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An assessment of development education resources in technology: their effectiveness and some issues arising

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Abstract

This paper summarises an assessment of development education resources that have been used by teachers of technology. It shows that such resources can significantly enhance students' understanding of technology and their awareness of values issues surrounding the subject. Impressions gained by this study suggest such benefits are dependent on the perspective of the teacher and in many cases where these resources have been used, negative stereotypes of other cultures and technological development within them have been reinforced. This paper suggests reasons for the varied impact of these resources and the implications for publishers and technology education.

The National Curriculum Design and Technology order¹ clearly demonstrates the importance of students developing an holistic view of design and technological activity by statements such as:

"illustrate the economic, moral, social and environmental consequences of design and technological innovations including some from the past and other cultures using specific examples"(AT4/6e).

Among those concerned with technology education policy and practice a wide ranging discussion about the role and influence of values in technology has begun. This discussion has, as yet, not had a significant impact on the practice of technology teachers in schools or on the resources they use.

The development education movement, which predates both the national curriculum and the discussion of values in technology, are, for the moment, the largest providers of teaching material that facilitate a consideration of values in technology. The Development Education Association which includes in its membership most of the major aid agencies and numerous independent centres around the country have defined development education as a process which aims to²:

- enable people to understand the links between their own lives and those of people throughout the world;
- increase understanding of the economic, social, political and environmental forces which shape all our lives;
- develop the skills, attitudes and values which enable people to work together to bring about change and take control of their own lives;
- achieve a more just world in which power and resources are equally shared by all.

This paper considers the use of development education resources by teachers of technology and the impact they are having on students' learning.

A recent, small study by one of the authors³ identified 30 teaching resources that clearly address aspects of the design and technology orders and the aims of development education. Using information from the publishers of these resources and development education centres 81 teachers and teacher trainers were sent questionnaires on the use and effectiveness of these resources. Returns were received from 21 secondary teachers of technology, 13 primary teachers and seven teacher trainers. This information was supplemented by visits to seven schools (two primary, three state secondary and two independent secondary) which were undertaking, or had recently finished, projects using some of the resources. Twelve teachers and approximately 35 students were interviewed during these visits.

Teachers' attitudes

A wide variety of reasons were given by teachers for obtaining the resources. The most common reasons given by secondary teachers was to support multi-cultural projects (38%) and to look at wider issues relating to technology (28%). Virtually all teachers (90%) said that the resources satisfied their requirements. The vast majority of teachers thought the materials provided useful activities that were clear and enjoyable for students as well as engaging them in purposeful learning. Furthermore most teachers felt the resources were well organised and well presented with helpful background information and advice to teachers. Interestingly, all the teacher trainers were critical of both the presentation and the content of many of the resources. Five out of the seven teacher trainers expressed considerable concern that the materials could reinforce negative

stereotypes of the cultures of the Majority World* and technological development within them. This concern has already been expressed by Siraj-Blatchford ⁴:

"Despite some excellent work that has been carried out by dedicated teachers under the 'appropriate' technology umbrella, it needs to be recognised that this perspective is inherently patronising and inadequate on its own in the face of racist ideology"

The impression from this research was that the approaches taken by the teachers interviewed could, broadly speaking, be divided into two. There are those with an awareness of the racial stereotypes that are endemic in our society and communicated to youngsters through the covert and overt racism of media presentation and adult attitudes. These teachers are, therefore, aiming to counter the negative impressions that students might bring to the study of other cultures and build respect for people of other cultures at home and elsewhere. Their attitudes are expressed in the following quotes:

"I try not to put the view across that technology in other cultures is primitive" Primary teacher.

"An important part of the department's policy is to challenge gender and racial stereotypes." Secondary teacher.

"I aim to question the students' assumptions of racial and gender stereotypes throughout my teaching." Secondary teacher.

The second approach is characterised by a strong conviction that students should know about the poverty that exists in the world and, in most cases, the injustice of this situation. This approach is typified by the following comments:

"I always tell students that they have to solve this problem with very limited resources because that's what it is like in the Third World". Secondary teacher.

"I get students to design using basic technology applicable to developing countries" Secondary teacher.

"I try to raise the students awareness of the injustice in the textiles trade" Secondary teacher.

"We look at slum life in India and compare it to our life here." Secondary teacher.

It is revealing to look at some student comments from these schools:

"We studied slums in India" Are there slums in England? "No"

What have you learnt about Bolivia? "That children live on the streets."

Why are you making a fan? "To help Malawian blacksmiths".

For a comparison here are some comments from students of the first group of teachers.

"We have learnt from the designs of Sri Lankan Technologists".

"India is very big and not all the people have the same kind of life".

"Some people use three stone fires which consume lots of wood".

Obviously, this is a tiny sample of students and their comments may not be representative, however, two points are worth making. One group of students were quick to make generalisations while the others were more specific in their remarks. Secondly one group of students made mostly negative remarks while the others seemed to have come away from the project with mostly positive impressions. The teachers' awareness of racial stereotyping and attitude towards other cultures is a critical factor in determining the students' learning. The teachers' underlying attitudes are contrasted by the following quotes:

"We have never needed a multi-ethnic policy as we don't have such issues in our school" Secondary teacher in all white school.

"Intermediate Technology teach them (people of the Majority World) how to solve their own problems", Secondary teacher,

"In nine years of teaching I've never come across a racist student", Secondary teacher,

"It's important that the students are aware of those less fortunate than themselves in the Third World", Secondary teacher.

And:

"It's even more important for racial stereotypes to be addressed in all white schools". Primary teacher.

"Good design and technology practice will always consider the impact on those at the margins of society". Secondary teacher.

"It's fundamental to good education that students learn to respect other cultures" Secondary teacher.

Terminology

Only one teacher of those interviewed understood the difference between "appropriate", "intermediate" and "alternative" technology. In most cases confusion between these terms led to teachers communicating incorrect and misleading ideas to students. This is highlighted by one teacher's comment;

"Intermediate technology is technology of a basic level that is appropriate to developing countries".

In the authors' opinion it is sufficient to talk only about "appropriate" technology. "Alternative" technology is usually used to refer to environmentally sound technology but as this is a fundamental criteria for any "appropriate" technology why make the distinction? More confusing still is the use of the terms "appropriate" and "intermediate" interchangeably and indiscriminately. An "intermediate" technology is one that lies on the range of technologies from "low" to "high". The labels, "high" and "low", are steeped in value judgements where "high" is obviously superior to "low". The popular perception is that the UK is a "high tech." society and that the countries of the Majority World are "low tech." societies. Not surprisingly the introduction of the term "intermediate" technology suggests that these technologies are a step on the way to becoming a "high tech." society. This is a similar argument as that used against the terms "First World" and "Third World" which also reinforce the idea that countries of the Majority World are climbing up some scale to become as "good" as countries in the Minority World. An appropriate technology can be high, low, intermediate or a combination of these and it is appropriate to its context in the Minority World or the Majority World.

Conclusions

In most instances these resources have helped teachers to undertake projects using unfamiliar contexts to the students. As a result most students learn something of the life and culture of people in the Majority World. In the best circumstances students appreciated the common needs and shared experience of communities around the world. They became aware of the technological achievements of other cultures. They grasped the concept of appropriate technology and its importance to communities in the Minority World and the Majority World. Perhaps the most significant contribution that the development education approach can bring

to technology education is the lesson that real technological development only occurs when there is genuine participation by users in the decision making process. The development of a participatory approach in technology education is discussed by Eggleston ⁵:

"Increasingly an education designed to inculcate respect, to put people into a received environment, is gradually giving way to an education in which people are expected to participate in the decision-making processes concerning their environment. In doing so they become active rather than passive participants in a modern society."

Unfortunately, more often the students gain the impression that all people in the Majority World live in poverty, use primitive technology and need the help of UK school children to develop. What can be done to avoid such gross misunderstandings? Teachers are the key agents of change in student learning. This is not to deny the importance or influence of government policy, educational research or curriculum developments but unless teachers are enabled to translate policies into good practice then the policy remains words on a piece of paper. Although the experience of this study suggests that there is considerable need and demand for resources that help teachers address values issues it is imperative that initial teacher training and in-service training equips teachers with the necessary awareness and skills to integrate a sensitive discussion of values within the context of design and technological activity. It, therefore, suggests that a more significant contribution would be made by the development education sector if their efforts were focused on initial teacher training and subsequent professional development rather than student education.

Race, Equality and Science Teaching⁶ is a bold initiative by the Association of Science Education (ASE) which aims "by developing the understanding and skills to address these complex and often sensitive issues with students and colleagues, teachers may feel more confident in working for equality and justice in the classroom...". This work could potentially influence for the better the way many teachers deliver the science curriculum. Such approaches need to be developed for technology teachers. Equality Assurance in Schools ⁷ by the Runnymede Trust provides indicators of good practice which along with the check-lists provided by Wilkinson, Grant and Farrell in Genderwatch! ⁸ form a basis for developing workshop/classroom practice, the curriculum and resources for a technology education that promotes equality and justice.

- Note: The term "Majority World" is used in this paper to refer to those countries where the majority of the world's population live and which have been referred to elsewhere as the "Third World", "Developing Countries" and the "South".

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