

/COMMENTARY

Disquiet in the Classroom

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It is sobering news, as a scribbler myself, to learn that journalists are at the very bottom of a list of 15 categories, ranked according to the degree of confidence that the public has in what they say. But facts are facts. Figures just released by Market & Opinion Research International (MORI, London, U.K.) tell the story unambiguously. Based on a representative quota sample of 1722 adults interviewed in the U.K. last November, only 10% of the population now believe that journalists will tell the truth. A decade ago, the figure was 19%.

Smug politicians, tempted to see confirmation here of the dastardliness of the media, will find cold comfort instead. Their trustworthiness rating has dropped from 18 to 14% over the same period, while that of government ministers has fallen from 16 to 11%. Even priests, riding high on 85% in 1993, are now trusted by only 80% of Britishers. The figure for judges has gone down from 77 to 68%.

Some of the best news, on the other hand, is for physicians, business leaders, and school teachers. Apparently belying the fashionable move away from conventional medicine in favor of mumbo-jumbo alternatives, Britishers voted physicians at the very top of the poll, their percentage of trust having risen from 82% a decade ago to 84% today. Business people, though much lower down the order, have grabbed an extra 7% of support, putting them at 32%—a reflection, perhaps, of the paramount importance given to market forces in the U.K. over recent years. Most striking of all is the position of school teachers. Despite lowly salaries and rueful complaints about their loss of social standing, they have added 5% of support and now stand alongside physicians in top position.

All of this has potent significance for biotechnology and the creation of public knowledge and attitudes regarding developments in fields such as genetic manipulation. Time and time again, when the widespread lack of scientific literacy is bewailed and the unreasonable influence of demagogues and doomsters is denounced, conversation extrapolates backwards toward the classroom. If only science teaching were more effective, they say, irrational opposition would never have an opportunity to arise in the first place.

Though there is more to be said than this, the point has substance. It is now given extra weight by the revelation that school teachers enjoy far higher regard in the population at large than might be expected, even though they no longer enjoy the considerable respect of decades past. While MORI data apply only to the U.K., anecdotal evidence suggests that the same conclusion could fairly be drawn for many other countries, too.

So what *do* young people learn and think about gene technology in the classroom? A clear, and in some

respects, disquieting answer—again for the U.K.—comes from the results of a study published last month in the *Journal of Biological Education* (27:267, 1994). The findings are reported by Roger Lock, a senior lecturer at the University of Birmingham, and Colin Miles, who works for the director general's "think tank" at the Agricultural and Food Research Council (Swindon, U.K.).

The subjects of their research were 188 pupils (112 males and 76 females), age 14-16 years, of mixed ability, and from six different schools. During science/biology lessons, the students were asked to complete questionnaires examining their knowledge of, and attitude toward, biotechnology and genetic engineering. The investigation was timely, given that all pupils now have to study science up to age 16, and that a new U.K. national curriculum embraces not only scientific ideas relevant to biotechnology but also social and ethical issues.

Lock and Miles found, nevertheless, that about a third of their sample (more males than females) did not even know the meaning of biotechnology, while about a fifth of those who claimed to understand actually gave "a simplistic explanation in terms of technology and biology combined." Almost one half of the sample could not offer a single example of biotechnology; less than 10% provided modern examples, while again more females than males had specific answers. A third of the students said they did not know what genetic engineering meant, and 47% could not cite concrete examples.

Questions about attitudes revealed a range of positions similar to those that emerged from the first "Eurobarometer" survey conducted throughout the European Union, as discussed in last month's Commentary. In general, the pupils approved of the genetic manipulation of microorganisms and plants, but not that of animals. Only 3% were against the genetic engineering of microbes, as compared to the 73% opposed to its application in sheep. The females were particularly hostile toward work with farm animals. Attitudes were strongly influenced by terminology. Statements about changing or altering genes, for example, provoked greater dissent than those about biotechnology and selective breeding.

As we are talking here about 14-16 year olds, the yawning gaps in their knowledge base are not wholly unexpected. Nevertheless, the survey provides a pointed reminder that such a weakness does not prevent people from entertaining powerful beliefs. Since biotechnology provides excellent opportunities for teaching the social, cultural, and ethical implications of science, Lock and Miles point out, the lesson is clear. Not only the biotechnology community but society as a whole would be the beneficiary if gene technology and its organic links were to be more thoroughly and more skillfully explored in the classroom. ///