

Cross, A. and R. McCormick (Eds.). (1986). *Technology in schools*. Milton Keynes: Open University Press. 352 pp. (ISBN No. 0-7102-0732-8)

Reviewed by Marc de Vries¹

For the development of technology education in many countries - the USA among them - the situation in the United Kingdom serves as an example of a fruitful approach to help students in understanding the nature of technology. Design is an essential part of technology and the United Kingdom pays a great deal of attention to it. Students in both primary and secondary schools learn to solve technological problems in a creative way. The teacher guides the students in their problem-solving activities and also serves as a resource of knowledge and experience. Students often deliver solutions to technological problems that are then considered for patenting by industries. For that reason, a book on technology education in the United Kingdom certainly deserves attention.

Technology in Schools, edited by Anita Cross and Bob McCormick and published by the Open University, is a collection of 36 previously published articles and (parts of) book chapters on various aspects of technology education. Although most articles are concerned with the subject of Craft, Design, and Technology (CDT) - the British version of Technology Education - the content of the book is relevant to similar subjects in other countries. It contains a number of articles on the following topics: "What is technology?," "Technology and human values," "Technology and society," "Technology in education," various "Issues," "Teaching and learning technology," and "Planning the technology curriculum." As can be seen from this abbreviated table of contents, there is great variety in the issues that are dealt with. This makes the publication interesting for people who are concerned with technology education in various ways including researchers, curriculum developers, teachers, and teacher educators.

For the development of technology education, the answer to the question "What is technology?" is essential. Naughton focuses on two ways in which technology can be defined - as a collection of products and as a process. Both aspects are relevant for education. Lewin distinguishes engineering from science. In science, reductionism and mechanism play an important role; in engineering these principles do not fit. Engineering is concerned with solving problems using a process of problem specification, synthesis, analysis, and implementation. Therefore, engineering and technology need a philosophy of their own. The differences between the scientific and design method are explored further in the next chapter by Cross, Naughton and Walker.

The second part of the book is about "Technology and human values." Fores and Rey discuss "Technik: the relevance of a missing concept." The authors feel a need to distinguish between "technology" and "technik," as can be done in a number of other European languages (e.g. Dutch, German, Swedish). These languages use the word "technik" for the practical hands-on activities and the word "technology" for the study of the theoretical background of these practical activities. Using only "technology" in the English language makes it hard to realize that there is both a science-based and more empirical form of "technology," called "technik" in other languages. This latter form of technology is not to be seen as less relevant than the first one. Other kinds of human knowledge and experience can be as valuable to technology as science. Archer makes a plea for distinguishing design as a "third culture" apart from science and the humanities. Weiner shows the position of this "third culture" in the whole of the English culture.

The third section of the book is concerned with the relationship between technology and society. Clarke provides a number of different responses to technological developments by different ideologies that can be found in our societies. For example, to the problem of pollution a "price response" ideology reacts by calling pollution "inevitable and worth the benefit it brings," while a "radical political response" ideology will say that "pollution is a symptom of capitalism." It is important that pupils get an impression of various ideologies in society and the ways in which these ideologies react to technological issues.

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In the fourth part of the book, lines to education are drawn. After a short “Manifesto by the Royal Society of Arts,” Gorb stresses the relevance of technology education for an “education for capability.” McCulloch, Jenkins and Layton suggest that the introduction of a “technological revolution” in schools is not easily accomplished. The articulation of the intrinsic value of design as a part of general education is needed, according to Cross in the next chapter. Down, especially, refers to the “technological society” in which we live as an argument for technology education for all children. Black and Harrison mention “Task-Action-Capability” as a goal for technology education. The next chapters by Dodd, Down, Tipping, Woolnough and Eggleston deal with the various options for introducing technology in the curriculum: as a separate subject, as a cross-curricular activity, and as a part of science. All options have their pros and cons, and the choice will depend on the specific school situation.

A section on “Issues” includes discussions on the role of girls in technology education, technology education for special needs and the relationship between schools and industry. Bruce, Catton and Evans suggest ways to make technology education more attractive to girls—for example, by paying attention to women’s criteria in the design of technological products. Lund does the same for students with special educational needs. Jamieson shows the relevance of a good connection between schools/teachers and industry. Both need each other. Schools need industry to help students understand what technology is about, and industry needs schools to spread a good, balanced image of what goes on there.

In part 6, “Teaching and learning technology,” various activities in specific technology education projects are discussed. As could be expected from a British publication on technology education, problem solving and design are the most prominent activities that are described.

The concluding part, “Planning the curriculum,” deals with strategies for developing technology education in schools. Page elaborates on the various options for introducing technology education in the school curriculum that were mentioned by Dodd. A survey of the Department of Education and Science (DES) in the United Kingdom has shown what strategies have been put into practice. The book ends with an article by Grant who opens with three possible approaches for technology education projects - starting from either skills, knowledge of human values - and then explains that the last-mentioned approach is the girl-friendliest because of its emphasis on the human aspect of technology, in which girls seem to be especially interested.

From the enormous amount of books and articles on technology education that have been published in the United Kingdom, the editors have made a choice. Each choice has its strong and its weak points. In this case, the editors have chosen breadth rather than depth. Many chapters have a length of just a few pages. That means that only some points can be highlighted and no details are discussed. This makes the book interesting as a first introduction to ideas about technology education in the United Kingdom. Such an introduction is more useful to readers in other countries than a more detailed discussion. Therefore, this publication provides information on the situation in one particular country, as well as a rich resource of thoughts on technology education applicable to the reader’s own situation.