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## **The Airedale project: designing electronics curriculum around girls interests**

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# The Airedale project: designing electronics curriculum around girls interests

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## **Abstract**

*Research in Bradford had shown that there was an imbalance between the number of boys and girls studying Design Technology beyond Year 9. There was interest both locally and nationally in encouraging more girls into this area. The Airedale Project involved collaborative work between Airedale General Hospital, Keighley College and Oakbank School. It set out to design some CDT curriculum that took girls' interests as its starting point.*

*The project used the problem-solving approaches of CDT to look at issues raised by Caring. Electronic system design was carried out by pupils with no previous experience of electronics and developed by them into hardware using Quick Track design software. The paper will present the work developed during the project, discuss how it has been followed up, and raise the issue of challenging boys' ownership of Technology*

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Research in Bradford has shown that there is an imbalance between the number of boys and girls studying Design and Technology beyond year 9. There is interest both locally and nationally in encouraging more girls into this area. Schools are using a variety of strategies to reduce the dropout by girls from CDT [1]. Discussion with teachers shows that most teachers feel that the curriculum ought to be 'gender neutral'. Some are concerned to correct any 'boy bias' that there might be in their work, but are careful not to overstep the line and become 'girl biased'. To what extent are CDT teachers in a position to evaluate whether their work is gender neutral?

The gender imbalance in CDT departments beyond Year 9 is so pronounced that positive action on the part of schools is required to correct it. Many schools are attempting this using a number of different approaches. What would a curriculum look like that was girl biased - that took girls interests and concerns as its starting point? The Airedale Project set out to focus an area of curriculum that was failing to attract girls, Electronics, on a traditionally female curriculum area, Caring. It was hoped that this would present electronics to teenage girls as an area of concern and involvement to them.

The Airedale Project was a collaborative project between Oakbank School, Keighley College and Airedale General Hospital. The Project received funding and support from NCET and Bradford Education Authority. The work developed forms a nine week module of electronics curriculum designed for pupils at Key Stage 3 or Key Stage 4. The Project formed part of the trials for QuickTrack design software. Full details of the relationship of the work to the National Curriculum can be found in the Teachers Guide to QuickTrack [2].

The Project used the problem-solving approaches of CDT to look at issues raised by caring for a premature baby. In the pilot school the work was done with an all girl class in Year 9. Pupils were introduced to the topic by watching a 10 minute video that had been made by the Project team at Airedale Hospital. After this they were taken to the hospital and spent some time at the Special Care Baby Unit. The girls were moved and fascinated by the tiny babies struggling for life. The video was used to prepare the pupils for what might otherwise have been a rather overwhelming experience, and to point out to them the role of electronics on the ward.

Over the next eight weeks the pupils worked in pairs to design and build systems that would respond to changes in the baby's condition, and would help the work of the care staff. For example, one group built a circuit that would detect moisture on a baby's mattress and alert the nurse with an alarm light; another circuit switched a cooling fan on if the temperature rose.

After the circuits had been prototyped the hospital technician visited the class to help the pupils evaluate and where necessary redesign their systems. On the whole his comments were not concerned with the technical side of the system; they encouraged the pupils to consider whether the system would really meet the care needs of the baby.

Systems were designed and prototyped using System Alpha boards. Most of the girls involved in the work of the Project had little understanding of the principles of electronics. They were working at design and evaluation on a systems level, using a logic probe to fault find. The development of QuickTrack CAD software meant that pupils could quickly move from prototyping on system boards to PCB design using menu driven design software. They etched the PCBs themselves and soldered and tested the circuits. The Project finished with a display of work to which visitors from the hospital were invited.

This work was piloted in Spring 1990 and it has been repeated in four other schools in Bradford. One of these schools used the same starting point and stimulus material to take a Home Economics group of pupils through a Design Technology project. Another school used the project with microelectronics for all ( M.F.A. ) boards and then using Quick Track to produce PCBs.

By extending the project to other schools it became apparent that a visit to a special care unit was unrealistic. It was therefore essential to re shoot the video, originally only intended as pre-visit stimulus, so that it could be used as a substitute for the visit. The new video now also includes two extra sections the first a series of still shots, taken in the hospital ward with a commentary for use with pupils and the second contains a short description of the PCB design and production process, for teacher use.

The project has had a number of long term effects. It required the team to upgrade the support material to a quality that could be produced for other schools to use. It had a profound influence on the people developing QuickTrack

software and caused them to redesign their graphics. Full details of the Project and a guide for teachers on resource requirements to implement the work, along with the video, have been published.

## References

- 1] Jenny Tizard, Girls and CDT (1988) Bradford LEA
- [2] QuickTrack (1990) National Council for Educational Technology
- [3] The A[1] Jenny Tizard, Girls and CDT (1988) Bradford LEA
- [2] QuickTrack (1990) National Council for Educational Technology
- [3] The Airedale project ( 1991 ) Bradford LEA

The video and teachers guide to the airedale Project are available from :

The Dorset Street Centre, Dorset Street,  
Little Horton, Bradford, West Yorks BD5 0LT  
Tel 0274 502533 at a cost of £18

Cambridge 1990	Mode 1	
C.D.T.	M. 38252	87.0%
	F. 5668	12.9%
Food + Material Technology	M. 903	2.6%
	F. 33608	97.3%
Computer Studies	M. 12765	69.0%
	F. 5718	30.9%
SEG 1989	Mode 1	
C.D.T.	M. 33367	93.6%
	F. 2251	6.3%
Food + Material Technology	M. 13305	65.9%
	F. 6872	34.0%
Computer Studies	M. 2420	12.5%
	F. 16838	87.4%
NEA 1988		
C.D.T.	M. 34362	91%
	F. 3369	8.9%
Home Economics	M. 6484	16%
	F. 33914	83.9%
Computer Studies	M. 15095	66%

	F.	7704	34%
IT	M.	2940	58%
	F.	2102	42%
1988 - 89	DES	Statistics	<u>Feb 1991</u>

Percentage of 16 year old pupils in England attempting G.C.S.E.

	Boys	Girls	Total
Technology (C.D.T.s)	51%	11%	31
Business Studies	11	26	18
Home Economics	7	40	23
Computer Studies	14	7	11

Compiled in this form by David Wadsworth from statistics obtained within

DES Statistics Bulletin Feb 1991

NEA Statistics 1988 exams

SEG Statistics Summer 1989

MEG Statistics Summer 1990