Gender inequality in design and technology ... the pupils' perspective

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Gender inequality in design and technology ... the pupils' perspective

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Abstract

Statistics have shown that those girls who choose to study the traditionally male areas of Design and Technology to GCSE level, generally do very well, yet very few still actually opt to follow these courses. My original research aimed to clarify effective strategies schools could adopt to redress the balance. This paper highlights the image of Design and Technology through the eyes of the pupils. Primarily it examines how relevant the study of Design and Technology seems to pupils and secondly it attempts to see which of the strategies implemented by teachers increased the enthusiasm and interest of the pupils.

The disinclination of girls to opt for 'core' Design and Technology could be increased all the more with the latest changes in Design and Technology GCSE syllabuses, which have reverted to the more traditional format of specific discreet disciplines.

Research Background

This research paper was undertaken following research carried out in 1995[1] comparing examination statistics with strategies employed in Design and Technology departments in secondary schools aimed at ensuring equal participation. According to OFSTED[2] findings, girls did very well in Design and Technology construction. It emerged from my early research[1] that although schools visited had specific strategies to encourage all pupils, few girls pursued Design and Technology construction beyond GCSE and, where it was optional, few girls even followed a GCSE in Design and Technology. This was occurring despite the 'positive' strategies employed by schools. Further investigations were undertaken to see what the underlying reasons were - the perceptions of the pupils themselves. The 1995 research and indeed the research of this paper are merely snapshots of what is occurring in the small number of schools investigated.

Method

A questionnaire was drawn up and given to boys and girls in year 9 of two secondary schools. The pupils were asked to fill in the questionnaire in their own words without discussing responses with their peers and the papers were anonymous so that the pupils could be completely honest. In total 18 boys and 17 girls completed the questionnaires. Most of the questions were open ended in order to allow respondents to say what they thought. A total of seventeen questions were asked, many of them split into different parts for example, 'What aspects of Design and Technology construction have been good?', followed by 'What aspects of Design and Technology construction have not been good?'. Each of the 35 pupils wrote differing responses, so in a paper of this size it has been impossible to tabulate every response to every question. Where the responses to questions were varied, I filtered through the data and accumulated all the different responses. I added up the numbers of responses that were essentially making the same statements, and then calculated what proportion of the sample had come up with that response.

The questionnaire aimed to seek out first how much each of the pupils enjoyed Design and Technology construction. It then sought to ask what the pupils liked and disliked about the subject. The questions which followed were concerned with the relevance of Design and Technology construction to both themselves and others. Subsequent questions were asked about group work, single sex groups, women they knew of in technological careers and their experiences of women teachers of Design and Technology. The final question asked about their ambitions.

Initial findings

General attitudes to Design and Technology construction

More than twice as many boys (61%) as girls (29%) ranked Design and Technology construction in their top six favourite school subjects. More than three times as many girls (41%) as boys (12%) thought that Design and Technology construction was more important to boys than girls. However only 5% of the boys and 6% of the girls thought that boys had greater ability in Design and Technology construction. Sixty nine per cent of the girls and 41% of the boys said that they did not like to have their Design and Technology construction work on display. These sets of results are an indication of how much the pupils in the sample like Design and Technology construction and how confident they feel in the subject. There were more boys than girls who felt confident of their own capabilities in the subject.
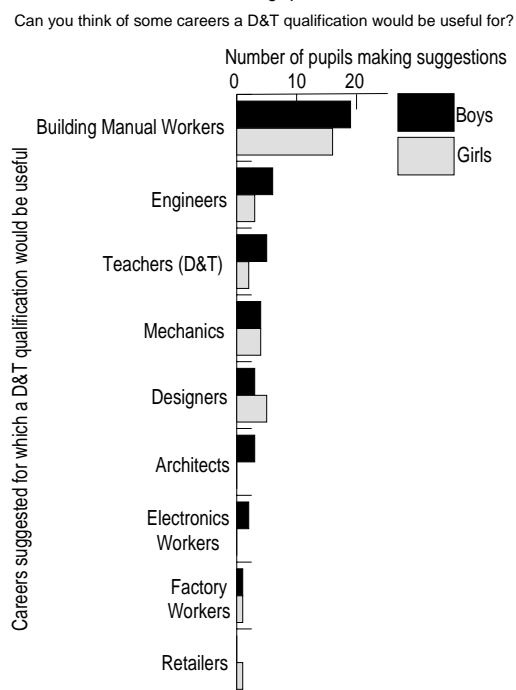
The pupils were asked what aspects of Design and Technology construction had been positive for them - most pupils mentioned particular projects that they had done, the largest proportion of boys (39%), said practical work in general, 41% of the girls said completing the whole project to the end and the final sense of achievement. Aspects reported that were disliked included specific projects, more general responses were folder work boys (58%), girls (13%) and failure outcomes girls (31%), boys (0%). Failure outcomes were incomplete or unsatisfactory artefacts. If changes were made in Design and Technology construction 64% of the boys would like more practical activity whereas this figure fell to only 13% for girls. Over half the girls (53%) thought more choice in projects and more relevant project subjects would make Design and Technology construction more enjoyable. This suggests, that the majority of the girls felt that the subject material given was not designed to interest them, even where schools believed they ran projects with a neutral gender bias. These results suggest that boys dislike doing 'paper work' and feel that they have still gained something even if a project is incomplete. Girls feel less strongly about paper work but much more strongly about failure outcomes as if
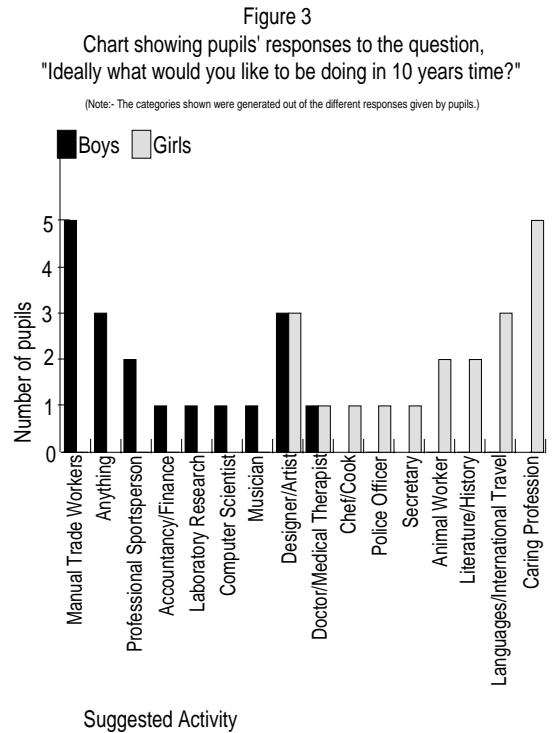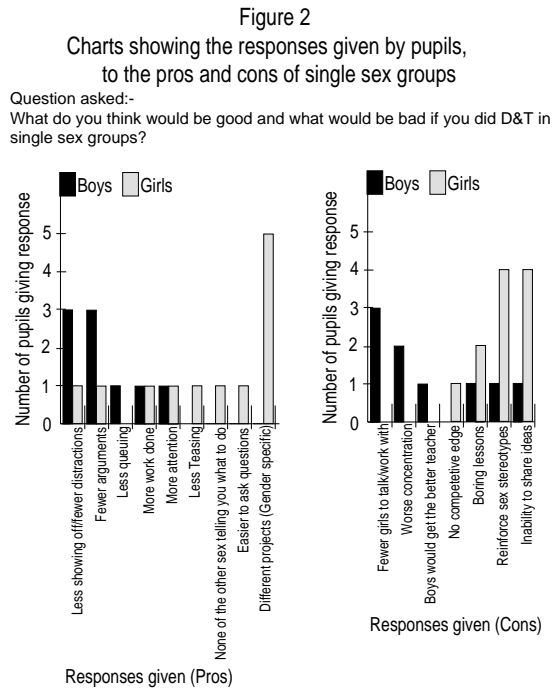
nothing has been learned or achieved without a completed practical project. Further research would be necessary to determine whether teacher expectations have an influence here.

Relevance of Design and Technology for careers.

When asked about the careers for which a Design and Technology construction qualification would be useful, the 17 girls and 18 boys only thought of nine different careers: manual workers from the building trade, engineers, mechanics, designers, architects, factory workers, design and technology teachers, retailers and electronic engineers. (See figure 1.) When asked about their parents regard for the subject 80% of the girls said their parents viewed Design and Technology construction as an unimportant subject, 92% of the reasons given for this was that Design and Technology construction was not relevant to them. Fewer of the boys (41%) said that their parents did not think Design and Technology construction was important for them, of these, 71% said Design and Technology construction was not relevant to them. One boy justified his disinterest in Design and Technology by saying, "I don't want to be a builder." another said, "(Design and Technology)...no future in it." (See figure 1)

Figure 1
Chart showing suggestions made by boys and girls when asked the following question:-

Can you think of some careers a D&T qualification would be useful for?

Figure 2
Charts showing the responses given by pupils,
to the pros and cons of single sex groups

Question asked:-
What do you think would be good and what would be bad if you did D&T in
single sex groups?

Figure 3
Chart showing pupils' responses to the question,
"Ideally what would you like to be doing in 10 years time?"

(Note:- The categories shown were generated out of the different responses given by pupils.)

This implies that most of the pupils believe, and the majority of pupils believe their parents to believe, that Design and Technology construction is a vocational subject with a very limited number of vocations relevant to it. Most of the pupils (75%) suggested 'blue collar' or low status jobs to which few of these 13/14 year olds aspire (see figure 3).

Options

Another question which concerned the selection of Design and Technology construction when making year 9 options reinforced this. Two thirds of the girls (65%) said they would not opt to do Design and Technology construction, of these, 73% said it would not be relevant in their futures. Less than a third of the boys (28%) would not opt for Design and Technology construction, 20% said it would not be relevant to them. In one of the secondary schools visited none of the nine girl pupils questioned would opt to take a GCSE course in Design and Technology construction.

Single sex groups

One strategy explored in the first stage of the research[1] was teaching Design and Technology in single sex groups. The pupils were asked what they thought of working in single sex groups. Responses are shown in figure 2. Girls

and boys admit to being distracted by each other in a negative way - showing off and arguing. The evidence of three girls acknowledged that some girls are too intimidated to ask questions by the presence of boys for fear of looking foolish or inadequate; one girl indicated feelings of oppression by boys telling her what to do. However none of the girls and only 17% of the boys had ever worked in single sex groups, and they anticipated problems in working in single sex groups (see figure 2). The results reinforce what researchers, from Stanworth[3], in 1981. to Ruddock[4] in 1994, have already found.

Given the choice, only 25% of girls and 41% of boys would prefer to work in small single sex groups. Reasons for this are shown by the 'cons' chart of figure 2; three boys thought that it would be a problem not to have girls to talk to. A further two boys said that they would concentrate less in single sex groups. Three pupils said that the lessons would be boring. One boy wrote that the girls would be disadvantaged because he assumed that the boys would have the better teacher, similarly five pupils (four girls and one boy) thought that sex stereotypes would be reinforced, indicating their assumptions that the lesson content would be different in single sex

groups. Four girls and one boy would miss the opportunity to share ideas with those of the opposite sex, and one girl indicated that she responded well to the competitive edge present when working alongside boys.

When making GCSE options 17% of boys said they would think twice about choosing a subject knowing that they might be the only boy, a further 11% were unsure. A quarter of girls (25%) would reconsider opting for a subject if they believed they might be the only girl, a further 13% were undecided. These results imply that some pupils will alter their option choices if they fear being the only person of their sex in a class, and that pupils are influenced by people of the opposite sex in a group and feel support from colleagues of their own sex. This was true for more girls than boys. (See figure 2)

Role Models
When asked if the pupils knew, or knew of, women in technological careers, 67% of the boys and 56% of the girls answered yes. However when asked what the careers were 67% of both boys and girls could only give one example - a woman Design and Technology teacher. Other careers volunteered were electrical and computer engineers, designers, factory workers, laboratory technicians and an hydraulic investigator.

Almost two thirds of the boys (61%) had been taught Design and Technology construction by a woman teacher, 89% said that it was a 'normal' experience, 11% said that it was not a good experience but gave no reason. Just over half of the girls (53%) in the sample said that they had been taught by a woman and all of them said that it was a 'normal' experience. Of the 16 pupils who had never been taught by a woman 50% of the girls and 12% of the boys would have liked the opportunity of being taught by a woman.

Aspirations of pupils
Figure 3 shows the results to the question asked about what each individual questioned would like to be doing in 10 years time. (See figure 3)

Although the question asked was not intended for purely careers based responses, all activities

suggested by girls were careers based. The vocational ambitions suggested are extremely gender stereotyped. The only activities where boys and girls overlapped were in the 'designer/artist' and 'doctor/medical therapist' categories. Most pupils had not recognised the benefits courses in Design and Technology had in relation to their own lives and futures.

Pupils' Perceptions
Keeping the pupils' responses in perspective, due to the small scale of the research, the responses indicate that both boys and girls think of Design and Technology as a 'practical' and narrowly vocational subject such as crafts or 'blue collar' jobs. The research of Thomson and Householder[5] has shown that people, from 11-12 year old pupils to teacher trainees and academics, have widely different views of what technology is; including 'problem solving', 'applied science', 'things, such as machines and radar' and 'making'. All groups linked technology strongly with science. Banks[6] and others have written extensively showing that Design and Technology education is included in the national curriculum for a variety of reasons including the 'intrinsic' benefits to intellect and the synthesis of thought, the importance of linking technology to the 'culture' in which we live, the process of technological capability being a transferable skill and for the creation of economic wealth and growth. Dearing[7] pointed out our inability to translate our strengths in scientific discovery to wealth-generating and commercial products this being a good reason for keeping technology as a statutory subject. The misconceptions may be heightened all the more with the introduction of the new Design and Technology GCSE syllabuses, which have reverted to the traditional format of specific discreet disciplines.

It seems the terms and boundaries of Design and Technology have been too loose. The inspectors report[2] found that there was a significant number of Design and Technology teachers who did not have an adequate grasp of what Design and Technology education is. If this is true what chance do other staff, parents and the pupils themselves have of understanding the importance and relevance of Design and Technology?

Effective Strategies

Effective strategies, such as positive female role models, neutral gender bias in projects, were highlighted in the initial stage of my research[1]. The responses of pupils in this second stage reveal that pupils do not regard projects to be of particular interest to them, despite the schools already having claimed to employ the strategy of 'focusing on pupils' interests in developing projects' to encourage participation. This research despite its small scale, indicates that the two schools visited have failed to encourage equal participation of all pupils or to show how Design and Technology is a relevant and valuable subject. Given that these two schools appear in the mid/ upper areas of league tables the results found may be a reflection of the situation in other schools all over the country.

To change the perceptions that boys and girls have of the relevance of Design and Technology in their lives, there needs to be emphasis on early clarification by teachers of all that Design and Technology encompasses. The clarification would be for adults associated with Design and Technology as well as for pupils in the foundation years and continuing throughout secondary education (including careers education). Teachers need to respond to the pupils requirements of the subject - to ensure projects are not gender biased and to ensure project outcomes are valued whether artefacts are completed or not. Closer observation of boys and girls when working together will allow teachers to work on overcoming the intimidation of girls and the domination by boys. More variety in role models from differing

backgrounds can be made visible in schools in order to show the diversity and therefore relevance of Design and Technology in our lives.

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