

Interest in Home Economics and CDT: Sex-Related Differences in 12-year-old Pupils

Abstract

First year comprehensive school girls and boys were given opportunities to express their interest and motives involved in attitudes towards home economics and craft, design, technology. Although girls' interest was higher than boys' for home economics (cookery) and needlecraft and boys' interest greater for woodwork and metalwork; the girls' level of interest was similar for both woodwork and needlecraft. The practical activities which started and finished the year with interest at the lowest level and shared significant falls throughout the year were metalwork for girls and needlecraft for boys. For design work, high ability boys and low ability girls expressed less need for teacher aid and although boys were more strongly interested than girls in additional technology lessons, high ability girls expressed greater technology interest than low ability girls. The pupils' reasons for their preferences are analysed and the results are discussed with reference to curriculum planning.

Introduction

In the 1970s relatively few schools were willing to offer craft subjects on a rotating pattern in the first five years of secondary education to enable girls and boys to have a reasonable experience of a wide range of possibilities (Department of Education and Science 1975). Frequently non-educational reasons were given for separating the sexes for some aspects of their work; often through problems of organisation, staffing and accommodation. Current educational thought however, has encouraged a swing away from segregation to mixed classes and this effect has been most noticeable in home economics and CDT classes. Evidence from twelve schools studied by Page and Nash (1980) suggests that the number of girls studying CDT subjects in the first three years is on the increase. The most striking factor arising from the school studies was that favourable attitudes to technology and industry tend to be found in schools having strong science and CDT departments, especially where courses are based on practical, experimental work.

Attempts are being made to encourage girls to continue CDT after their third year. The Girls into Science and Technology Project (Catton 1982) is an example. This project aims to improve girls' attitudes to science and technology and increase participation through the development of curriculum materials which appeal to girls' interests as well as through involvement in wider issues such as the technological careers of women. The widening of participation has not yet been reflected in the examinations taken by 16-year-olds. In the GCE 'O' level examination Summer 1980, the entries of girls for woodwork and metalwork were only 1% of the total, and the needlework and cookery entries contained 0% and 3% respectively from the boys (Harding 1982). Furthermore, only a few of the 'O' level and CSE examination syllabuses and assessments revealed a significant

emphasis on design skills. Of the 75 workshop based courses examined only 32 syllabuses included a statement about the design process or attempted to assess problem-solving skills.

The problems associated with widening girls' and boys' interest in home economics and CDT activities may revolve around, not only stereotyped attitudes, but also the content and nature of the materials and experiences offered. In adolescence, sex-related cognitive differences have been clearly identified. Girls have a more advanced maturational pattern of linguistic and fine motor skills whilst boys show superiority on tests of mathematics and spatial ability. (See Wittig and Pettersen 1979 for a summary of many research studies.) Thus the type of activity preferred and the ability to perform well may vary quite sharply between the sexes. In an analysis of the entries for the Design Council's annual Design Prized competition, Grant (1982) compared the choices of girls and boys. Girls were much more likely to submit a project that had a social origin (e.g. educational toys, aids for the handicapped), while the designs of boys were more likely to originate from problems with a technical orientation (e.g. a drilling machine holding device, an electronics test and demonstration device).

The present study was designed to assess the views of the pupils in their approach towards home economics and CDT, to examine the influence of previous experience at home and school, to compare the interest in different practical activities throughout the school year and to infer possible directions for curriculum development.

Method

All the pupils from eight first-year classes in an urban comprehensive school were given self-report questionnaires. The main measure was a five-point bi-polar scale from very interested to not interested for each of the practical activities: needlecraft, woodwork, home economics (cookery) and metalwork. The normal school timetable rotated the pupils at approximately 10 week intervals, through these activities and on the first week of each rotation the questionnaire was completed. At the beginning of the year additional questions referred to home and previous school activities and at the end of the year pupils answered design.

technology and time allocation questions. Thus at the beginning of each activity change, the pupils entered the new practical room and completed the questionnaire before work commenced. The teachers for the practical activity administered the questionnaire. The calculations based upon the data take note of the fact that the judgement of one of the four activities may have been influenced by the teacher and room environment. However, the final questionnaire at the end of the year, was administered in a neutral setting.

Course Content

In each of the practical activity areas the teaching was carried out by two different teachers — three in

the case of needlecraft. Thus the present study is focussed more upon the influence of the course, than upon the personality of the teacher. All the teachers employed a combination of teaching situations. Class methods were frequently used for introductions and main demonstration work; whilst for much of the time when pupils were manipulating materials, individual teaching took place. The practical work undertaken by the pupils is described for each activity area.

Needlecraft: The articles were, a pencil case, patchwork mat and collages, with some of the collages turned into cases or cushions. A free choice was frequently given in the design work on the cases and collages although restrictions were applied to the processes followed and selection of fabrics.

Woodwork: In one workshop, pupils made a table lamp with very little opportunity to participate in the design work whereas in the other workshop, freedom to develop natural wood sculpture forms was encouraged with an emphasis upon individual and group work.

Home Economics (Cookery): The course involve practical and theoretical aspects of the subject. All pupils made a snack on toast, cheese loaf and a dessert. The items of work and the manner by which they were carried out was strictly controlled.

Metalwork: In one workshop a brooch or pendant in the shape of a beetle was made and in the other workshop the item was a wall plaque of a veteran car. With both articles opportunities were given to develop individual design variations, but little choice was given in the selection of materials and processes.

Results and Discussion

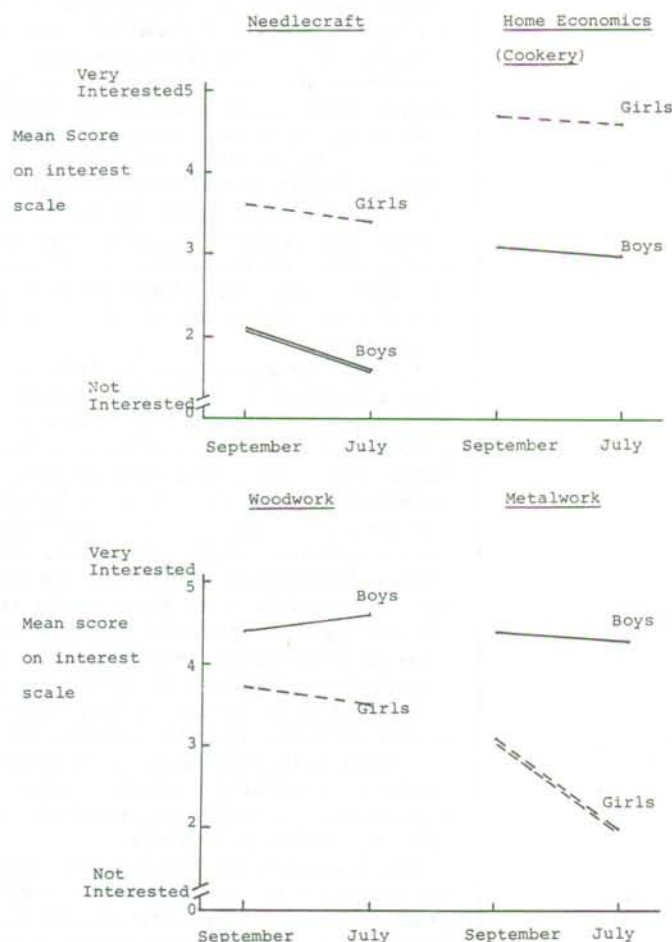
Interest change throughout the year

Girls and boys showed marked differences in their interest towards each activity. Figure 1 clearly indicates girls' preferences over boys' for needlecraft and home economics and boys' superior preference for woodwork and metalwork. All these differences are significant at the beginning and end of the year as measured by the 't' test ($p < 0.001$). To avoid extraneous influences, the interest judgements relating to the practical activity of the room in which the pupils answered the questionnaire, has been removed from these calculations.

In terms of the strength of interest measured, there is a great similarity between girls' needlecraft and girls' woodwork. At the beginning and end of the year there is no significant difference between them ($t = 0.3$ on both occasions). The highest level of interest appears to be shown in home economics for girls and in woodwork and metalwork for boys.

Interest change from September to July is significant for girls' metalwork ($N = 136$; $t = 5.98$; $p < 0.01$) and for boys' needlecraft ($N = 140$; $t = 2.69$; $p < 0.01$). In both cases the interest is lower in July than in the previous September. It

Figure 1 Girls' and boys' mean scores on the interest scale at September and July. A double line indicates a significant difference.



could be hypothesised that the tasks required of the pupils throughout the year fostered some disillusionment or alternatively the social environment exerted an influence. Nevertheless for both these situations the strength of interest at the beginning of the year was not high. Boys' needlecraft and girls' metalwork were the lowest means recorded. The question is therefore raised concerning the value of such activities. Should the needlecraft content for boys and the metalwork content for girls be changed or should the time be allocated to other practical activities? A low level of interest would seem to suggest low motivation and therefore limited progress in knowledge and skill.

From the questionnaire relating to previous experience of these practical activities at home and school a continuing influence did not appear to be strong. The interest of those pupils who had been involved in these activities in the junior school was no greater than those who had not. In only two cases of previous experience at home, girls' needlecraft and boys' cookery, was there greater interest by those who had participated and for these the difference had disappeared by the end of the year.

Interest changes before and after participation

The purpose of this calculation was to examine the expectation and influence of the room conditions for each activity irrespective of the time of the year. It was therefore necessary to include in the data for the 'first session', only pupils' scores where the judgements of the activity were made in that practical room. The data for the before and after participation conditions did not include pupils' scores related to the room in which they were working. The results are shown in Figure 2. Although it is apparent that there are vast differences between girls' and boys' interest in the practical subjects, the changes brought about by expectation and impact of the work are remarkably similar. Participation in needlecraft was followed by little change in interest, whereas for both girls ($N = 140$, $t = 3.65$, $p < 0.001$) and boys ($N = 136$, $t = 5.55$, $p < 0.001$) the rise in interest at the beginning of the first session was highly significant. This rise in interest may be due to heightened expectation and anticipation from the influence of the room conditions. The children had perhaps misjudged the meaning and implications of needlecraft prior to involvement.

The home economics and metalwork courses both show a lessening of interest after participation. For home economics the girls' ($N = 164$, $t = 4.49$, $p < 0.001$) and boys' ($N = 158$, $t = 3.96$, $p < 0.001$) fall in interest was from a stable plateau, whereas in metalwork the girls' ($N = 154$, $t = 5.20$, $p < 0.001$) and boys' ($N = 158$, $t = 2.20$, $p < 0.05$) reduction of interest followed a slight upward trend at the first session. The practical sessions may not have lived up to expectations or the impact of the work may not have had the long-lasting effect that might be expected. Even though the interest fall is significant, the strong sex differences for the courses remain.

The differences between the first woodwork session and before and after participation are not significant. Girls and boys maintain an even level of interest for woodwork throughout the period. Expectations are fulfilled and interest is maintained following workshop involvement.

The influence of the four practical subjects and the rooms and workshops in which creative work is produced have a similar effect on girls as on boys. Although the children exhibit greater or lesser degrees of interest, the rise and fall of that interest appears to be related. Influences, whether arising

Figure 2 Interest changes before and after participation for each practical activity. A double line indicates a change which is statistically significant.

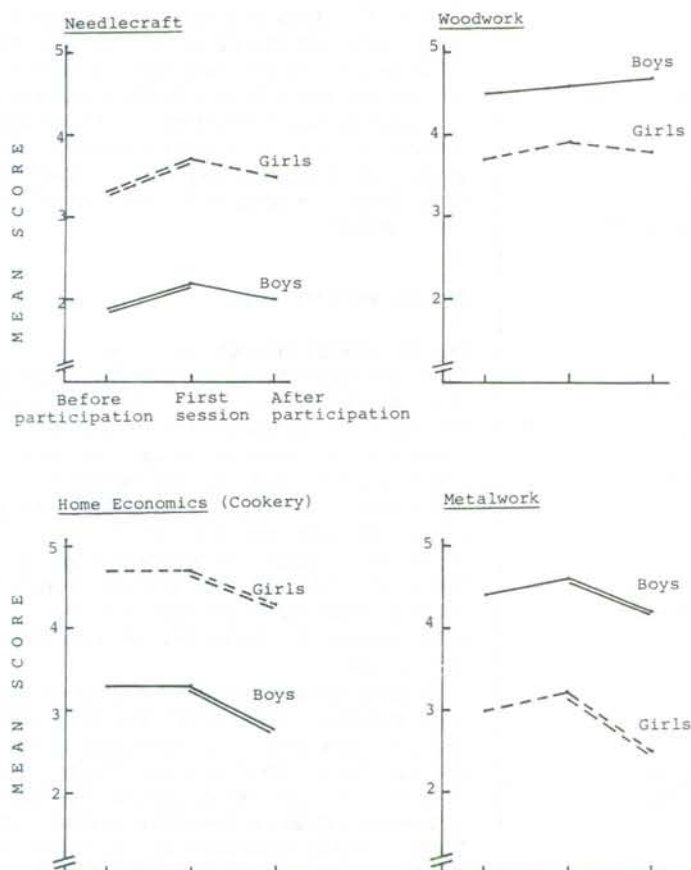


Table 1 Main reasons given for being very interested in most preferred activity; expressed as percentages of the number of pupils in the sample.

	<u>Girls</u> <u>H.E. (Cookery)</u>	<u>Boys</u> <u>Woodwork</u>
Great enjoyment, interesting.	10.9	11.6
General usefulness, helpful in adult life.	63.0	22.1
End product desired, show to parents.	1.4	15.6
Materials and equipment liked; a feeling of being good at the activity.	15.1	32.2
Parents occupation or interest.	0	3.9
Practical nature of work, not much writing.	1.4	0
Fully occupied during lessons.	0	2.6
Can do the activity at home, by oneself.	2.7	2.6
Teacher or teacher's organisation liked.	5.5	5.2
Activity thought to be easy.	0	5.2
	N = 73	N = 77

Table II Main reasons for not being interested in least preferred activity; expressed as percentages of the number of pupils in the sample.

	<u>Girls</u> <u>Metalwork</u>	<u>Boys</u> <u>Needlecraft</u>
Generally not interested, activity boring.	22.0	33.8
Activity not important or useful.	13.2	9.2
Difficulties with materials and equipment.	19.8	26.3
Opposite sex activity.	16.4	12.3
Dislike of teachers' organisation	8.8	1.5
Too long to produce anything.	6.6	1.5
Dirty working conditions.	4.4	0
Not able to continue at home etc.	2.2	0
Not interested in end product.	6.6	7.7
Activity can be learnt at home or from a book.	0	7.7
	N = 91	N = 65

from stereotyped attitudes, peer group pressures or physical attributes of the craft, seem to affect girls and boys by equal amounts, when examined over ten and twenty-week periods. However, the examination of interest over the full school year, clearly showed a number of differences between the sexes. Stimulating interest may be more difficult than losing interest. Harvey and Edwards (1980) found that although there were sex differences associated with interest in biological and physical sciences, the school was unable to stimulate the interest of comprehensive school girls or boys between the beginning and end of the first year.

Reasons for preferences

To examine the reasons for pupils' like or dislike of each activity a questionnaire was given, in a neutral setting, to another 12-year-old year group at the end of the first year. Each pupil entered the title of the activity and was given complete freedom to write the reason in the blank space provided. The only restriction was that the answer should be limited to the main reason. Thus all pupils were able to choose one of the four activities they were interested in and give the reason and also to choose and give the reason for a non-interested activity. As might be expected the most interested activities for girls and boys were home economics (cookery) and woodwork respectively. These results are shown in Table 1. The least interested activities: girls (woodwork) and boys (needlecraft) are shown in Table II.

The girls' strongest reason for preferring home economics is the general usefulness and applicability to adult life with a liking for the materials and equipment a very secondary reason. For the boys those two reasons are reversed with the boys' most frequently chosen reason that of particularly liking the materials and equipment. A further difference between the sexes is concerned with the end product, this is desired much more by the boys than the girls. These differences are identified at 12 years of age but some similarities are seen at 16 years in criteria for choosing a job. Fogelman (1983) reports that girls require variety in a job and also wish to be able to help others; whereas for the boys, being well paid is the most important factor with variety next and helping others of very little importance. Turning to the reasons for not being interested, a third of the boys and a fifth of the girls found the activity uninteresting generally, but were not able to explain their feelings precisely. Both girls and boys felt they had problems with the materials and equipment and to a lesser extent the opposite sex aspects of the activity were an inhibiting factor.

Interest in design and technology

At the end of the year the pupils were asked to answer questions related to their work. A five-point scale was used to assess strength of preference in three areas.

- (i) The design question. Pupils indicated how strongly they felt the need to design their own work. At one end of the scale was 'Like to be given the designs by the teacher' and at the other end 'Like to work out the designs for myself'.
- (ii) The technology question. School technology was described as often providing the means of making models which have moving parts and examples were given, e.g. animals with moving heads or eyes, vehicles which drive up slopes and the making of kites and gliders. The scale required a decision between more or less technology than currently being taught.
- (iii) The time question. Pupils were asked to indicate whether they would have liked more or less

time each week for Craft Studies and Home Economics lessons during their first year.

The data from the questionnaire was analysed in terms of high and low ability for girls and boys with the ability groupings obtained from scores on the National Foundation for Educational Research Verbal Reasoning Test EF.

The median for first-year pupils was 106.5, thus making 107 and above the high ability group and 106 and below for low ability.

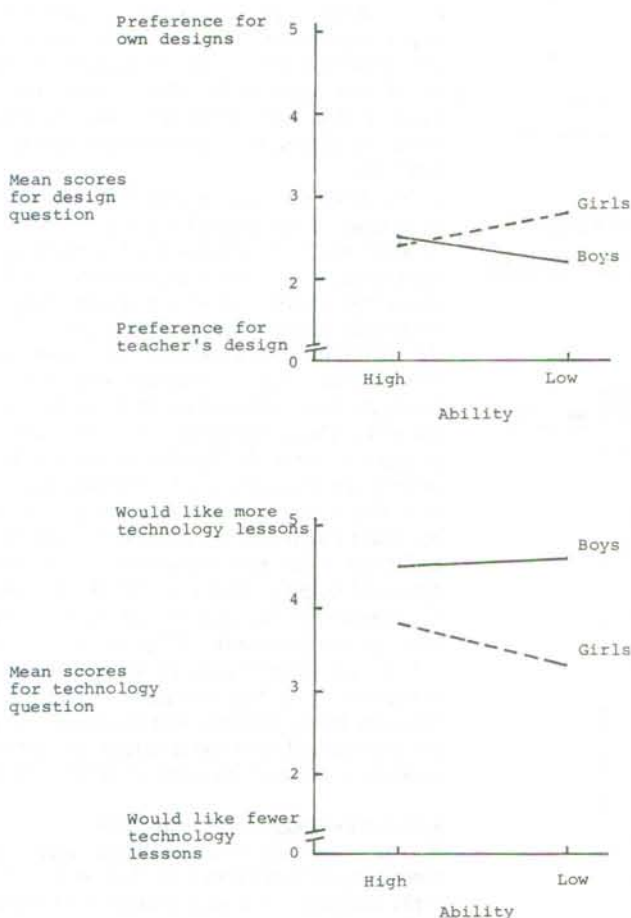
A two-way analysis of variance was performed on the data from the first two questions. The results of significant sex x ability interactions are shown in Figure 3.

The answers to the design question showed little difference between high ability girls and boys but there was a substantial sex difference between low ability pupils. Low ability girls had a greater preference for producing their own designs than high ability girls and for boys the trend was reversed ($F = 5.77$; $df 1,152$; $p < 0.05$). Although for all pupils, it should be noted that the emphasis tends towards help from the teacher. The reason for the high ability boys greater preference than low ability boys' for designing their own work, may stem from a greater confidence in solving problems and in a willingness to participate in divergent thinking activities. Hasan and Butcher (1966) found a high correlation between divergent thinking and IQ scores. A recent study (Egelstaff 1983) also found high ability boys' preference to be greater than low ability boys for designing their own work, albeit with slightly more emphasis towards pupil preference than the present study. Others (Parsons, Graham and Honess 1983) have noted that a teacher's model of high achievers includes a preference for discovery, coping with uncertainty and absence of functional fixity. Why this should apply only to the boys and not to the girls is unclear.

When asked to comment upon more technology practical work, high ability girls are much more positive than low ability girls and there is only a small difference between the boys ability groupings. ($F = 4.97$; $df 1,152$; $p < 0.05$). High ability girls may feel the challenge of a new area of work, which will lead to a greater understanding of technology, to be stimulating. Low ability girls may feel less able to cope with the demands of the activity; perhaps the association with science is inhibiting. The boys willingness to participate in further technology work is significantly greater than the girls. ($F = 47.17$; $df 1,152$; $p < 0.001$) although both boys and girls would like more rather than less technology than received now.

The question devoted to establishing the pupils liking for more time indicated no significant difference between the sexes and ability groups. The group means were all within the range 4.4 to 4.7 which indicated an extremely strong preference for further time to be allocated for practical activities of this kind.

Figure 3 Interest in design and technology. Mean scores for girls and boys of high and low ability.



Conclusions

It was expected that girls would show more interest than boys in home economics and needlecraft and boys more interest in woodwork and metalwork. However, girls are shown to be just as interested in woodwork as they are in needlecraft and this is maintained throughout the year. But for girls' metalwork and boys' needlecraft there is the least interest at the beginning of the year and a significant fall throughout the year. If these results are replicated there may be a need to consider the characteristics of the skills, materials and equipment of particular practical activities when allocating curriculum priorities. The policy of equal opportunity in planning educational programmes does not necessarily mean that girls and boys should always follow identical programmes. The content of practical activities should be made as interesting as possible for both girls and boys but ultimately decisions need to be made about core curriculum and eventual specialisation.

However, the influence of a particular practical activity before and after participation seemed to affect girls' and boys' interest in a similar manner. The differences between the sexes did not seem to be so apparent over the short-term as the long-term.

The girls' strong preference for home economics was based very much upon general usefulness especially in adult life, whereas for boys, attitude towards the materials and equipment seemed to be important. The dislike of an activity, particularly metalwork for girls and needlecraft for boys, centred around general disinterest and difficulties with materials and equipment. To encourage pupil participation in practical activities which promote knowledge and skills of investigation, invention, implementation and evaluation, it may be necessary to search for materials and end products which more closely match the imagination and interests of the pupils. The present sample of pupils do not appear to be unduly distressed by the thought of participating in an activity which is frequently associated with the opposite sex.

A preference for designs provided by the teacher was greater for low ability boys. The high ability boys may have been attracted by the greater freedom and opportunity for initiative in producing their own designs. For the girls the reverse situation may have resulted more from the motivation of the task. Low ability girls showed slightly more preference for designing their own work. The high ability girls were perhaps less interested in designing items associated with the existing practical activities, than in meeting the challenge of a new activity. These girls were strongly interested in technological activities and may have been influenced by intellectual considerations. The boys' preference for more technology was even greater than the girls'.

Teachers should ensure that girls are given freedom to develop their talents. From observation in workshops, boys tend to monopolise the apparatus and call out more than girls (Whyte 1984). Girls hesitate to take risks with either

equipment or answers which might turn out to be mistaken.

Whyte concluded that observation techniques had helped teachers to increase their awareness of inequalities in girls' and boys' participation and to alter the imbalance of public speaking opportunities made available. Highly motivated teachers through variations in management style, could change the sex balance of teacher-pupil interactions. Lively practical activities involving problem solving experiences should provide equal opportunities for girls and boys to develop their abilities. This may mean the inclusion of a number of compulsory home economics and CDT elements in the early years of secondary education to form a groundwork of fundamentals and breadth of experience. But as early as possible, there should be built into the curriculum structure, a range of practical activity choices which make it possible for girls and boys to develop their talents as individuals.

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