

## A study on the knowledge of bioethics among prospective biology teachers

- Miftachul Hudha

State University of Malang, East Java, Indonesia &  
University of Muhammadiyah Malang Jalan Raya

Tlogomas, East Java, Indonesia

Email: atok1964@gmail.com

- Mohamad Amin

State University of Malang, East Java, Indonesia

- Sutiman Bambang Sumitro

Brawijaya University, East Java, Indonesia

- Sa'dun Akbar

State University of Malang, East Java, Indonesia

### Abstract

This research was conducted to examine the knowledge of bioethics among students of teaching biology, the sources of their knowledge about bioethics and their response to various problems as examples of bioethics study. This research is important because bioethics is becoming an important part of the curriculum developed for students of teaching biology. Through survey research results, 75% of responding students of biology knew bioethics in vocabulary but did not have a deep understanding of it, and 25% of respondents did not know bioethics either in vocabulary or its understanding. From all respondents, 79.68% stated that bioethics was very important to be integrated in the biology course that already exists in the curriculum and 20.32% stated that bioethics was important to be given and become the main subject in the curriculum. Moreover, 75% of respondents who knew bioethics in the context of vocabulary but did not have a deep understanding of bioethics had learned about it from various sources, namely: articles 21% of respondents, books 4% of respondents, internet 48% of respondents, senior students 16, 33% of respondents, teachers and lecturers 10% of respondents. Furthermore, most respondents agreed and strongly agreed on various problems presented as relevant to bioethics case studies, namely: (1) environmental damage caused by pollution; 2) the low moral and ethical aspects of life; 3) exploitation of animal life on land and sea.

### Introduction

Bioethics is as an observation of the moral dimensions of decision in relation to health and in contexts involving biological knowledge and biological issues (Shannon, 1987). It is a new discipline that bridges between fact and value (Apressyan et al. 2008), that combines biological investigation, scientific technology and ethical

issues as well as a biology and humanistic knowledge (Burnham and Mitchell 1992), and studies ethical issues and decision-making related to the use of organisms (Macer, 2008). Bioethics learning has not been part of the curriculum in the form of main subjects or materials that are integrated or collaborated with the existing subjects in the field of biology.

The importance of bioethics for students of teaching biology is that the students are required to have the thinking and learning skills, as called by Moylan (2008) as 7-Cs, namely: 1) Critical thinking and problem solving; 2) Creativity and innovation; 3) Collaboration, teamwork, and leadership; 4) Cross-cultural understanding; 5) Communication and information fluency; 6) Computing and Information & Communication Technology; 7) Career and learning self-reliance. Maftuh (2016) states, human resources in the 21<sup>st</sup> century must behave ethically.

The competence of ethical behavior is formed through the learning of bioethics, so the purpose of bioethics learning becomes important for prospective teachers. In order to be able to implement the learning of bioethics, it must be collaborated with various sources of other disciplines, even with experts from other scientific disciplines. Helland (2002) says that the development of bioethics requires cooperative effort from philosophers, doctors, scientists, lawyers, theologians, sociologists and politicians, since there is no one field that can be more precise to study bioethics because it is interdisciplinary.

Attempts to establish ethical competence through bioethics learning in biology students are important efforts, so it must be started by knowing the students' initial knowledge of bioethics, the expectations of bioethics, as well as the ethical decisions related to the ethical dilemma of life's problems. However, *first*, bioethics has not been developed as a subject for biology teacher candidates or in collaborative or integrated studies with other subjects. *Secondly*, bioethics can be expected to help solve ethical problems of life involving moral and ethics, so that ethical problem of life related issues of life ethics can be a focus. *Third*, teaching bioethics to biology students increases the hope that in the future students will gain knowledge about bioethics from their biology teachers.

Moreover, studying bioethics must be serious; Green and Wishart (2008) firmly state that understanding bioethics is not easy, so students must take part to understand bioethics by deep thinking process. Through thinking deeply biology teachers can improve thinking skills and learning skills, so that bioethics as an interdisciplinary study

can be mastered well by students. Macer (1999) asserts that bioethics is love of life.

The priority of bioethics learning is to cope with the development of science and technology and the emergence of various ethical dilemmas on science products and human actions and behaviors that impact on life. As Mustami (2009) asserts, the world of education is currently facing a challenge by rapid technological development, full of uncertainty and dilemmas. Tsekos and Matthopoulos (2014) state that uncertainty is a characteristic of the environment, and biological phenomena raise matters of social life. According to Ranjan (2000) education teaches respect to nature and environment, society and social values. Therefore, a study on students who are prospective biology teachers regarding bioethics knowledge and bioethics problems is important for the development of bioethics learning so that in the end of a process occurs which is called by Takahashi (2016) as happiness in bioethics.

## Method

This study was conducted on respondents who were prospective biology teachers who had taken the courses of zoology and ecology. The study was designed with a qualitative descriptive approach with observation, questionnaires and in-depth interviews to collect data on bioethics knowledge, the source of bioethics knowledge, decisions on problems related to bioethics and perceived impact to ethical dilemma on respondents. The data that had been obtained were processed with frequency distribution in percentage form.

The responses of respondents are stated based on scores in four categories: strongly agree (4), agree (3), disagree (2), and disagree (1). Class categories with intervals of 0.75 are used as follows: Strongly Disagree (1.0-1.75), Disagree (1.75-2.5), Agree (2.5-3.25), and Strongly Agree (3.25-4.00). This research was conducted on students who have not received bioethics learning in campus, and the expectation of this research is to produce data to recommend bioethics as an important study included in the curriculum of prospective Biology teacher.

## Results

### a. Knowledge and resources of bioethics

Based on data conducted on 123 students, the knowledge of students of teaching biology is low; 75% of respondents have knowledge of bioethics in the context of knowing the word bioethics and have not known yet the meaning of bioethics and 25% of respondents are not familiar with bioethics, both as a word and a term or a definition, so bioethics is known as a new designation. The information used by 75% of respondents in knowing the word

bioethics comes from various sources, 48.33% from the internet, 20.67% from articles, 16.33% from senior students, 10.30% from teachers and lecturers, and 4.37% from reference books. Similarly, the response of respondents to bioethics, 78.50% of respondents stated that bioethics is very important to be given to student prospective Biology teacher although it must be integrated in Biology subject which already exist and 21.50% of respondents said bioethics is very important and is expected to be the main subject for prospective Biology teacher.

### b. Respondents' response to ethical dilemmas

Various life problems that cause ethical dilemmas were presented to the respondents through questionnaires. There were three basic problems: 1) Problems related to the environment, 2) Problems of moral and ethical awareness, and 3) Problems in animal welfare. Most respondents agreed and strongly agreed that the problems had an impact as ethical dilemma and were worthy of study in bioethics learning, as seen in table 1.

**Table 1:** The response of students (prospective biology teachers) in the assessment of the bioethical problems in life.

Bioethics Problems	Mean	Category
A. Environmental Damage:		
Land Pollution	3.39	Strong agree
Water Pollution	3.40	Strong agree
Air Pollution	3.25	Strong agree
Sound Pollution	2.20	Agree
Beach Damage	2.75	Agree
Coral Reefs Damage	2.75	Agree
Deforestation	3.01	Agree
Beef Damage	3.35	Strong agree
Exploiting Natural Resources of Mining	3.55	Strong agree
Exploiting Natural Resources of Sea	3.35	Strong agree
Having low awareness of environmental conservation	3.55	Strong agree
B. Having Low Morale and Ethical Life Sustainability:	3.67	Strong agree
C. Animal Treatments:		
Fishing at sea with bombing	3.40	Strong agree
Fishing at sea with poison	3.39	Strong agree
Exploiting sharks' fin and throwing sharks back without fins in the sea	3.55	Strong agree
Exploiting manta ray gills with sadistic hunting	3.55	Strong agree
Serving frog soup a live	3.55	Strong agree

The desire of students to have bioethics in the existing curriculum as a main subject is evidence of the emergence of awareness of the importance of bioethics. Making bioethics a part of an existing curriculum will support reform in teaching, because according to Yali (1997) the reforms are better than the old ones. Learning bioethics will certainly encourage students to become humanists and have a good personality. Humanists according to Pelligro in Nalini (2013) includes two components namely cognitive and affective, as according to Haryadi and Aripin (2015) cognitive and affective component can be trained in learners.

Haryadi and Aripin (2015) also mention that the cognitive component is closely related to the mind, memory, reason, intellectual, numeracy, logic, exact science and academic. The affective component is closely related to the psychic, which includes attitudes (enjoyment, respect), rewards (reward, punishment), values (moral, social), and emotion (happy, sad).

Students get information about bioethics enormously from the internet; the internet is the most dominant source of information for students. However, information about the bioethics from teachers and lecturers has very low percentage, so it can be interpreted that teachers and lecturers have not been effective in discussing bioethics on teaching-learning activity. According to Arends (2007), the role of teachers is to help students acquire new knowledge. The absence of bioethics courses and bioethics studies that are integrated in the course can be interpreted as many lecturers never mention the issue of bioethics. It is supportive to recommend the importance of bioethics in the curriculum for students.

Although students are not familiar with bioethics yet, their response to the exposure to various life problems with ethical dilemmas were positive. Most of the students strongly agree that the problems related to environmental aspects, moral and ethical awareness and animal welfare aspects (in zoological studies) deserve to be an important study in bioethics. Moreover, a small proportion agrees that pollution, coastal damage, coral reef destruction and deforestation are related to bioethics.

The respondents strongly agree that the cause of environmental problems is the low morale and ethics of survival; according to respondents, any human action is inseparable from morals and ethics, so that environmental problems occur because morality and ethics have a great role in decision making. If the decision is good, then people will not exploit and destroy the environment for personal gain or group. Moral norms as stated by Magnis (1989) are the benchmarks used by society to measure one's goodness. As an example, the

environment Climate Action Network (CAN) (2007) states that about 8 million to 16 million hectares of tropical forests were damaged annually between the 1980s and 1990s. This destruction released 0.8 billion to 2.4 billion tons of carbon into the atmosphere and 20% of global warming is caused by deforestation.

Based on various bioethics problems presented, all students stated strongly agree that the low morale and ethics of life sustainability is a serious bioethics problem, as shown by a mean of 3.67 of the class categories achieved from all items of bioethical problems. These data indicate that the concerns of students on moral and ethical issues are very high. Macer (1999) asserts that bioethics is love of life.

## Conclusions

The result of this research is that the knowledge of biology teacher candidates is still low because there is no subject matter in the curriculum. It can be stated that the interest of students is very high in bioethics. The expectations shown by students is to make bioethics a part of the learning curriculum even though it must be integrated in the existing biology subject or become a major subject to be followed up. This study can recommend an analysis of the need for the importance of bioethics for student of teaching biology.

## Acknowledgement

I thank Dr. Eko Budi Minarno, M.Pd who gave me the Bioethics book he wrote, so I have a bioethics reference that is very exciting in studying bioethics.

## References

- Arends, Richard I. (2007). *Learning to Teach, Belajar Untuk Belajar*. Translator Helly Prajitno S dan Sri Mulyantini S. 2008. Yogyakarta: PustakaPelajar
- Apressyan, Ruben. at al. (2008). *Bioethics Core Curriculum*. UNESCO.
- Burnham, Michael and Mitchell, Rod. (1992). *Bioethics an Introduction*. (Online). [http://www.accessexcellence.org/AE/AEPC/WWC/1992/bioethics\\_intro.php](http://www.accessexcellence.org/AE/AEPC/WWC/1992/bioethics_intro.php), accessed April 6, 2015.
- Boyd, Ann. (2016). Framing Assumptions in Teaching Ethics Using Case Studies. *Eubios Journal of Asian and International Bioethics* Vol. 16 (4): 140-144.
- Climate Action Network. (2007). Reducing Emissions from Deforestation and Degradation (REDD). Bahasa Indonesia. [http://www.climatenetwork.org/sites/default/files/Language\\_Indonesia\\_laid-out\\_version\\_-CAN\\_REDD\\_Discussion\\_Paper.pdf](http://www.climatenetwork.org/sites/default/files/Language_Indonesia_laid-out_version_-CAN_REDD_Discussion_Paper.pdf) accessed, June 7, 2015
- Conner, Lindsey. (2008). The importance of Knowledge Development in Bioethics Education. In. Daniel Calderbank and Darryl R.J. Macer (eds) *Asia-Pacific Perspectives on Bioethics Education*, UNESCO: Asia and Pacific Regional Bureau for Education.

- Green, David and Wishart, Jocelyn. (2008). *Cross Curricular Units for Cultivating Students' Learning Skills Through 'Bioethics Project'*. World Conference on Educational Media and Technology.
- Helland, Dag E. (2002). What is Bioethics? Nordic Committee on Bioethics, *Teaching Bioethics* (p.11-23). Reprint From Seminar, November 2001.
- Hariyadi, Toto Aripin. (2015). Melatih Kecerdasan Kognitif, Afektif, dan Psikomotorik Anak Sekolah Dasar Melalui Perancangan Game Simulasi "Warungku". *Jurnal Desain Komunikasi Visual & Multimedia*. Vol.01 No.02 Tahun.
- Leavitt, Frank J., (1997). The Bioethicist of the Future: Commentary on Pollard and Gilbert, and Melanie Rock. *Eubios Journal of Asian and International Bioethics*. Vol. 7 (5): 133-134.
- Lee, Chu Keong, Foo, Schubert, and Goh, Dion. (2006). On the Concept and Types of Knowledge. *Journal of Information & Knowledge Management* Vol. 5 NO. 2: 151-163.
- Magnis, Franz. Suseno. (1989). *Etika Dasar, Masalah-masalah pokok Filsafat Moral*. Yogyakarta: Kanisius
- Macer, Darryl. (1999). Bioethics and Global Love. *Eubios Journal of Asian and International Bioethics*. Vol. 9 (2): 34-35.
- Moylan, William Alexander. (2008). Learning by Project: Developing Essential 21 st Century Skills Using Student Team Projects. *International Journal of Learning*. Vol. 15, Number 9.
- Nalini, Annaswamy. (2013). Humanism in medicine as the main premise for rethinking medical ethics education. *Eubios Journal of Asian and International Bioethics*. Vol. 23 (1): 30-31.
- Ranjan, Raghvesh. (2000). Education and Bioethics (Mystical Bioethics Network. *Eubios Journal of Asian and International Bioethics*. Vol. 10 (6): 186-187.
- Shannon, Thomas A. (1987). *Pengantar Bioetika*. Translation Bertens, K. 1995. Jakarta. PT. Gramedia Pustaka Utama.
- Selvanagayam, M and Xavier, Francis P. (2000). Importance of Bioethics in Science Education. *Eubios Journal of Asian and International Bioethics*. Vol. 10 No. 2: 48-51.
- Tsekos, Christos A. and Matthopoulos, Demetrios P. (2014). Environmental Ethics, Bioethics and Education. *American Journal of Life Sciences*. Vol. 2, No. 1, 2014, pp. 1-4.
- Takahashi, Takao. (2016). Happiness in Bioethics. *Eubios Journal of Asian and International Bioethics*. Vol. 26 (6) (November 2016): 214-216.
- Yamada, Kohji. (1996). Bioethics as study for daily life. *Eubios Journal of Asian and International Bioethics* 6, 165.
- Yali, Cong. (1997). The Teaching of Medical Ethics in Beijing Medical University. *Eubios Journal of Asian and International Bioethics*. Vol.7 (3): 71.

## Bioethical issues in dental practice and prevention: Is dentistry paternalistic?

- Nusrat Fatema Chowdhury

Dhaka, Bangladesh; Ph.D. Student, American University of Sovereign Nations

Email: [dr.nusratchow@gmail.com](mailto:dr.nusratchow@gmail.com)

### Abstract

Paternalism is not acceptable in dentistry today because it eliminates the patients' right to choose the treatment they feel is right for them, even if their choice is not what the doctor feels is best. Paternalism violates the patient's autonomy and self-determination. Dentists accept the ethical principle of non-maleficence and in many countries, are also recognizing the right to informed consent. Most people trust health professionals who serve them. Dentists are among the trusted professionals, and the paper will investigate the attitudes to dentists in several different countries as examples. When patients request inappropriate dental treatment, the dentist must decide how to balance a concern with patients' wellbeing with respect for their choices. It is important for a dentist to keep this in mind and to reflect of its implications, especially when dental practice seems to be changing so much under the influence of the malpractice crises, the changing economic scene, the changing regulatory environment, and so on. A dentist must consider the patient's values and personal preferences, and must involve the patient in the decision-making process. It is the dentist's responsibility to determine the decision-making capacity of each patient with the help of appropriate surrogates. For example, patients may be given choices about which type of tooth repair they will choose, given that there are often choices between what an insurance will cover and what an insurance will not cover. Are dental implants only for the rich, and dentures for the poor? Is there a class divide between a silver, gold or white smile? Ethics affect virtually every decision made in a dental office, encompassing activities of both judging and choosing, relationship with patients, the public, office staff, and other professionals. This paper gives an overview of bioethical issues in dental practice and explains the fact that dental ethics cannot support paternalism even in prevention.

### Introduction

Medical paternalism is a set of attitudes and practices in medicine in which a healthcare professional determines that a patient's wishes or choices may not be honored. These practices were