

# Bioethics education for informed citizens across cultures

*Darryl Macer*

---

A project developing international online and printed resources for bioethics and a teachers' network invites others to join in and help achieve their goals

---

Citizens of all ages need to make ethical decisions on how they use science and technology and its products. Surveys show global agreement on the need to teach more about ethical and social issues associated with science and technology (Macer, 1994). UNESCO (1997), in the *Universal declaration on the protection of the human genome and human rights*, declared such an educational need. In particular, there is a global need for open-access bioethics teaching material giving a balanced viewpoint. That is the reason for this collaboration.

This project first aimed to produce teaching materials for bioethics education in different countries. Efforts were also made to develop evaluation methods

## ABSTRACT

The project 'Bioethics education for informed citizens across cultures' has produced free on-line and printed teaching materials for bioethics education in different countries, in response to a global need for such materials. The main products are: materials for teaching bioethics; a textbook that could be used in school and university classes to teach about bioethical issues; and a network of teachers in different countries. Since early 2003 a group of authors and teachers has produced, revised and tested an international textbook in China, India, Japan, the Philippines and Taiwan. The project is being tested in other countries in 2004 to develop the teaching materials. Others are invited to join this cooperative network to share teaching ideas and conduct class trials of materials to teach students to cope with environmental and medical ethics issues across a range of disciplines.

for the materials, based on earlier research that received positive feedback from students (Van Rooy and Pollard, 2002). The project also aims to assess possible criteria for measuring the success of bioethics education, and the effectiveness of different forms of education for empowering mature citizens. After one year we can report the main products are:

- Materials for teaching bioethics;
- A textbook (Macer, 2004a) that can be used in school and university classes to teach about bioethical issues;
- A network of teachers in different countries. The list of countries is rapidly expanding but this article considers the results from the first year of trials (China, India, Japan, the Philippines and Taiwan).

## The textbook and teaching materials

The teaching materials include a variety of topics so that teachers can select those with which they feel most comfortable, and which they judge to be most useful for their students. For each topic module, informative text and illustrations are interspersed with discussion questions to guide the thinking processes.

In the light of the initial trials, in the second year topics are being improved and expanded to increase the range of ideas that the students can learn and discuss. The first aspect to be assessed will be bioethical maturity, which includes understanding a diversity of ideas and how to balance the benefits and

risks of science and technology. Another measure will be the use of reasoned approaches in making decisions, combining scientific data with ethical concepts. The topics are being enriched through the addition of contemporary local news items to assist more in-depth student discussion in different countries.

### Implementation in high schools and universities

This project has included trials at high schools and universities and the materials can be adapted for use at both levels. In some of our school trials we found that school education also stimulates public education as many students said they discuss bioethical topics with their families, especially if they are engaged on projects.

Lack of some background knowledge of bio-science may be a big barrier to in-depth analysis and discussion of some ethical issues; for example, of the structure of brain when we discuss brain death. Therefore, it is often necessary for students to learn related content knowledge before they can discuss the ethical issues. Since bioethics is still a new field for many secondary school students, additional audio or video materials, pictures and stories may enhance the learning experiences. This sort of back-up material proved valuable in the trials in China. Student role-play in the classroom also proved to be a good method of teaching about brain death and organ transplants in all countries. It helped students to feel more involved with, and to relate to, the dilemma of brain death.

### Teachers' network

In Japan a coordinated bioethics education network of 100 high school teachers has been formed and research has been carried out into the effectiveness of different styles of teaching since 1996 (Asada and Macer, 1998). At the February 2004 meeting of this project in Tsukuba, Japan, an International Bioethics Education Network was created. A *Yahoo* listserve has also been used to develop communication. A student listserve to generate cross-cultural dialogue is also underway, developing a critical mass of enthusiasm and experience (see end for addresses).

Teachers have a major role to play in introducing knowledge of ethics, and the teaching outcomes

depend very much on the quality and interest of teachers. Teachers need to receive regular continuing professional development for a higher standard of teaching to be achieved (Su, 2004). Teacher training seminars and workshops are necessary for many teachers to develop confidence to teach students about bioethical topics. Over 50 educators from 20 countries met in February 2004 to share their experiences of teaching and teacher development in bioethics. These deliberations are available on-line and in a book (Macer, 2004b).

### Examples of class trials

The success of the programme depends on the ability of local teachers to make materials that are relevant to their student needs. The topic preferences vary between students in different countries.

#### China

In the trials in the middle school attached to Beijing Normal University, all the biology teachers who spoke English taught the course, splitting up the topics and assigning different subjects to each teacher. Then each teacher prepared extensive background videos and DVD materials, as well as the English notes. A total of 23 lessons was given to an elective class of 32 students, aged 16–17, in the first trial. Each lesson lasted 80 minutes. The general language of discussion was Mandarin Chinese although English was also used at times by students in presentations and by teachers. The animal rights topic was extended by giving examples of the use of animals in the production of traditional Chinese medicines, a case study that is interesting not only to Chinese students but internationally. The students were not graded, but wrote reports in English and/or Chinese about the materials, while written feedback about the activities was given by the teachers. Discussion was a very important part of the lessons and this aspect was welcomed by the students. It included approaches such as asking students to explain why their choice was the best one for them, and encouraging them to think about their personal values involved in making such decisions (Su, 2004).

#### Philippines

At the Ateneo de Manila High School, Quezon City, Philippines, 48 lessons on ten topics were handled by four biology teachers with the advanced and regular biology classes, made up of 464 second-year (13–15

year-old) male students. The choice of topics for the trials was chosen for relevance to the current biology curriculum of the school. The topics were well received by the students, and the teachers welcomed the useful supplemental material for their lesson plans. With the participation of the school in the Bioethics Education Project in July 2003, entire biology classes were eventually devoted to bioethics concerns using appropriate bioethics modules from the textbook. From April 2004 the textbook was adopted as a text for all biology students at the school. The Ateneo de Manila High School is a Filipino, Catholic, Jesuit, college preparatory school. As a Filipino school, it seeks:

*to prepare its students not only to live as responsible and productive members of Filipino society, but also to make a critical difference in the ideas that can direct the growth of Filipino life.*

Students were assessed on how well they justified and explained their views and how well they integrated ethical principles into their positions.

### Japan

In Japanese schools isolated trials in small and large classroom formats were conducted, with active discussion of the issues that were selected. Surrogacy was a popular topic as there was intense media interest in 2003 following the pregnancy of a Californian surrogate mother for a popular Japanese female television personality.

### India

In India the interest has been principally from Christian schools, but earlier research suggests it will be welcomed across all types of schools when personal contacts are secured (Pandian and Macer, 1998). In India the preferences of rural and urban school students were different.

## Evaluation criteria and goals

One of the most difficult questions in bioethics education is how to evaluate the usefulness of the materials provided. One concept that has been used by Macer is whether students demonstrate 'bioethical maturity' in some way. Bioethical maturity assumes a certain ability to weigh up the different arguments that can be used to discuss an issue, to recognise the

different ethical frameworks that can be used and to compare the benefits and risks of the dilemmas.

There is no consensus in the academic literature or teaching community on the best criteria to measure the success of bioethics education. Those involved with the project believe that an important goal of teaching about bioethical issues is to get students to evaluate the issues critically (Conner, 2003). In the Mexican case, bioethics classes are used as a way to improve the general behaviour of students and their aptitude for study.

Those involved agree that we can measure the success of implementing bioethics activities in several ways. For example, some of the goals for bioethics education have been identified from discussions with teachers. These include:

- increasing respect for life;
- balancing benefits and risks of science and technology;
- understanding better the diversity of views of different people.

Each school is likely to put a different emphasis on each goal. Different activities are likely to enable some goals to be met and not others. Therefore we do not need to assess all three goals when evaluating the success of the programme. Case studies of how students and teachers responded will be sought to give a wider descriptive account of various approaches.

## The future

Assessing the impact of moral decisions involves the ability to identify existing ideas and beliefs, listen to others, be aware of multiple perspectives, find out relevant information and communicate the findings to others. Students need to experience situations that will allow them to develop these skills through interacting with the teacher and each other. This project allows sharing of topics and experience over a range of cultures as well.

The materials are designed to augment existing curriculum delivery. In a number of countries, the curriculum documents state the general goals of educating students to address the ethical and social issues relating to the use of science and technology, but the practical measures needed to implement these ideals are lacking. We welcome all to join this project.

## Acknowledgments

The Sasakawa Peace Foundation gave essential financial support to Eubios Ethics Institute. I thank many colleagues including Baoqi Su, MaryAnn Chen Ng, Fumi Maekawa, Dena Hsin-Chen Hsin, Ester Abito, Beryl Jin Hwa Lee, Irina Pollard, Lindsey N. Conner, Jing Zhuo, Li Kuang, Jinhua Fu, Lei Li, Alireza Bagheri, Morgan Pollard, Rick Weisburd, Margaret Sleetbom, Minakshi Bhardwaj, Jayapaul Azariah, Martha Marcela Rodriguez Alanis, Mihaela Serbulea, Rok Lampe and Nobuko Macer.

## References

- Asada, Y. and Macer, D. R. J. (1998) High school bioethics education network in Japan. In *Bioethics in Asia*, ed. Fujiki, N. and Macer, D. R. J. pp. 152–166. Japan: Eubios Ethics Institute.
- Conner, L. (2003) The importance of developing critical thinking in issues education. *New Zealand Biotechnology Association Journal*, **56**, 58–71.
- Macer, D. R. J. (1994) *Bioethics for the people by the people*. Christchurch: Eubios Ethics Institute.
- Macer, D. R. J. ed. (2004a) *Bioethics for informed citizens across cultures*. Japan: Eubios Ethics Institute. <<http://www.biol.tsukuba.ac.jp/~macer/betbk.htm>>
- Macer, D. R. J. ed. (2004b) *Challenges for bioethics in Asia*. Japan: Eubios Ethics Institute. <<http://www.biol.tsukuba.ac.jp/~macer/abc5edd.htm>>
- Pandian, C. and Macer, D. R. J. (1998) An investigation in Tamil Nadu with comparisons to Australia, Japan and New Zealand. In *Bioethics in India*, ed. Azariah, J., Azariah, H. and Macer, D. R. J. pp. 390–400. Japan: Eubios Ethics Institute.
- Su, B. (2004) Bringing ethics to life: teaching bioethics at both the high school and college levels in China. In *Challenges for bioethics in Asia*, ed. Macer, D. R. J. Japan: Eubios Ethics Institute.
- UNESCO (1997) *Universal declaration on the protection of the human genome and human rights*.
- Van Rooy, W. and Pollard, I. (2002) Teaching and learning about bioscience ethics with undergraduates. *Education and Health*, **15**(3), 381–385.

## Web addresses

- Bioethics education project website: <<http://www.biol.tsukuba.ac.jp/~macer/betext.htm>>
- International Bioethics Education Network listserv: <<http://groups.yahoo.com/group/Bioethicseducation/>>
- Student listserv for cross-cultural dialogue: [Bioethics\\_for\\_students@yahoogroups.com](mailto:Bioethics_for_students@yahoogroups.com)

---

**Darryl Macer** is associate professor in the doctoral program in life and environmental sciences, University of Tsukuba, affiliated professor in bioethics at United Nations University, and Director, Eubios Ethics Institute, PO Box 125, Tsukuba Science City, Japan.  
E-mail: [macer@biol.tsukuba.ac.jp](mailto:macer@biol.tsukuba.ac.jp)

---

Promotion of public education and scientific risk communication is significant for the peaceful progression of biotechnology. Where numerous action groups raise and refer to ethical issues, public policy could benefit from the establishment of more efficient networks with associations interested in aspects of biotechnology. Macer, Darryl. Bioethics Education for Informed Citizens across Cultures. *School Science Review*, 86. 2004:315. The Department of Bioethics is pleased to offer a limited number of two-year post-doctoral and post-baccalaureate fellowships. Fellows participate in the activities and the intellectual life of our interdisciplinary department and study ethical issues related to biomedical research, clinical practice, genetics, biotechnology, public health, and health policy. They conduct mentored theoretical and empirical research on a range of bioethical fields of interest. For a typical fellow, this research yields multiple first-authored publications in premier academic journals. In addition to research the project 'Bioethics education for informed citizens across cultures' has produced free on-line and printed teaching materials for bioethics education in different countries, in response to a global need for such materials. The main products are: materials for teaching bioethics; a textbook that could be used in school and university classes to teach about bioethical issues; and a network of. The project is being tested in other countries in 2004 to develop the teaching materials. Others are invited to join this cooperative network to share teaching ideas and conduct class trials of materials to teach students to cope with environmental and medical ethics issues across a range of disciplines. Ethics. View.