order to assess the views of design and technology practitioners towards values a survey of design and technology teachers based in North London was undertaken. This survey used a questionnaire which was split into six sections, and each is discussed below.

1. General values issues in design and technology

This section was designed to give an initial general impression of the attitudes of design and technology teachers towards values teaching. It used a modified 'Likert scale' in which respondents indicated strength of agreement or disagreement with the following five statements:

1. making pupils think about values is an important part of design and technology education
2. values issues are not addressed enough in design and technology education
3. the National Curriculum for design and technology encourages the consideration of values
4. values issues are better understood by girls than by boys
5. all material areas (food, resistant etc.) allow the consideration of values equally well.

In general, design and technology teachers believe that making pupils think about values is an important part of design and technology education. They also felt that the National Curriculum encourages teaching about values and that the material areas that make up design and technology are all equal in their ability to teach values issues. However they are divided on whether values issues are covered sufficiently at present in design and technology, and are also divided about whether both girls and boys cope with values in design and technology equally well. Thus, while teachers were in agreement about the importance of values to design and technology education, there was a clear division between those who felt that values were addressed enough and those who thought there should be more. It was in fact almost an even division: a split of 51.7% who agreed and 42.7% who disagreed. The small but very significant majority in favour is an indication that more work is necessary on the part of pressure groups in order to prioritise the teaching of values. Furthermore, the fourth statement produced a wide variation in responses: a reasonably even breakdown between those who agreed and those who disagreed, with a small majority disagreeing. A large proportion of design and technology teachers believed that values are better understood by girls, which is perhaps a surprising result, but nevertheless one which supports existing research suggesting that girls find a value-laden approach more accessible (Siraj-Blatchford 1996, p.30). In view of the broad disagreement on the subject and since a surprisingly large number of teachers ticked the 'don't know' response, there is an indication here that further research is necessary. If girls do understand the values issue better, then it could be used as a means of developing their interest in particular aspects of the subject. Conversely, if boys do not seem to respond as well to values issues in design and technology, then there is a case for producing curriculum materials particularly aimed at increasing their awareness. There are important ramifications here if the profile of values is to be raised further in design and technology.

2. Specific categorisation of values

This part of the questionnaire set out to answer the question of how much teaching about values occurs in design and technology and to examine the differences between values in practical projects and product evaluation. Before asking teachers to define how much teaching about values happened in their work with pupils, definitions of 'Practical Projects' and 'Product Evaluation' were offered. This was necessary in order that teachers were clear about the terminology used. Clear distinctions had to be drawn between pupils' own 'design

and make' tasks and their evaluation of products and artefacts designed and made by others. The definitions offered were the authors' own and are a combination of phrases used in the National Curriculum and the authors' own experiences as design and technology teachers.

- Practical Projects: 'Design and make' tasks where pupils make something themselves. Do pupils think about values in relation to their own designs and the products they have made?
- Product Evaluation: Pupils analyse artefacts and objects made by companies, organisations or individuals. Do pupils think about values in relation to products designed and made by others?

A range of value types was then offered in order for the teachers to decide how often each value was considered during both practical projects and product evaluation. Decisions about which categories of value to include were based on the typology of values offered by Prime used in 'Looking at Values through Products and Applications' (Prime 1993, p.34; DfEE 1995a, p.3), and as suggested by various VALIDATE publications (DATA 1997a, p.1; Martin in *DATANEWS* 1998, p.11) and used by DATA (DATA 1998, p.8)

After careful consideration of a range of value types, it was decided to use the following categories in the research:

> Social, Moral, Environmental, Economic, Technical, Aesthetic, Cultural, Political

Teachers were then asked how often they got pupils to think about each value under the following headings:

> All of the Time; Most of the Time; Rarely; Never

From the responses, it is clear that there was a common order of priority among design and technology teachers in the types of values they encouraged pupils to consider in both product evaluation and practical projects (Figures 1, 2 and 3).

Teachers clearly encouraged pupils to consider some values (technical, aesthetic, economic and environmental) much more often than others (cultural, moral and political) in their design and technology work. The results of parts 3 and 4 of this questionnaire might give some indication as to the reasons why.

3. Relative importance of values to design and technology

This section attempted to discover how far teachers of design and technology considered teaching pupils about values important. The respondents were invited to categorise each value according to the following descriptions:

> Essential, Quite Relevant, Not very Relevant, Not at all Relevant, Don't Know

From the results (Figure 4) teachers believed strongly that some values were extremely important to design and technology, but were less convinced that others had any relevance.

4. Your opinion on teaching about values

This section used five headings which allowed teachers to tick more than one response so that they could more fully describe how they felt about values in design and technology. The options available allowed teachers to express whether they were confident about teaching pupils to think about certain value types. They could choose to describe themselves as being

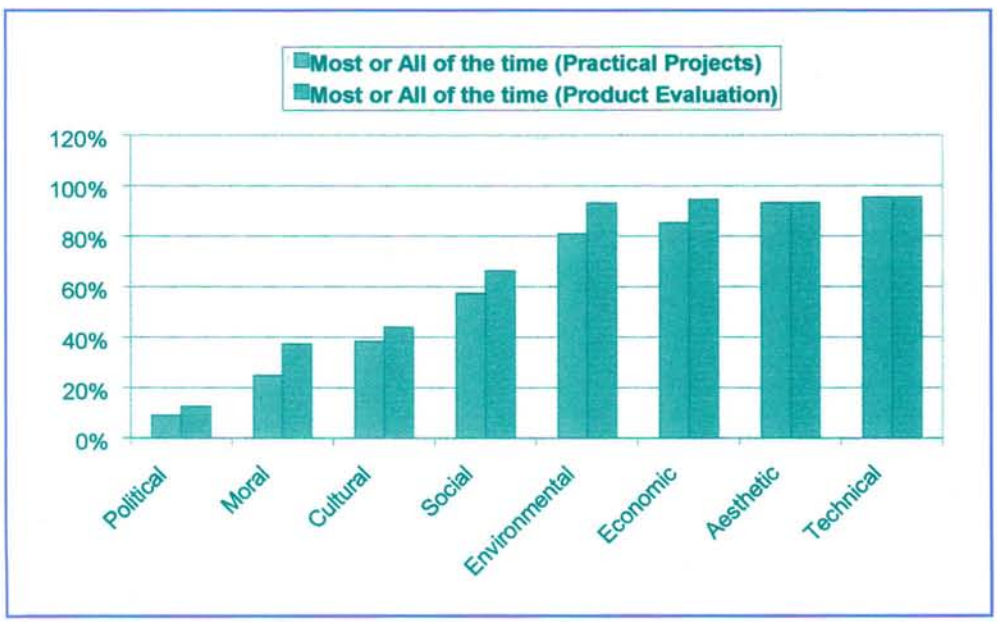


Figure 1: Comparison of figures for Practical Projects and Product Evaluation.

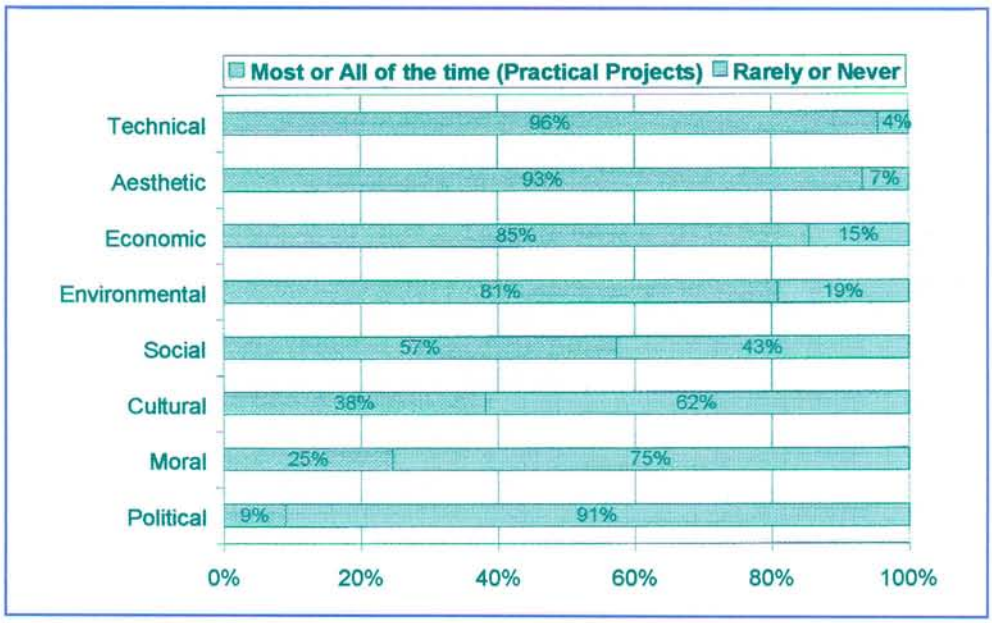


Figure 2: Combined figures for Practical Projects.

able to teach about the values at a reasonable level, indicating if they felt fairly able to cope with the value type. They were also able to indicate whether they wanted to increase their teaching about various types of values, or if it was unimportant for them to be able to teach about different categories of values.

Added to the relative importance attached to values in part 3, it seems that lack of confidence is a factor in explaining why pupils were called upon to consider some values less than others in their design and technology work. Design and technology teachers indicated that they generally felt confident when dealing with aesthetic and technical values, most were confident with economic and environmental values, but only approximately half when dealing with social or moral values. There was the least amount of confidence in dealing with cultural and – particularly – political values. However, there was a desire among some teachers to increase the amount of values-related teaching. This was most notable in the case of cultural values: 20% of teachers indicated they would like to be more able to include it in their teaching. Once again a number of teachers (25%) indicated that they felt political values were unimportant in their teaching.

5. Use of resources

This section set out to discover the level of awareness of resources produced by both DATA and VALIDATE, and the extent of their use. In addition, it asked how much the profiles of the organisations had been raised among design and technology teachers.

All the design and technology teachers were aware of DATA, but only 25% knew of VALIDATE. A majority of teachers had used some DATA resources, but very few claimed to have used those of VALIDATE. The Guidance Notes produced by VALIDATE, 'Exploring Value Judgements in Design and Technology' were known by 23% of teachers but were used by only 9% (DATA 1997a). More teachers were aware of the DfEE publication, 'Looking at Values through Products and Applications' (DfEE 1995a), and it seemed that it had been used as a resource by over a quarter of the sample.

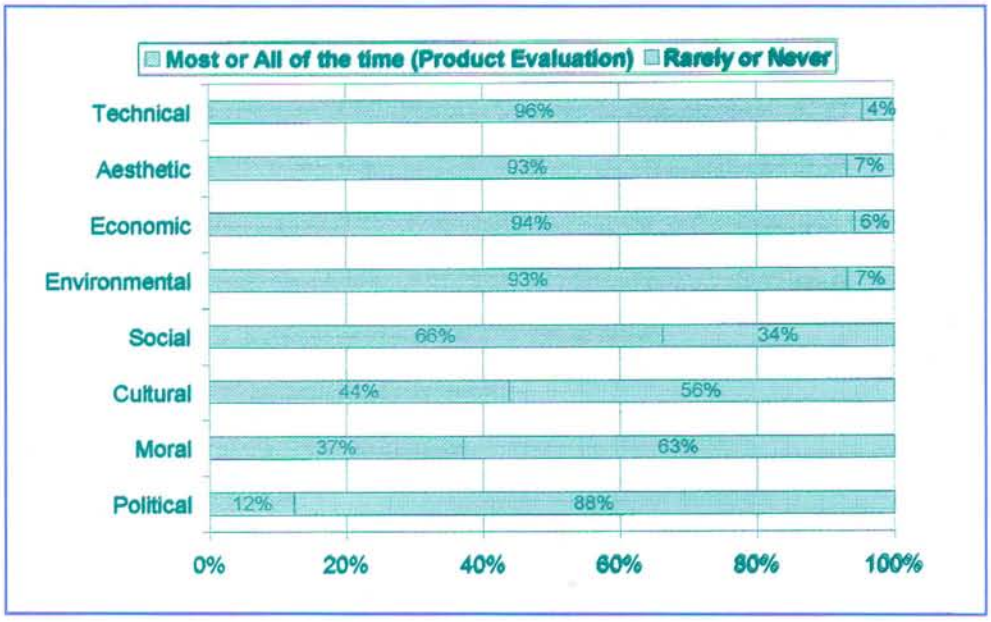
In general it seems that there was some awareness of resources to help promote the teaching about values in design and technology, but that over half of the respondents did not seem to know of the full range of support materials and organisations available. This would help explain the lack of confidence felt by some teachers with regard to values issues.

6. About you and your school

So that the demography of replies could be easily determined and possible differences considered between male and female respondents a section on the respondents themselves and their schools was included. In addition a question about the amount of 'design and make' projects and product analysis tasks undertaken at both Key Stage 3 and Key Stage 4 with the purpose of gauging numbers of tasks undertaken in each case.

It was difficult to make meaningful conclusions about the sex of the respondents because the sample size somewhat restricted analysis and the statistics for the 28 female teachers who replied could be unfairly distorted when adjusted into a percentage. The majority of responses appeared similar; although there was some indication that female

Figure 3: Combined figures for Product Evaluation.



teachers of design and technology were more comfortable with, and undertook more work on, cultural values. Apart from this observation, no wide differences were found in the responses of male and female teachers in relation to values in design and technology. The figures for the incidence of either activity reflected the findings in part 2 which indicated that slightly more values-related work was undertaken in product evaluation tasks than in practical projects.

Conclusion

In answer to the general research question design and technology teachers did believe that making pupils think about values was an important part of design and technology education. However, when they were asked about particular values then some teachers felt that certain values were more important than others. In the main, technical and aesthetic values were considered most important with nearly all design and technology teachers agreeing that they are essential. In pupils' design and technology work teachers indicated they nearly always ask students to think about the technical and aesthetic values embedded. Teachers have indicated they are confident when dealing with them and this, combined with their feelings of the importance of these two values, may help to explain why pupils will most often be asked to consider technical and aesthetic values in their projects or product analysis. Environmental and economic values are considered almost as important as technical and aesthetic and are often considered in pupils' work. Most teachers seemed confident about dealing with them, and encouraged pupils to think about them in the majority of cases.

The research seems to indicate that design and technology teachers believe that social values are quite important with just over half of them describing themselves as confident about teaching about these values. Approximately a third of teachers indicated, however, that they rarely or never made their pupils think about the social effects of their projects or considered the social values within products when analysing them.

Moral and cultural values are believed to be quite important by a similar number, but teachers make pupils think about them much less often in their design and technology work. Approximately 60% of teachers rarely or never make their pupils think about moral or cultural values when undertaking practical projects or product evaluation. Teachers seem to be less confident about dealing with these types of value, although a reasonable number of the sample would like to be able to teach about both moral (15%) and cultural (20%) values more.

Political values are the least often considered value. The majority of design and technology teachers did not see political values as important to Design and Technology, and more indicated that they were not confident dealing with these issues than felt able to describe themselves as confident. A combination of this lack of confidence with the unimportance attached to political values means that they are rarely considered by pupils in their design and technology work.

In answer to the question regarding the amount of values related work in schools it seems that technical, aesthetic, economic and environmental values are considered in the majority of practical projects and product

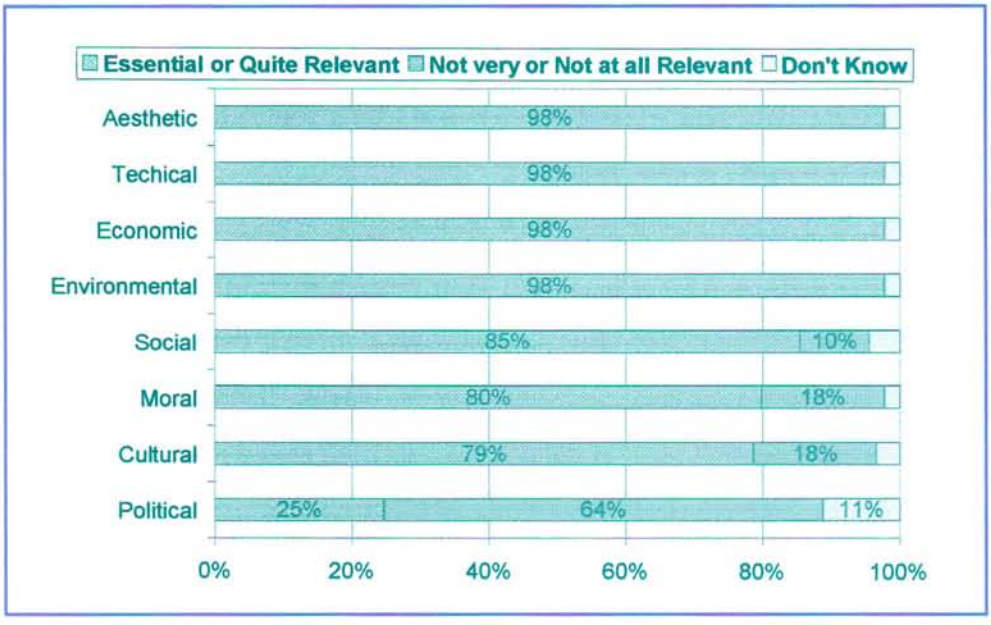


Figure 4: Graph showing the relevance teachers placed upon getting pupils to think about each value in design and technology. Figures for 'Essential' and 'Quite Relevant' have been combined, as have the percentages for 'Not very' and 'Not at All Relevant', to give a clearer picture.

analysis tasks. Social, moral, cultural and political values are more rarely considered.

The methods by which pupils are asked to consider values indicate that they are slightly more often expected to think about values when undertaking product evaluation tasks, rather than in their practical projects. They seem to encounter product evaluation tasks only half as frequently as their own design and make tasks.

In considering the entire research, it seems that there is almost a priority of values, which could be suggested as:

1. Technical
2. Aesthetic
3. Economic
4. Environmental
5. Social
6. Cultural
7. Moral
8. Political.

It seems that there are some teachers who just do not view certain values as relevant. Perhaps if a section on values is explicitly written into the review of the design and technology National Curriculum then these views would matter less as the teachers would be required to teach about them regardless of their own opinions.

It is also evident that teachers lack confidence concerning some values related issues. The teacher survey has shown that some of the resources produced to support values related teaching in design and technology do not have a high profile. Only a quarter of surveyed teachers were aware of VALIDATE, and less than half knew of some of the resources available to encourage teaching related to values. This could be an area for VALIDATE and possibly DATA to attempt to improve their profile.

Recommendations

The work represented in this article only partly answers some questions regarding values in design and technology and raises even more queries for the future. If it is clear that some values are more often considered than others, then what is the mechanism by which values are being thought about in design and technology work in schools? How is values-related work achieved in design and technology lessons? Are there examples of good practice, particularly regarding the values, such as social, moral, cultural and political, that are less often covered? Could resources be designed and piloted to improve the teaching about these values in design and technology lessons?

The next focus of research on values should, in the authors' opinions, concentrate on the classroom, to examine how values can be considered, and try to produce resources to encourage more values-related work. Case studies could be undertaken to identify good practice and to develop quality curriculum support materials. Now that there is a picture of what teachers believe their thinking and practice to be regarding values in design and technology the next step is perhaps to try and examine current practice to produce improvements and wider values-related work in design and technology lessons.

The views of both DATA and VALIDATE have been quoted extensively in this article. In view of the findings of the questionnaire it seems appropriate to make some reference to their

work. In order for design and technology teachers to more fully cover values issues they seem to need more support and guidance. Teachers need to be informed of the relevance of values, convinced of their worth and then given strategies and curriculum materials which allow them to include more values-related work with their pupils. Both DATA and VALIDATE are already playing this supporting role. It also seems that it is important to ensure that values are more clearly included in the National Curriculum. Although design and technology teachers believe that the National Curriculum encourages the consideration of values in the main, the National Curriculum could be much more explicit, since at present it seems not all pupils are encountering a wide range of values-related work in their design and technology lessons. The forthcoming review of the National Curriculum could encourage the consideration of cultural, moral and social values that seem less often covered by teachers in their work with pupils.

This work indicates aspects of the current state of thinking amongst some North London design and technology teachers regarding values in design and technology. It shows that there are areas where some values are not being considered by pupils, for various reasons given by their teachers. The research could be used as a basis for identifying improvement in the amount of work pupils in design and technology do in relation to values. The opinions of design and technology teachers towards values are hopefully somewhat clearer, and for those who wish to increase the amount of work on values issues it is hoped that this work will be of use.

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