KNOWLEDGE AND PRACTICES ON ECOLOGICAL JUSTICE OF EDUCATORS

[1]Mary Josephine C. Bautista*

Abstract

Ecological justice is now becoming a sine qua non for humans and nonhumans in the environment. The community should be aware of the ecojustice-oriented education. Students can be eco-justice-oriented citizens if their teachers are knowledgeable and advocating eco-justice themselves. Therefore, the researcher undertook the study among public school teachers in Panay and Guimaras during the academic year 2012-2013 to determine the levels of knowledge and practices on ecojustice and differences between them and some personal factors and relationship between knowledge and practices on eco-justice among educators. The researcher administered the questionnaires and conducted interviews and observations to the teachers. Quantitative data were analyzed using SPSS. Results indicated a "high" level of knowledge and a "desirable" level of practice on eco-justice. There was a significant difference in the level taught subgroups respective to knowledge about eco-justice. A significant difference were also observed between practice and sex and level taught. There was no significant relationship between knowledge and practice on eco-justice among educators. The "high" level of knowledge about eco-justice is due to vast and rich experiences of teachers. The "desirable" level of practice in eco-justice was due to their belief that environmental sustainability is worth doing.

Keywords: ecological justice, knowledge, practices

*Corresponding Author: Mary Josephine C. Bautista, joybauti@yahoo.com

1.0 Introduction

The country's natural resources have undergone degradation (Guiang, 2004) and thus this environment is now in a critical state. Human activities deplete the resources of the environment. In the quest for food security, the rural poor sometimes have little choice but to overuse the limited resources available to them. People are not aware of the risks involved (Rhodes, 2003). This environment is not ecologically fit for living. Humans and non-humans living in this environment must be served with ecological justice. The United States Environmental Protection Agency (2007) defined ecological justice (eco-justice) as the fair treatment and meaningful involvement of all people regardless of the race, color, sex, national origin, or income on the development, implementation and enforcement of environmental laws, regulations, and policies. It is also a fair distribution of environmental goods and bads (Schlosberg, 2007). It is not justice for human (environmental justice) but also for other living and non – living beings in the ecological system as well (Low and Gleeson, 1998).

Teachers help in increasing the level of awareness in the importance of the environment, its conservation and in the respect for the lives of other forms of organisms. People should realize that the fragile environment on which they depend for their survival is being neglected or over-exploited. It is now necessary to rehabilitate and manage it sustainably. They should also bear in mind that everything in the environment has a role to play in the maintenance of its balance. They should protect the environment because the people of today and tomorrow deserve it. Promising initiatives are undertaken through eco-justice oriented education.

Tippins et al., (2010) believed that eco-justice played a major part in what science educators do, yet it remained in environmental and science education literature. The topic is new and unpopular among the people in the community.

Students and pupils informed the community about eco-justice education. Teachers promote reforms at classroom level that contribute to a more ecologically sustainable future. Teachers, and the academe, in general, have great influence on their pupils and students. They shape their behavior and educational outcomes. Teachers are their role–models. Teachers can educate the next generation to become environmental and eco-justice- oriented citizens. They must be prepared to assume the responsibility for educating citizens capable of strengthening local democratic and sustainable communities. They can integrate eco-justice in their daily activities by exposing their students in ecological studies. They can affect the choices and attitudes of students. Teachers or educators can only do this responsibility if they have the knowledge about and practicing ecological justice.

2.0 Theoretical Framework

This study anchors in the following theories: On eco-justice, the Theory of Ecological Justice by Baxter (2004) states that "as a result of human activities, many organisms in the Earth face serious and worsening threats to their continued existence." This statement is usually regarded as a matter of concern because maintaining a non-human environment affects the well – being of humans. The researcher studied the areas where there are serious threats to humans and non-humans by the activities of men. This theory adopts an approach where all non-living and living organisms have claims in justice to a fair share of the earth's environmental resources.

[1]West Visayas State University Lambunao Campus

On knowledge about ecojustice, this study is anchored on the Constructivist Theory of Learning of Vygotsky. The theory emphasizes that full cognition development requires social interaction. People constructed their knowledge through social influences and interaction with their environment. They created knowledge as they attempt to understand their experiences. Experience, according to Stephenson (2004), is the best teacher of knowledge. A teacher constructs his knowledge by testing ideas and approaches based on his prior knowledge and experience and applying it to the new situation.

On the practice of ecojustice principles, this study is anchored on Thorndike's Law of Exercise (Bower and Hilgard, 1981). This law provides the premise that "practice makes perfect". This law is also called the law of habit formation through repetition. It has two forms: the law of use – the use of a connection increases its strength, and the law of disuse – the disuse of the connection "not practicing it" leads to weakening or forgetting. If one practices a particular environmental preservation and conservation activities regularly, then they become habitual without their knowing.

The researcher included in the study the provinces in Panay and Guimaras. Specific areas in these places were used as sample sites because they belong to the top areas where environmental problems occurred as provided by the Regional Disaster Coordinating Council (RDCC). Public teachers in these places are the respondents because they have significant roles in promoting learning as guides or facilitators of students who are at that point have done things which affect the rest of their lives.To find out how their knowledge about and practices on ecojustice influence the students and in the citizenry, the researcher is propelled to conduct the study.

The researcher undertook this study among educators in public schools in Panay and Guimaras during the academic year 2012 - 2013 to determine: 1) the levels and of knowledge about and practices on eco-justice and the differences between them, and 2) relationship between their knowledge about and practices on eco-justice.

3.0 Research Methodology

This study used the descriptive-correlational method of research. The paradigm ensured the maximum insight and understanding to characterize teachers' knowledge about and practices on ecological justice. The design of this study consisted of two phases: (1) the collection and analysis of descriptive-correlational data and (2) collection and analysis of additional data from interviews of teacher-respondents and ocular observations of the sites by the researcher to help explain or elaborate on the results of the first phase. In this study, sixty-five science teachers in the elementary, secondary, and tertiary levels in predetermined public schools in Aklan, Capiz, Antique, Iloilo, and Guimaras, where environmental degradations occurred, were the respondents. They were categorized based on their sex, educational qualifications and level taught. There were sixteen from the elementary, twenty-one from the secondary and twenty-eight teacher respondents from tertiary schools. There were thirteen respondents from Aklan, twelve from Capiz, fifteen from Iloilo, fifteen from Antique and ten from Guimaras.

Purposive sampling was used in determining the study setting based on certain criteria. Ethical considerations were strictly observed. The researcher applied the following principles: 1) Permission to conduct the study. Necessary permits were requested from the Heads of Offices of target schools. 2) Beneficence. The researcher informed the respondents of the nature, purpose, and significance of the study. 3) Respect for Human Dignity. The respondents signed the informed consent forms. Their rights of anonymity and confidentiality were respected.

The researcher utilized three research instruments for triangulation in the study, namely: the survey questionnaire (descriptive-correlational), the observation sheet, and interview transcript. The triangulation design provided in-depth understanding and added richness to secure the validity of the study. A questionnaire was used to gather descriptive-correlational data. The researcher distributed questionnaires to the teacher-respondents to obtain data on the knowledge about, and practices on ecojustice of the educators. It was a researcher-made questionnaire consisting of three parts. The first part was the information sheet that gathered data about the demographic profile of the respondents like sex, educational qualifications, and level taught. Respondents checked the space being provided for the needed personal data. The second part was the test that measured knowledge about ecojustice of educators. This was comprised of two tests, alternate response, and multiple choice tests. The alternate response test consisted of twenty closed questions and thirty multiple choice test questions. The multiple choice test contained four choices from which the respondents chose the letter of their answer. Respondents just checked the column for true or false and encircled the letter of the correct answer. A correct answer was given a point. The following scale of mean scores and corresponding descriptions were used:

Scale	Description
43 – 49	Very High Knowledge
37 – 42	High Knowledge
31 – 36	Moderate Knowledge
25 – 30	Low Knowledge

The third part was the questionnaire that measured the level of practice of ecojustice principles. It was made up of a twenty - five test questions also adapted to Likert's scale. Responses were rated 1 to 5. The teachers responded to the five choices which best described the

frequency of practice.

Choices	Description	Numerical Weight
Always	he practiced all the time	5
Most of the time	he practiced frequently	4
Sometimes	he practiced now and then	3
Rarely if ever	he seldom practiced	2
Never	he did not practice at all	1

The following scale was used for the interpretation:

Rating Scale	Description
100.00 – 117.00	Very Desirable
84.00 – 99.99	Desirable
68.00 – 83.99	Moderately Desirable
52.00 – 67.99	Not Desirable

Triangulation of the data ensured the validity of the study. In this study, an inter-item or factor analysis measured the correctness and reasonableness of the data. The validators scrutinized and provided comments to the table of specification presented by the researcher. Validators were composed of a professor who is an expert in instrument design and three professors in Ecology. Moreover, Cronbach's Alpha were used to determine the reliability of the instrument. For knowledge about eco-justice, its value is 0.82 (good instrument), and for practices on eco-justice, its value is 0.94 (excellent instrument). The rules of thumb provided the basis for these values.

A survey questionnaire that was researcher-designed needed a pilot study to validate its effectiveness and the value of the questions to elicit the right information to answer the primary research questions. It tried out the questionnaire to identify the irrelevant, unnecessary, confusing items and words, difficulties of the respondents with the instructions, sequencing and formatting, and to determine the average amount of time needed to finish it (Subong, 2005). The researcher conducted the pilot test among seventeen (17) science teachers, in one of the municipalities of Iloilo, who will not participate in the major study. The scores from this trial test were subjected to computer – processed reliability and factor analysis for content and construct validity using Statistical Package for Social Science (SPSS) software. The coefficient of the reliability testing of the instrument is higher than the considered baseline of significance and acceptability. The interview questions were also tried out among the science teachers. The researcher incorporated the comments from the pilot test to the final questionnaire design.

The researcher calendared the schedule of the conduct of the research. She also retrieved and checked the completeness of data. The collected data were tallied, computer–processed, and interpreted. In-depth interviews which were tape-recorded were done after the respondents had submitted their questionnaires. The researcher allowed the respondents to clarify their answers and tell their stories and experiences. Observations of the place were done to determine the changes that had taken place from the time the environmental degradation happened to the present, the extent of the recovery (if any), and their coping measures. Pictures were taken to justify the interviews and observations.

The quantitative data gathered were subjected to a particular computer analysis using the Statistical Package for the Social Sciences (SPSS) software. Statistical tools employed in the analysis of the obtained data are frequency, percentage, mean, standard deviation, Pearson's Product Moment Coefficient of Correlation, One Way ANOVA, Post Hoc Tests and t-test for the independent sample.

Analysis of interview transcripts began with listening to the participants' verbal descriptions, followed by reading and rereading of the transcriptions or written responses; data were transcribed, sorted and arranged according to from where the sources of information come from; identified and extracted significant statements; saw to it that the transcribed data were typed double spaced with a two-inch margin on the side for coding purposes; tried to capture the essential relationships among the statements. The identified the common content of themes and analyzed the observations through meanings or interpretations.

4.0 Results and Discussion

Descriptive Analysis on the Levels of Knowledge and Practices on Eco-Justice of Educators

Table 1 revealed that educators in Panay and Guimaras had a "high" level of knowledge (M = 39.74; SD = 4.58) about eco-justice when taken as an entire group. The obtained standard deviation shows the wide dispersion of the mean scores indicating that educators are heterogeneous with regards to their level of knowledge about eco-justice. Sex of the teachers does not make a difference with one another regarding their level of knowledge about eco-justice. Both the males and females have "high" level of knowledge (M = 38.62, SD = 4.23); (M = 40.02, SD = 4.66), respectively. The level of knowledge showed no variation regarding educational qualifications of the educators. Those who have finished baccalaureate degrees have "high "level of knowledge (M = 39.23, SD = 4.25), those who finished masters degrees also have "high" level of knowledge (M =39.67, SD = 4.75), and those who finished doctoral degrees have "high" level of knowledge (M = 41.87, SD = 5.19). The level of knowledge, when classified according to level taught by the educators, has similar results with that of sex and educational qualifications. Elementary teachers

(M = 37.20, SD =5.29), secondary teachers (M = 39.76, SD = 4.31), and tertiary teachers (M = 41.03, SD = 3.93) have "high" level of knowledge about eco-justice.

Table 1. Levels of knowledge and practices on eco-justice of educators

Category	Description	
	Knowledge	Practices
Whole Group	High Knowledge	Desirable
Sex		
Female	High Knowledge	Desirable
Male	High Knowledge	Desirable
Educational Qualification		
Baccalaureate	High Knowledge	Desirable
Master's	High Knowledge	Desirable
Doctorate	High Knowledge	Desirable
Level Taught		
Elementary	High Knowledge	Very Desirable
Secondary	High Knowledge	Desirable
Tertiary	High Knowledge	Desirable

The "high" level of knowledge that the teacher-respondents possessed shows that they have adequate knowledge about eco-justice. They are aware that their day-to-day existence had a severe impact on the biosphere which they share with all other organisms. The results signifying a healthy knowledge about eco-justice is similar to the findings of Unlas (2000) that the high grades of students were due to the rigorous attention to their studies. The "high" environmental knowledge of educators may also be due to the vast and rich experiences gathered from their attendance to seminars, conferences, workshops, or educational field trips.

Most of the respondents said that it is only during this survey that they encountered the term eco-justice. Some thought that it is about the awareness, preservation, conservation, and proper utilization of natural resources for the benefit of man. The teacher respondents are only considering the importance of the environment for human's benefits. They are referring to environmental justice. They misses the idea that the environment should be preserved, conserved, and appropriately utilized so that the other environmental nonhuman components will be sustained. This is already an ecological justice concept. Some teachers are also practicing this but are not aware that it is already ecojustice. Respondents have a "high" level of knowledge about eco-justice for humans, but they missed the nonhuman component. These ideas show how they explain answers in the questionnaires and on stories they tell about their experiences during the environmental degradation.

Respondent-teachers who are considered mentors are expected to be knowledgeable when it comes to ecological concepts. They are supposed to be models of their students as well as in the community where they live. However, in some instances, human beings, as they are, they are entitled to some shortcomings (Lucero, 1980). Among the respondents, only the elementary teachers showed "very desirable" level of practice on ecojustice. This attitude may be attributed to the fact that teachers teaching in the elementary practice what they have learned from customs and traditions whether in school or not, or they do what is expected by their supervisors from them. Ironical as they are, there are cases when teachers are just mimicking the theories to their students but failed to practice what they have taught (Jugan, 1977).

Differences in the knowledge about eco-justice of educators

Tables 2 and 3 shows the T-test and ANOVA results for the differences in the knowledge about eco-justice of educators when grouped as to sex and educational qualifications, respectively.

Table 2. T-Test results for the differences in the knowledge about eco-justice of educators as to sex.

Category	Mean	df	t-value	Sig.
Female	40.04	64	0.99^{ns}	0.33
Male	38.62			

ns-not significant at 0.05 alpha, p>0.05

Table 3. ANOVA results for the differences in the knowledge about eco-justice of educators as to educational qualifications.

Source of Variations	df	SS	MS	F	Sig.
Between Groups	2	44.13	22.16	1.058^{ns}	0.35
Within Groups	62	1298.24	20.94		
Total	64	1342.55			

ns-not significant at 0.05 alpha, p>0.05

The tests reveals that there is no significant difference in the knowledge about ecojustice of educators when they were grouped according to sex (p = 0.33) and educational qualifications (p = 0.35). The values are greater than 0.05, thus the null hypotheses were not rejected. It implies that there is no significant difference in the knowledge about eco-justice of educators when grouped according to sex and their educational qualifications. However, there is a significant difference in the knowledge about eco-justice of educators when they were grouped according to the level taught (p = 0.03 < 0.05) as shown in table 4. Thus, the null hypothesis, there is no significant difference in

the knowledge about eco-justice of educators, is rejected. There was a rather a significant difference in their knowledge about ecojustice when grouped according to level taught. The level of knowledge of teachers in tertiary level is significantly higher as compared to those teaching in elementary but did it not differ significantly to those teaching in the secondary level. Further, the level of knowledge of teachers in the secondary level does not differ significantly to that of teachers in the elementary level.

Table 4. ANOVA results for the differences in the knowledge about eco-justice of educators as to level taught

Source of Variations	df	SS	MS	F	Sig.
Between Groups	2	145.38	72.69	3.76*	0.03
Within Groups	62	1197.18	19.31		
Total	64	1342.55			

*Significant, p ≤ 0.05)

Differences in Practice on Eco-justice of Educators

Tables 5 and 6 show the T-test and ANOVA results for the differences in the practices about eco-justice of educators when grouped as to sex and educational qualifications, respectively.

Table 5. T-Test results for the differences in the practices about eco-justice of educators as to sex

Category	Mean	df	t-value	Sig.
Female	97.65	63	2.12*	0.04
Male	87.08			

*Significant, p<0.05

Table 6. ANOVA results for the differences in the practice about eco-justice of educators as to educational qualifications and level taught

Source of Variations	df	SS	MS	F	Sig.
Educational Qualification					
Between Groups	2	1190.10	595.05	2.27^{ns}	0.11
Within Groups	62	16288.05	262.71		
Total	64	3999.54			
Level Taught					
Between Groups	2	2369.98	1184.99	4.86*	0.01
Within Groups	62	15108.17	243.68		
Total	64	17478.15			

ns-not significant, p>0.05, *Significant, p<0.05

Results show a significant difference in practice on eco-justice of educators when a grouped according to their sex (p = 0.04 < 0.05) and level taught (p = 0.01< 0.05). It implies that when respondents are classified according to sex, there is a significant difference between males and females in their practice in favor of females. In other words, females shows a significant difference over males in their practice. Their practice, however, has no significant difference when grouped according to educational qualifications (p = 0.11 > 0.05). Looking at the practices of eco-justice when the educators were grouped according to their level taught, results shows a significant difference (p = 0.01 < 0.05) among the group. When subjected to post hoc test (Table 7), the practices of eco-justice among teachers in elementary level is significantly higher as compared to those teaching in the tertiary level, but it did not differ significantly to those in the secondary level. Further, the knowledge about eco-justice of teachers in the secondary level does not differ significantly to that of teachers in the tertiary level. This differences can be linked to the type of curriculum. Elementary curriculum requires many core competencies that enable teachers to integrate various concepts of ecojustice. They have the chance of integration of the acceptable practices during their homeroom periods such as in the cleaning of rooms and gardening.

Table 7. Post Hoc Test for the differences in means in the practice as to level taught

Level Taught	Mean
Elementary	103.07^{b}
Secondary	99.19^{ab}
Tertiary	89.00^{a}

Means with both letters are not significant

Table 8 shows the relationship between the knowledge about and the practice on eco-justice of educators in Panay and Guimaras.

Table 8. Relationships in the educators' knowledge and practices on Eco-justice

	Knowledge	Practices
Knowledge	-	0.06^{ns}
Practices	0.06^{ns}	-

ns – not significant

Results in table 8 show no significant relationship between knowledge and practices of teachers (p = 0.65> 0.05). Hence, those teacher-respondents who have a high level of knowledge about ecojustice may not have a high level of practice. The jobs that people have or how they do things are not necessarily affected by what they knew. The present investigation shows that the teachers

have the "high" level of knowledge about eco-justice and "desirable" level of practice. Knowledge does not go hand in hand with practice. Some teachers are proficient in their knowledge about eco-justice but failed to apply to their day to day living, and on the contrary, there are concepts which they were not aware of yet they applied to their actual life conditions. Based on interview and ocular observation of different sites, there are those who continuously throw their garbage everywhere when they very well knew that it is not proper, it is against the law, and morally not right. Teachers teach students to observe cleanliness, yet they are not observing cleanliness in school and at home. Not everyone practices what he or she preaches.

It does not always follow that what they learned from school will be practiced in their homes. Some teachers are just mimicking the theory to their students, but they failed to practice what they have taught. Women or females appear to be more particular in details regarding how they train and demonstrate the science concepts than males. They tend to exhaust all means and see to it that their students got the message correctly.

The respondents appear to manifest an optimistic attitude towards eco-justice. This attitude may be due to their being receptive and supportive of the environmental reforms and policies of the government. Those respondents with higher educational qualifications appear to have better knowledge because formal education makes them acquire more information that may be useful to meet or cope with life's stresses. Imagine the curriculum developers, schools, and policymakers, all working together to create environments that advocate the study of eco-justice and support teacher and student growth in ecological literacy and the study of eco-justice. Imagine curriculum materials and resources provided to empower teachers to educate and students to learn. Imagine professional development providing learning opportunities to enhance pedagogical knowledge and higher education institutes supporting teacher preparation in eco-justice. Making eco-justice literacy a reality for all requires a strong system of support for teachers from professional development, curriculum developers, school districts, and teacher preparation institutes. The study of eco-justice is not yet a part of any curriculum. The guiding principles must support the visions of education reforms that require all students to study and promote eco-justice literacy for all students at all levels. Teachers must be adequately prepared to teach eco-justice concepts and content.

5.0 Conclusion

Educators in Panay and Guimaras have "high" level of knowledge about eco-justice due to their vast and rich experiences, and they are supportive of the acceptable practices of eco-justice because they believe that environmental sustainability is worth doing. The "very desirable" level of practice of elementary teachers is due to the various environmentally-related activities required of them. The degree of degradation of the environment in Panay and Guimaras is alarming, but the people had undertaken extensive restoration and adopted coping and recovery measures to address the problems. The people realized the importance of the human and nonhuman components of the environment and had undertaken steps to restore their damage. Because of the experiences, they were able to formulate and adopt coping and recovery measures to address the problems. Most of them are practicing the conservation and preservation measures right after the environmental degradation.

References

Baxter, B. (2004). *A theory of ecological justice.* Routledge Publishing. New York. Retrieved from http://boks.google.com on November 10, 2011.

Bower, G.H. & Hilgard, E.R. (1981). *Theories of learning* (5th ed.). Englewood Cliffs, NJ. Prentice Hall. 141-157.

Guiang, E.S. (2004). *Environmental analysis for USAID/ Philippines strategy for 2005–2009.* EcoGov 1 Technical Report for USAID/Manila. Pasig City, Philippines. 111pp. Retrieved from https://rmportal.net/library/content/1/118_philippines/at_download/file on November 7, 2011.

Jugan, R. (1977). *The health and environmental program and the community in Tabulan, Cebu.* Unpublished Master's Thesis. University of Visayas, Cebu City.

Low, N.P. and Gleeson, B. (1998). *Justice, society, and nature: an exploration of political ecology*. London, Routledge. 87-95.

Lucero, L. (1984). *Student-teachers' perceived knowledge of biological achievement test.* Unpublished Master's Thesis. University of the Philippines, Diliman, Quezon City.

Rhodes, E. L. (2003). *Environmental justice in America: a new paradigm.* Bloomington, Indian University Press.

Schlosberg, D. (2007). *Defining environmental justice: theories, movements, and nature*. Oxford University Press.174-186.

Stephenson. K. (2004). *What knowledge tears apart, networks make whole*. Reprinted from Internal Communication Focus, no. 36. Retrieved from http://www.netform.com/html/icf.pdf on Sept. 3,

2011.

Subong, P. (2005). *Statistics for research*. 1st Edition Manila, Rex Printing Company.127-139.

Tippins, D.J., Mueller, M.P., van Eijck, M. & Adams, J.D. (2010). *Cultural studies and environmentalism: the confluence of ecojustice, place-based (science) education, and indigenous knowledge systems.* Springer, Dordrecht ; London. 494pp.

United States Environmental Protection Agency (2007). *Environmental Justice* – Retrieved from http:// www.epa-gov.compliance/environmental justice/ index.html on November 7, 2011.

Unlas, M.L.C. (2000). *Ecological knowledge and practices in the academe.* Unpublished thesis. Cebu Normal University.Cebu City.