Book Reviews


The sixth volume of the UNESCO series on ‘Innovations in science and technology education’ has as its main theme: ‘Scientific and Technological Literacy’ (STL). This is truly a relevant, but certainly not an easy theme to deal with.

Those who are acquainted with the series no doubt will notice a change on the cover of the book. Apart from the fact that, of course, there is a ‘VI’ that was not there before, the name of the editor is not the usual one. The first five volumes have been edited by David Layton, but now we see the name of Edgar W. Jenkins. No doubt David Layton has done an excellent job on making the series as well-known as it has become. In general, the field of technology owes much to this highly respected Leeds professor emeritus. For this sixth volume of the UNESCO series Layton has served as Consultant Editor and I am sure this has been a valuable help for his successor-editor. But the name Jenkins also raises great expectations. Another Leeds professor who has gained a well-established reputation in our field, not least because of his leadership in the International Journal of Technology and Design Education.

The book is published more or less in the context of UNESCO’s Project 2000+ which aims to provide a major impetus for further developments in science and technology education worldwide, and perhaps especially in developing countries. The project is now in its third phase. This phase comprises the establishment of links between the United Nations and other intergovernmental and non-governmental bodies to stimulate the inclusion of scientific and technological literacy – whatever that may be – into education for all.

Now to the contents of the book. There are three Parts. In Part I, consisting of one chapter, Jenkins makes an effort to bring some clarity to the confusion that exists about the terms ‘scientific literacy’ and ‘technological literacy’. This is certainly not an easy task. Literacy is given a very broad meaning that makes it difficult to distinguish from related concepts like awareness, capabilities and attitudes. But Jenkins’ chapter helps us to see where the term literacy has a meaning and value of its own. I totally agree when he states that technological literacy is a term that is even less defined (or ‘less well explored’ in Jenkins’ more patient words) than scientific literacy is. Yet the rationales that Jenkins describes in the beginning of the chapter make it seem worthwhile to keep using the term as an indication of what we see as a useful contribution in every child’s general education. Jenkins would not be Jenkins if he closed the chapter without having made a plea for setting up a research agenda for the issue. Indeed, there still seems to be a need for that.
Part II offers theoretical reflections on the concepts of scientific and technological literacy by nine authors, all of whom cover a different perspective, apart from the last two (Kuku and Keitel), who both deal with the aspect of numeracy. One might wonder why this aspect is worth spending two chapters on rather than one, but the chapters differ substantially in content. Kuku’s chapter offers a helicopter view on the history of mathematics (20,000 years in barely six pages of course do not allow much depth, but a general impression is conveyed). Keitel’s chapter, on the contrary, is analytically very strong (as those who know her previous publications would have expected). The end of her chapter about differences between ‘street and real maths’ and ‘school maths’ relates very nicely to similar discussions in science education and call for a similar analysis in terms of technology.

But now back to the beginning of Part I. Fourez in the first chapter of this part gives a socio-historical view of science and technology, thereby showing that the traditional differentiation between science with its perceived fundamental character and technology as its practical application is not adequate in describing the real situation. Being involved in writing the history of the world-famous Philips Research Laboratories, which served and serve as a scientific laboratory within a technologically oriented company, I can only strongly confirm the naiveity of this differentiation. I am sure most of Philips’ problems would be solved if technology were indeed no more than just ‘applied science’. The checklist of ‘operational’ (maybe one could wish them to be a bit more operational to justify this term) objectives at the end of this chapter are certainly worth considering when working on science and technology curricula. Pomeroy in the next chapter discusses the cultural diversity of the concept of STL. She produces a list of nine agendas for shaping science and technology education each of which has its own approach in dealing with those differences. It is a pity that she made no effort to put some structure or hierarchy on this list, which makes a rather random impression. Nevertheless the variety is interesting to ponder.

The next two chapters are written by authors who are well-known in STS circles. Aikenhead has been given the assignment to compare STS and STL. Differences seem to emerge from the idea that STS is rather ideologically laden and STL is a more neutral term. Personally, I think this limits the use of the term STS too much, as if one would almost have to be socially critical towards technology to be allowed to ally oneself with STS. It is good to see that Aikenhead himself also seems to weaken this differentiation. Mehta then takes over by raising awareness of the need to include STL in informal and non-formal ways of learning in addition to formal ways. Later in the book, in the first chapter of section III, Donghong described how in a country like China such forms of learning science and technology play a crucial role. Mehta herself uses examples from India. The next chapter, too, seems to search for ideas that in particular seem to apply to developing countries, although Ferreyra quite correctly claims that the intermediate perspective (or ‘appropriate’ to use a different