

# Transforming an Exposure Trip into a Botanical Expedition: Introducing Ecological Research through an Eco-Tourism Site Visit

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**Abstract** – Fieldtrips can be considered as one of the three avenues through which science can be taught - through formal classroom teaching, practical work and field trips. An exposure trip at Bangkong Kahoy Valley Field Study Center was arranged for a class of BS Biology and BS Education students enrolled in Ecology Course. This approach purposefully transformed the usual exposure trip from being a casual site visit into a focused and productive learning experience. This transformation from exposure trip to a botanical expedition has exceeded the initial activity goals. Rather than a day off from learning, the time spent at the study center has been a meaningful opportunity to engage students in an active ecological research project while delivering valuable science content. Employing the descriptive survey design, the learning gains of the students were assessed and students were directed to do a guided reflection writing using the ORID Model of Focused Conversation. The learning gains and reflections of the students confirmed that students can collaboratively develop focused research questions, make meaning from a variety of sources, carry out a vegetation analysis and conduct surveys on socio-economic status, plant resource utilization and ecotourism assessment of the host community. As students prepared for their trip and synthesized their learning afterward, they were able to come up with very impressive and scientifically sound research outputs.

**Keywords** – exposure trip, ecological research, ecology, ecotourism, botanical expedition

## I. INTRODUCTION

Ecology as a course deals with the general concepts and principles of the interaction between and among organisms and its environment. It is designed to discuss important topics such as nature of ecology, various components of the ecosystem, population, communities and ecosystem dynamics. After completing this course, students are expected to be able to analyze ecological processes, articulate insights on ecological problems, translate the gained scientific knowledge, skills and values into practice and be manifested as responsible behavior.

Fieldtrips provide avenues for experiential learning that brings the students away from the four walls of the classroom and into a more authentic manner of learning. Fieldtrips may range from a simple outdoor activity on the school grounds where students are directed to make observations, up to an out of the country visit to a particular field site. Field trips are designed not only

expand students' learning and experiences by providing them with hands-on experiences, they also are deemed instrumental in increasing their knowledge and understanding of the world in which they live.

According to Falk and Dierking (1997) students tend to remember the experience long after a visit, and that it can influence students' career choice (Salmi, 2003). Another claim is that can increase interest and engagement in science regardless of prior interest in a topic (Bonderup Dohn, 2011). The importance of field trips is supported by professional organizations such as the National Science Teachers Association which asserts field trips can "deepen and enhance" classroom study conducted in 1999.

Active research, on the other hand, allows and propels the learners to explore and investigate an area of personal interest, to make meaning from a variety of sources, and to contribute their learning to that of their peers. According to Zorfass and Copel (1998), active

research is a goal across the curriculum, with national standards in science, mathematics, language arts, and social studies all emphasizing the development of students' skills with research and inquiry.

Aimed at making the students attain the four graduates attribute: critical thinkers, excellent communicators, socially responsible citizens, and life-long learners, an exposure trip at Bangkong Kahoy Valley Field Study Center was arranged. Cognizant of the equally important roles of fieldtrips and active research, the usual exposure trip was purposefully transformed from being a casual site visit into a focused and productive botanical expedition experience.

In this study, the student respondents made a self-assessment of their learning experiences as they were deployed to an eco-tourism study site and were introduced to ecological research in the form of botanical expedition. This study surveyed the students' perception as regards their learning gains from the vegetation analysis and ecological survey conducted based on the attainment of the four Expected Lasallian Graduate Attributes (ELGAs). Students assessed also their service-learning experience through guided reflection using the ORID Model.

## II. METHODS

This study made use of the descriptive method of research that evaluated through a self-assessment of the learning gains of students from the botanical expedition in Ecology Class. Photo documentation was also used to capture the activities undertaken during the entire conduct of the study.

The study was conducted at the De La Sale Lipa, an institution that provides education from pre-school level to tertiary school level. Founded in 1962 by the Brothers of the Christian School, De La Salle Lipa was built on a 5.9- hectare lot along the National Highway, an institution located at Lipa City, Batangas. The tertiary school provides education in the college level offering degree programs like Accountancy, Business Management, Computer Science, Education, Engineering, Psychology and Nursing. It also provides Certificate programs in Culinary Arts, Entrepreneurship and Information Technology.

Two class composed of 32 third year BS Biology students and 13 second year BS Education students from the College of Education, Arts and Sciences of De La Salle Lipa who were enrolled in Ecology during the first semester of SY 2014-2015 served as the respondents for this study. With a researcher- made survey questionnaire the students' self- assessment of

their learning gains from the experience was solicited. Students assessed also their botanical expedition experience through guided reflection using the ORID Model.

The respondents, being the students enrolled in the subject, were all made aware and gave their consent to be the respondents of this research. Own personal biases and opinions were shun to get in the way. All responses were treated and interpreted in appropriate context. Data gathered analyzed using frequency count, arithmetic means and ranking.

## III. RESULTS AND DISCUSSION

Table 1 shows that based on the self assessment done by the respondents on being critical thinkers, they considered all the indicators as highly attained with a composite mean value of 4.12. In particular, students claimed that the expedition stimulated their interest in ecology and their understanding of ecological principles and processes, both with the highest mean values of 4.23. The respondents regarded the indicator that says that the expedition has helped them analyze and statistically evaluate the data they collected the least attained, with a mean value of 3.99.

Table 1. Assessment of attainment of the Graduate Attribute: Critical Thinkers

Critical Thinkers	Mean
1. The expedition stimulated their interest in the field of ecology	4.23
2. The expedition stimulated their understanding of principles and processes	4.23
3. The expedition increased their confidence in conducting scientific investigations	4.09
4. The expedition helped them read and understand primary literature	4.07
5. The expedition helped them analyze and statistically evaluate data	3.99
6. The expedition helped them understand and critically evaluate experimental design	4.11
<b>Composite Mean</b>	<b>4.12</b>

The findings of this study is parallel to the report of Beyer (1995) which states that is important to teach critical thinking among students to enable them to make sound decisions. According to Cooper (1995), when students are subjected to a group learning situation, it enables them to foster critical thinking. The result also conforms to the findings of Precioso and Lunar (2013) that critical thinking skills of the students are honed as

they are exposed to service learning activities in Ecology.

One of the end goals of teaching Ecology is to develop students with excellent communication skills. The assessment of learning gains based on the attainment of this attribute is presented in Table 2 on being excellent communicators. Student respondents' assessment shows that all the indicators have been highly attained as reflected by the composite mean value of 4.14. Specifically, the indicators that are attained the most are in analyzing, interpreting and comparing the data they collected and in organizing and presenting a research project in written form, both with the mean values of 4.23.

Table 2. Assessment of attainment of the Graduate Attribute: Excellent Communicators

<b>Excellent Communicators</b>	<b>Mean</b>
1. The expedition helped them organize and present a research project in written form	4.23
2. The expedition helped them organize and present a research project orally	4.09
3. The expedition enabled them to analyze, interpret, and compare data collected	4.23
4. The expedition made them do citations of primary work	4.11
5. The expedition permitted them to offer explanations for findings to be understood	4.07
6. The projects allowed them to discuss and conclude from data analyzed	4.11
<b>Composite Mean</b>	<b>4.14</b>

These particular findings are supported by Mezirow (1997) who posited that in order to facilitate transformative learning among students, the teachers must help students become aware and critical of their own and others' assumptions. The attainment of the attribute being an excellent communicator is parallel result of the study by Precioso and Lunar (2013) that through the learning activities provided for each student they learned to articulate coherently their insights and stand regarding ecological issues, listen critically and respectfully to the viewpoints of others, and formulate clear, relevant and humane solutions to identified ecological problems.

As regards the attainment of the attribute socially responsible citizens, Table 3 shows on being socially responsible citizens that the student-respondents found all the indicators to have been highly attained with the composite mean value of 4.27. The indicator that claims that the botanical expedition developed in them

appreciation of the natural world got the highest mean values of 4.57. Although all the indicators are found to have been attained, the indicator that says that the expedition familiarized them with the variety of ways that organisms interact was ranked the least attained, with a mean value of 3.67.

Table 3. Assessment of attainment of the Graduate Attribute: Socially Responsible

<b>Socially Responsible</b>	<b>Mean</b>
1. The expedition developed in them appreciation of the natural world	4.57
2. The expedition developed in them appreciation of modern scope of scientific inquiry	4.35
3. The expedition familiarized them with the variety of ways that organisms interact	4.07
4. The expedition made them translate the gained knowledge and skills into practice	4.27
5. The expedition enticed them to participate in various environmental projects	4.11
6. The expedition made them respond to the call to stewardship & foster Lasallian values	4.23
<b>Composite Mean</b>	<b>4.27</b>

These findings on the self-assessment of the students on the perceived attainment of this particular graduate attribute support the report of was found out Laguardia et.al (2012) that looked into the transformative learning design in Environmental Science and in the study of Precioso and Lunar (2013) that segmented the learning gains in Ecology class using student originated projects which that the students became socially responsible citizens after the respective learning experiences.

Table 4 shows the respondents' assessment on the graduate attribute- life-long learners. They considered all the indicators as highly attained with a composite mean value of 4.08. In particular, students claimed that the expedition made them see connections with their future careers 4.27. They regarded the indicator that says that the expedition influenced their decision making and choices in life the least attained, with a mean value of 3.99.

Findings of the present research are in resonance with Davidson, et.al (2010). Their study revealed that within the scope of the hands-on work, many of the lessons students learned from their work as

change agents in the community seemed to have translated from specific situations in their cases to other more broad lessons to live by in other aspects of their lives.

Table 4. Assessment of attainment of the Graduate Attribute: Life-long Learners

<b>Life-long Learners</b>	<b>Mean</b>
1. The expedition made them embrace sense of responsibility	4.01
2. The expedition developed in them to think for the future generation	4.03
3. The expedition transformed my attitude from “I know” to “I care”	4.07
4. The expedition made them see connections with their future careers	4.27
5. The expedition enticed them to do something good in the future	4.11
6. The expedition influenced their decision making and choices in life	3.99
<b>Composite Mean</b>	<b>4.08</b>

Table 5 summarizes the assessment made as regards the perceived learning gains through attainment of the four expected La Sasallian Graduate Attributes . In general, the botanical expedition conducted in the field study center was regarded effective in making the students attain all the attributes expected of them. The highest composite mean of 4.27 was on becoming socially responsible citizens. Though with relatively lower composite mean values of 4.14, 4.12, and 4.08, the attributes- excellent communicators, critical thinkers, and life-long learners, respectively, were still perceived to have been highly attained by the student-respondents. This denotes that students agree that the ecological research and surveys they did during the expedition translate into gained learning and attainment of expected Lasallian graduated attributes particularly in their Ecology course.

Table 5. Assessment of Learning Gains Based Over-all attainment of the ELGAs

<b>Attributes</b>	<b>Composite Means</b>	<b>Rank</b>
Critical Thinkers	4.12	3
Excellent Communicators	4.14	2
Socially Responsible Citizens	4.27	1
Life-long Learners	4.08	4

### Reflections on the Botanical Expedition Using ORID Model

At the end of the expedition and completion of the ecological research and survey, the students were asked to reflect on the experience using the ORID Model of Focused Conversation. On Objective Mode, when they were asked about what they did in the field, all of the students manifested knowledge and awareness of the activity and they all have a grasp of its relevance the subject matter. They were able to state the objectives of the activity. They were completely aware of the task given to them which led them to work on establishing baseline data on vegetation analysis and socio-economic survey.

One of the students said:

*“Our foremost objective for visiting Bangkok Kahoy Valley Field Study Center was to do vegetation analysis. We intended to conduct surveys among the local people there to know the economically important plants in the area and to assess the place as an eco-tourism destination”.*

Segmenting the student respondents’ reflective mode about the expedition, they were one in saying that being outside in the mountain was a bit tiring but an exciting encounter with nature. They reported to be so exhausted with the task but have felt satisfied and felt good as they recalled the experiences they had not only during their stay in the valley, but also during the trek, interview and the actual measurement of tree statistics.

This was reflected in one of the student’s remark:

*“The entire experience was fun, though I must admit, a tiring one. I learned a lot from Mr. Dion Pulan, the owner/ caretaker of the place. I was moved by his conviction to pursue his advocacy of preserving the integrity of the valley and helping the local people. I feel so blessed to have joined the trip”.*

On Interpretative Mode, students drew connections between the expedition and their being Biology students. They were able to see the relevance of the lessons and skills learned with their future tasks of becoming an environment friendly scientist. As with the education students, they claimed that they have realized the role that they have to play as stewards of God’s creation and as teachers.

One student put it this way:

*“After the expedition, I realized that one can really contribute to the preservation and conservation of our nature. Despite the fact that the place was severely hit by typhoon Glenda, nature still displays its beauty and the effort of the local people to rebuild what was destroyed, is indeed commendable. If they are successful in doing it in Bangkong Kahoy Valley, other places can still be rehabilitated, we just have to have the need will to start and sustain the task”.*

Looking through the Decisional Mode, the student respondents all agree that what they had was not a usual exposure or field trip but a more meaningful and learning directed experience. The vegetation analysis and conduct of surveys made them see the reality and gave them chance to contribute to the community in their own little ways.

One of the student respondents wrote:

*“This botanical expedition did not only enable us to comply with the requirement of the course but also made us aware status of the environment. I realized that I should, in my own little way, contribute in taking care of our mother earth”.*

These themes are in agreement with the findings of Davidson et al in 2010. The study revealed that learning occurred through continuous cycles of applying concepts, thinking critically learning through experience and reflection. Being able to go out and actually do what they learned out in the community with real unpredictable situations was where comprehension of the material was obtained, where critical thinking occurred, and where some insights were gained.

#### IV. CONCLUSIONS

Based on the foregoing findings and reflection themes, it is concluded that as the student- respondents were exposed to a botanical expedition, there were positive learning gains as reflected in the perceived high level of attainment of the four Expected Lasallian Graduate Attributes. The usual exposure trips can be

made more relevant and educational, when students are directed to active research. Students' reflection using the ORID Model revealed that they consider the expedition as a relevant and significant service with the chosen community; as a chance to enhance their academic learning; and as a meaningful civic learning opportunity.

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#### REFERENCES

- Beyer, B. (1995). *Critical Thinking*. Retrieved: August 18, 2012 from [dergiler.ankara.edu](http://dergiler.ankara.edu)
- Bonderup Dohn, N. (2011). Situational interest of high school students who visit an aquarium. *Science Education*.
- Cooper, J. L. (1995). Cooperative learning and critical thinking. *Teaching of Psychology*
- Davidson, William S. et al. (2010). Student Experiences of the Adolescent Diversion Project: A Community-Based Exemplar in the Pedagogy of Service-Learning. *American Journal of Community Psychology*. Volume 46, Issue 3-4.
- Falk, J. & Dierking, L. (1997). School field Trips: Assessing their long-term impact. *Curator*, 40, 211-218.
- Laguardia, M. et.al (2012). Outcomes- based Evaluation of the Transformative Learning Design in Environmental Science Course of De La Salle Lipa
- Lunar, B. & Ronsairo, M. (2011) Assessment of Service Learning in Ecology Class Using the ORID Model.
- Precioso, C. & Lunar, B. (2013). Assessment of Learning Gains from Student- Originated Projects in Ecology Laboratory Course Delivered through Service Learning Design.
- Salmi, H. (2003). Science centers as learning laboratories: experiences of Heureka, the Finnish Science Centre. *International Journal of Technology Management*.
- Zorfass, J.M., and H. Copel. 1998. Teaching middle school students to be active researchers. Alexandria, VA: Association for Supervision and Curriculum Development.