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Husamah, University of Muhammadiyah Malang, Indonesia. (e-mail: husamahumm@gmail.com)

Yuni Pantiwati, University of Muhammadiyah Malang, Indonesia. (e-mail: yuni_pantiwati@yahoo.co.id.)

Atok Miftachul Hudha, University of Muhammadiyah Malang, Indonesia. (e-mail: atok_emha@yahoo.com)

OIDDE Learning Model through Integrated Field Studies Abroad to Develop Ethical Decision Skills of Candidate Biology Teachers: Indonesian Perspective

HUSAMAH, YUNI PANTIWATI and ATOK MIFTACHUL HUDHA

Abstract

This study aimed to describe the ethical problems, valuable experience, and ethical decision-making abilities about the environment by students through the application of OIDDE models on integrated field studies abroad. Descriptive data analysis techniques were used on existing data. Environmental ethical problems that arose are the use and exploitation of natural resources, pollution, lack of public facilities' cleanliness, poaching, and environment arrangement problems. Valuable experiences gained by students were: 1) Malaysia Highway Rest Area: plants flourish and the birdlife is undisturbed; 2) Malacca River: transformed into a clean and beautiful area; 3) Putrajaya: concerns raised about environmental balance and sustainability; 4) Sentosa Island: various modern amusement rides prepared for enjoyment in line with environmental principles. Ethical decisions taken were: 1) environmental functions and sustainability should be referenced in development; 2) amusement rides developed in line with environmental consideration; 3) pattern of consumption and human activities to avoid resultant pollutants as much as possible; 4) use of environmentally friendly facilities should become a lifestyle choice; and 5) consistently implement environment regulations.

Keywords: bioethics, ethical decision, environment, Malaysia, OIDDE model.



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Introduction

The Department of Biology Education has the primary task of organizing quality education to produce prospective Biology teachers who will be the professionals of the future (Husamah, 2015a). The task is demanding and therefore the learning process applied must be appropriate. According to Muhibbuddin (2011), learning to equip prospective teachers must be relevant, including; 1) effective learning, with students required to actively explore and process information, 2) helping raise and develop thinking skills according to the material being studied, and (3) learning strategies should aim to build awareness of the difficulties of conception, practice skills, cultivate an attitude of curiosity, and build motivation to learn.

There is a significant responsibility imposed on the path of college education, including Biology Education (Aktas, Kurt, Aksu, & Ekici, 2013). The Department of Biology Education, Faculty of Teacher Training and Education, at the University of Muhammadiyah Malang (FTTE-UMM) has a study program where graduates will become candidate biology teachers in secondary education (Hudha, 2015). The future, as a global era, is indicated by the progress of science and technology, especially in the field of modern biology or biotechnology. Progress in biotechnology has produced a variety of products that strive to meet the needs of human life. However, such needs result in the emergence of ethical issues in the fields of biology and science (Minarno, 2012).

Students (prospective teachers) should be fully competent, possess an ability for advanced thinking, elevated sensitivity, a sense of caring, ethics, and have extensive knowledge (Husamah, 2015b). Students should be prepared as human resources of high quality, or in other words, as an intelligent person who is healthy, honest, faithful, with high ethics, morality, character, broadmindedness, social conscience, and high environmental awareness. Professorship in such an implementation is a position that requires professional ethics, character, insight, knowledge, skills, and attitude (Chowdhury, 2016; Hudha, Ekowati, & Husamah, 2014; Setyaningrum & Husamah 2011).

In time, when they practice as teachers, they will be required to be innovative, creative, caring, and sensitive to the environmental problems being faced as an example to their own students (Setiawati, Rusilowati, & Khumaedi, 2013). In fact, the greater the problems of environmental ethics becomes a global issue, both now and in the future (Minteer & Collins, 2005). All issues concerning the environment require knowledge, skills, attitudes, behavior, motivation, and commitment to work together in order to resolve such issues (Amini, 2015).

Implementation of ethics in life requires ethical decision-making capabilities. Ethical decisions are defined as "a good decision both legally and morally acceptable to society at large" while the unethical decision can be considered as "illegal or morally unacceptable by society at large" (Jones, 1991; Selart & Johansen, 2011). This is consistent with the view of Trevino, Weaver, and Reynolds (2006), who see ethical behavior as the behavior of individuals subjected to or judged by moral norms that are generally accepted. Ethical decision making involves ethical reasoning process in which collaborative moral consciousness and moral cognitive ability ultimately manifest in the process as an implementation of the decisions taken (Ahmad, Ansari, & Aafaqi, 2005; Srnka, 2004; Wisesa, 2011).

The ability to identify and conduct ethical or unethical behavior is fundamental to the teaching profession. A prospective teacher cannot be separated from the challenges of making ethical decisions. Teachers tend to set an example and thereby affect other people, either through the work environment or their students (Brown & Trevino, 2006). This area needs to be taught in higher education, given the importance of skills in ethical decision making in order to increase the level of teacher professionalism. Such professionalism includes ethics, social responsibility, self-critical reflection, and personal responsibility. More specifically, teachers' ethics can improve ethical decision-making of students, resulting in a more ethical climate both within the organization and when they live in society at large (Drumwright, Prentice, & Biasucci, 2015).

In connection with ethical problems in biology or bioethics, research by Hudha (2015) showed that respondents in a study did not know terms or scope of bioethics studies well. Bioethics was understood by 67.5% of respondents as being a new term in biology, whereas 32.5% of respondents had known nothing about bioethics or thought that bioethics was vocabulary of biology rather than knowledge. As to capabilities for decision making in ethics, 100% of respondents had never made ethical decisions related to problems of biology, but 65.5% of respondents had made decisions related to manners (links between humans with courtesy). Of the respondents, 27.5% had made ethical decisions regarding administration, and 7% related to legal ethics. Based on this data, Hudha concluded that a need existed to increase knowledge of bioethics and the improvement of ethical decision-making capability in biology student teachers at the Department of Biology Education, Faculty of Teacher Training and Education at the University of Muhammadiyah Malang through an appropriate learning model.

Professional teachers should be produced by a professional university, where the teacher-learning processes conducted are designed to provide maximum capability for the prospective teachers being educated. According to Fadlan (2010), poor quality of learning is contributed to by poor quality teachers. As an agent of learning, teachers are the key to success in education, so it is not surprising then that teachers are the ones considered most responsible for the poor quality of education. A teacher's main function is to improve the quality of national education. However, equally important is the ability to prepare teacher candidates (students) to manage learning, especially the active learning demands of today. Therefore, a systematic effort is needed in order to improve the competence of bioethics.

The Department of Biology Education at the Faculty of Teacher Training and Education of the University of Muhammadiyah Malang (FTTE-UMM) has implemented Integrated Field Studies courses which includes Integrated Field Studies Abroad (SLT). Throughout the course or program, it is expected that the competence of students will increase. Related to aspects of the provision of education, activities are performed based on the premise that the quality of graduates is not only determined by the quality of raw input, but also through the quality of learning and lectures. SLT activities are expected to improve the quality of learning, giving students the opportunity to engage directly, or at least have the experience of interacting with teachers/lecturers from other countries (overseas), and are thereby expected to develop increased competencies of students in a comprehensive manner.

According to Rosana, Jumadi, and Pujiyanto (2014), international courses or those attended overseas must be substantially investigated. International programs must be able to guarantee the output of a potential qualification, e.g. a primary language (English); to

understand the development of cutting-edge concepts and problems of science and science education in order to be able to hold creative dialogue; master the methodology of thought in a related field; and to be able to develop critical and analytical thinking. Additionally, courses should include international standards of academic ability.

In order for ethical decision-making capabilities of students to increase, the research team applied the OIDDE Learning Model through Integrated Field Studies Abroad. The basic consideration is that students are provided with preliminary information related to the destination country as well as ethical aspects that exist through the Internet and social media. The virtual world provides basic knowledge related to ethics which can be built upon if the students and teachers directly view the facts themselves (Foulger, Ewbank, Dartmouth, Popp, & Carter, 2009).

According to Hudha, Amin, Sutiman, and Akbar (2016), the OIDDE learning model is an acronym of Orientation, Identify, Discussion, Decision, and Engage in behavior. The OIDDE learning model results from the review and modification of social learning and behavioral syntax (Joyce, Weil, & Calhoun, 2014) and Tri Prakoro learning model (Akbar, 2013; Ellis, 1979). This current study aims to describe the ethical problems of the environment or the spotlight raised by students in the discussion, valuable experiences, and the ability of ethical decision making related to the environment by students through the application of the OIDDE learning model on the subject of Integrated Field Studies Abroad at the Department of Biology Education (Faculty of Teacher Training and Education, University of Muhammadiyah Malang).

Methodology

This research is a quasi-experimental study with a Non-equivalent Control Group Design. The study is a continuation of research and development previously conducted, and which aims to look at the effectiveness of the models that have been developed. In the design of this study, both groups of research subjects were randomly selected. The study compares only post-test scores as a pre-test was not carried out.

This is a descriptive qualitative type of research study. This research was conducted in the Department of Biology Education at the Faculty of Teacher Training and Education of the University of Muhammadiyah Malang (FTTE-UMM). The research was conducted during the first semester of the 2015/2016 academic year. The subjects were 25 students of the Department of Biology Education.

The design was developed from research conducted according to the syntax learning model OIDDE by Hudha, Amin, Sutiman, and Akbar (2016). Data collection techniques applied in this study include: (1) observation, to see the students in learning activities; (2) questionnaire/worksheets, to determine the ethical problems raised by the students and the ability of ethical decision-making by students in the environmental field; and (3) analysis of the document, in the form of a Field Study report individually prepared. The data analysis technique applied in this research was qualitative descriptive analysis on the instrument of observation and the open questionnaire.

Results and Discussions

The OIDDE Learning Model was implemented through Integrated Field Studies Abroad. The process of implementation was carried out in three countries, namely Indonesia, Malaysia, and Singapore. The implementation of learning is presented in Table 1.

Table 1. Implementation of ODDIE learning model through integrated field studies abroad

<i>Phase</i>	<i>Lecturer Activities</i>	<i>Student Activities</i>	<i>Special Remarks</i>
Phase 1: <i>Orientation</i>	<ul style="list-style-type: none"> a. Lecturer preparation and directing students to learn subject matter of ethical decisions in the field of environment (comparison of conditions in Indonesia, Malaysia, and Singapore) b. Lecturer assigns students individually to identify findings of ethical dilemma in environmental issues. c. Lecturer presents material and reinforces orientation through storytelling of real-life problems, plus a film documentary related to environmental dilemma. 	<ul style="list-style-type: none"> a. Students prepare and direct learning about material ethical decisions in the field of environment (comparison of conditions in Indonesia, Malaysia and Singapore). b. Students receive learning materials from lecturer to listen, observe and carefully record. c. Students write about the problematic dilemmas of field environments found in the material presented to them. 	Event held in Indonesia (UMM)
Phase 2: <i>Identify</i>	<ul style="list-style-type: none"> a. Lecturer divides students into five small groups (in groups of four students). b. Lecturer assigns individual students to identify dilemmas in problematic areas of the environment for group discussion. c. Lecturer directs each group of students to explain dilemma on problematic areas of environmental study identified as a discussion topic. d. Lecturer questions any contradictory issues of the identified environmental dilemma. 	<ul style="list-style-type: none"> a. Students join one of five groups of four students, as directed by the lecturer. b. Students individually identify problematic issues of dilemma in the environmental field for study. c. Together the group: <ol style="list-style-type: none"> 1) examine the facts of the case dilemma facing the environmental field; 2) make inquiries (what, why, how) regarding the identified dilemma; 3) create a synthesis between facts of the identified dilemma; 4) prioritize dilemma issues for discussion; 5) identify contradictions for 	Event held in Indonesia (UMM)

<i>Phase</i>	<i>Lecturer Activities</i>	<i>Student Activities</i>	<i>Special Remarks</i>
		on the dilemma under discussion. d. Students explain the dilemma and selected priority issues on the problem being studied.	
Phase 3: <i>Discussion</i>	<p>a. Lecturer becomes a facilitator and mediator in the discussion group.</p> <p>b. Lecturer directs each discussion group to discuss the priority of the dilemma over other problems.</p> <p>c. Lecturer asks and guides each discussion group to deliver or present results in class discussion; whilst holding question and answer sessions with the other groups.</p> <p>d. Lecturer guides the activities of observation and observation of students in the integrated field study visit destination, ranging from arrival in Malaysia, arrival/departure from Singapore, until return to Indonesia.</p> <p>e. Lecturer guides each group discussion to present final results.</p>	<p>a. Students discuss the issue of priority dilemma on the problems being studied.</p> <p>b. Each group sets the position (role) on the issue of a dilemma on the problem being studied.</p> <p>c. Students explain the fundamental reason for choosing the position (role).</p> <p>d. Students present the focus group discussions results.</p> <p>e. Students conduct a cooperative debrief with the other groups.</p> <p>f. Students compile discussion results using basic initial decisions.</p> <p>g. Students make observations and observation of students at integrated field study visit destination, ranging from arrival in Malaysia, arrival/departure from Singapore, until return to Indonesia.</p> <p>h. Students undertake final group discussion in Malaysia and prepare results for basis of final decision making.</p>	First discussion implemented in Indonesia; subsequent discussions held in Malaysia at end of all field studies (before returning to Indonesia)
Phase 4: <i>Decision</i>	<p>a. Lecturer leads group to decide on solving problems in the field of environment (comparison of conditions in Indonesia, Malaysia, and Singapore).</p> <p>b. Lecturer commissions</p>	<p>a. Students planning and decision-making process in the field of environmental issues dilemma (comparison of conditions in Indonesia, Malaysia, and Singapore).</p> <p>b. Students set up problematic</p>	Phase planned in Malaysia after all field studies (before returning to

<i>Phase</i>	<i>Lecturer Activities</i>	<i>Student Activities</i>	<i>Special Remarks</i>
	focus groups to determine decisions. c. Lecturer asks group to submit discussion results and decisions taken.	decision of dilemma ethical issues studied based on the position (role) determined. c. Students present decision results on the appropriate role of problems studied.	Indonesia)
Phase 5: <i>Engage in behavior</i>	a. Lecturer directs students individually to behave as per verbal decisions made (writes intended behavior). b. Lecturer directs students to infer learning outcomes jointly implemented.	a. Students write individual actions to describe behavior of the decision. b. Students make individual conclusions on material studied collaboratively in Integrated Field Studies Abroad report.	Phase planned in Indonesia (after returning to Indonesia)

Based on the analysis of questionnaires and worksheets during the ODDIE learning identification and discussion phase, the selected priority of issues on the dilemma problems can be seen as studied by the students. The issue of ethical dilemma or problem and ethical decisions taken by students are briefly presented in Table 2.

Table 2. Summary of ethical problems, valuable experience and ethical decision-making student through learning ODDIE

Ethical problems in Indonesia	Experience & significant findings in Malaysia, Singapore	Ethical decisions of students
1. Natural resource exploitation.	1. Natural resources are well-managed with principles of sustainability (in general in Malaysia and Singapore).	1. Balance and sustainability of environmental functions should always be a reference in construction and daily activities of population.
2. Environmental pollution (soil, water, air).	2. Environmental pollution rarely seen, garbage properly managed, policy of water use and management, relatively low-emission vehicles for public transport (Singapore)	2. Modern amusement rides can be prepared in line with environmental principles.
3. Poor cleanliness of public facilities.	3. Public facilities well-maintained, clean, tidy, and environmentally friendly (Highway Rest Area Malaysia known as North-South Expressway / NSE).	3. Pattern of consumption and human activity to avoid generating pollutants.
4. Wild animal hunting.	4. Pollution of rivers, lakes and reservoirs very low. River flows smoothly, clear and even made as an attraction (e.g. Malacca	4. Use of environmentally friendly facilities should become a modern lifestyle choice.
5. Undesirable environmental arrangements.		5. Environmental regulations must be implemented and consistently adhered to.

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- River, Lake/Tasik Putrajaya; Malaysia).
 - 5. Harmonious interaction between animals and humans (Sentosa Island, Singapore).
 - 6. Adherence to environmental regulations (Sentosa Island, Singapore).
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Ethical problems related to the environment were found or were the focus of the students. The emerging environmental problems were natural resources exploitation, pollution of the environment (soil, water, and air), lack of public facility cleanliness, poaching, and undesirable environmental governance.

All students were of the view that in Malaysia and Singapore, it was very rare to see trash (rubbish), that public facilities were maintained as clean and tidy (e.g., along the Rest Area Toll Malaysia, known as the North-South Expressway/NSE), the river flowed cleanly and smoothly, and were even made into attractions (e.g. Malacca River and Lake/Tasik Putrajaya). While specifically in Sentosa Island, Singapore, it could be seen how harmonious the interaction was between animals and humans.

The NSE, which stretches 823 kilometers from the Thai border in the north to the border of Singapore in the south, is very comfortable and safe for motorists. The Face rest area had been made as beautiful and comfortable as possible, with relatively complete facilities that were clean and environmentally friendly. According to the students, it was hard to find any garbage lying around. Various birds perched and flew around the trees that grow lush and well-pruned. The birds were barely disturbed by the human activity, which suggests that the birds are not disturbed by residents of Malaysia, in contrast to conditions in Indonesia where birds are hunted illegally and continuously.

The Malacca River at night looks clean, tidy and beautiful, despite being flanked by large buildings with flickering lights. The riverside area was formerly seedy, dirty and slovenly. The students assumed that it was due to the commitment of the government and the local public of Malacca should be made an example for their attitude towards the environment. Because of the seriousness of the government and local society of Malacca, the river has once again been changed to become clean, with a variety of plant life now thriving on the banks of the river. Putrajaya is the administrative center of government designed as a smart (intelligent) garden city. The town is very pretty, modern, futuristic, and of course environmentally friendly. Tata planned the city of Putrajaya very well and paid attention to its environmental balance, such as building wide sidewalks for pedestrians, cycle paths, and vast amounts of green open space (totaling 38% of the land area). All buildings, parks, lakes, and public facilities were designed as beautiful and exotic.

According to the students, the ethical decisions that can be drawn here are that the balance and sustainability of environmental functions should always be a reference point in construction. If this can be done consistently, many negative impacts of environmental degradation can be avoided. The students' views are that ethical decisions are taken, and it is very appropriate to the sustainable development paradigm. According to Rogers, this includes three things, namely improving the quality of life is continuous, the use of natural

resources at low intensity, and leaving natural resources for generations to come (Rogers, Jalal, & Boyd, 2012).

The Imbiah Lookout area is mostly open with learning spaces that are child-friendly and it also has a butterfly garden; Siloso Point contains an underwater park; Beach spot is an area where children can play in the sun; and Resort World Sentosa are entertainment venues, one of which is Universal Studios, Singapore.

According to the students, ethical decisions that can be taken here is that a wide range of modern amusement rides can be prepared and enjoyed in line with environmental principles. Environmental damage can be minimized, and even air pollution can be prevented due to the number of electric vehicles in use. Some rules are in place (in the form of signage regulation) which are adhered to consistently by visitors, so there is no significant environmental problem even though the number of visitors continues to grow. The large number of daily visitors from different countries have not become an environmental burden because they adhere to and practice environmental ethics. According to Kortenkamp and Moore (2001), environmental ethics are based on the idea or notion that morality should be the reference point involved in the relationship between humans and nature.

OIDDE learning through integrated field studies (SLT) abroad effectively develops ethical decision-making capabilities for candidate biology teachers. This is in line with the views of Minarno, Holil, and Romaidi (2012) that the decision to discuss activities through a variety of opinions (both pros and cons) is very valuable to developing the insights and critical thinking skills of students. The process of obtaining ethical decisions of a modern biological phenomena need to be taught to students on the basis constructivist philosophy (that knowledge should be constructed by the students and not through doctrine), so that students as biological scientists can consider the actions to be undertaken.

Good learning for students is when they are taught to make decisions related to the environment, because life is always associated with decisions. Environmental ethics demand that ethics and morality are applied also to the biotic or ecological communities. Environmental ethics should also be understood as a critical reflection on the norms and principles or moral values, which is known to be applied more widely in the biotic and ecological communities (Minarno, 2012). In addition, in the perspective of environmental ethics, human beings should treat nature not merely in relation to their own interest, but also for the good (sustainable function) of nature (Cowen, 2003; Everett, 2001; Jamieson, 2008).

Integrated Field Studies Abroad and the discussions held influence ethical decision making by the students, because these activities are effective in providing ethical considerations. Ethical considerations are having thoughts and consideration of a definite truth of an ethical action as to what should be done. Ethical considerations about what to do to prevent ethical dilemmas (Tjongari & Widuri, 2014). Individuals who develop better moral judgment are likely to play a role in aiding the teaching of unethical personalities (Rahim, Subroto, Rosidi, & Purnomosidhi, 2013; Richmond, 2001).

The Integrated Field Studies Abroad field trip conducted in Malaysia and Singapore provided valuable experience for the students and so by strengthening their insights, will also influence their ethical decision making. Widiyatmoko (2013) stated that learning gives a real picture to students about examples of good environmental management, and that tends

to instill a positive experience so that by itself, the students will be trained in maintaining and conserving the environment.

This is line with Ferrell and Gresham (1985) who stated that when a person faces an ethical dilemma, the emergent behavior is influenced by the interaction between characteristics related to the individual and factors beyond the individual's control. Individual factors consist of personal background, knowledge, individual values, attitudes, and intentions, as well as social characteristics such as education and experience (Hammer, 2000; Steg & Vlek, 2009).

The positive experience and ethical decisions realized by the students are expected to become firmly entrenched in the personality of the students to become positive points of character. According to Husamah and Pantiwati (2014) and Machin (2014), cultivation of character as integrated in learning can provide a meaningful experience for students, because they will not only understand, but also internalize and actualize even through daily activities.

Conclusion

The application of the OIDDE Learning model through Integrated Field Studies Abroad helped students (candidate biology teachers) to identify ethical problems of their environment and assist in ethical environmental decision making in the field. Environmental ethical problems that arose were natural resource exploitation, environmental pollution (land and air), lack of public facility cleanliness, poaching, and undesirable environment arrangements. Valuable experiences which the students gained were: 1) Regional rest area in Malaysia: plants flourished and bird life were undisturbed due to the population of Malaysia living in harmony with nature, which is different from the situation in Indonesia; 2) The Malacca River in Malaysia: the area was formerly seedy, dirty, and nasty, but because of the commitment and seriousness of the government and local society in Malacca, the river has been transformed into a clean and beautiful area; 3) Putrajaya, Malaysia: through central government administration's concern about the environmental balance, it is shown that balance and sustainability of environmental functions should always be a point of reference in construction; 4) Sentosa Island, Singapore: various modern amusement rides were prepared in line with environmental principles. Environmental damage can be minimized, even air pollution can be prevented because the number of electric vehicles.

Ethical decisions taken were: 1) balance and sustainability of environmental functions should always be a point of reference in development and daily activities; 2) modern amusement rides can be prepared and enjoyed in line with environmental principles; 3) consumption patterns and human activities can avoid the resultant pollutants; 4) the use of environmentally friendly facilities must become a modern lifestyle choice; and 5) regulations relating to the environment must be implemented and consistently adhered.

The study only focused on the ability of ethical decision making related to student environmental problems. Therefore, further study is needed in other fields of biology and biology education that will further enrich the knowledge of students and the pertinent literature.

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Notes

Corresponding author: HUSAMAH

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