

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

**EXPLORING COMMUNITY FUNDS OF KNOWLEDGE TO DEVELOP
CONTEXTUALIZED BIOLOGY LESSON PLAN EXEMPLARS
FOR K-12 INSTRUCTION**

A Thesis Presented to the
Faculty of the Graduate School
College of Education
West Visayas State University
La Paz, Iloilo City

In Partial Fulfilment
of the Requirements for the Degree
Master of Arts in Education
(Biology)

by
Michael Galvan Garlan

April 2018

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

APPROVAL SHEET

A Thesis for the Degree
Master of Arts in Education
(Biology)

By

Michael G. Garlan

Approved by the Research Committee:

ELVIRA L. ARELLANO, Ph.D., Chair

IGNACIO S. TIBAJARES, Jr., MA.Ed., Member

LOURDES N. MORANO, Ed.D., Outside Expert

PETER ERNIE D. PARIS, Ph.D., Adviser

HILDA C. MONTAÑO, Ed.D., RGC
Dean

April 2018

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

Garlan, Michael G., "*Exploring Community Funds of Knowledge to Develop Contextualized Biology Lesson Plan Exemplars for K-12 Instruction*". Unpublished Master's Thesis, College of Education, West Visayas State University, Iloilo City, Philippines 5000. February 2018

Abstract

Every community is an educational setting. Learners' context is an underdeveloped resource that can be tapped to create meaningful teaching-learning experiences. This hybrid study explored the coastal barangay and extracted funds of knowledge that existed within the various cultural practices of the community, drew out relevant biological concepts from these funds of knowledge congruent to K-12 curriculum, developed biology lesson plan exemplars anchored on the science competencies and according to the contextualization framework. These lesson plan exemplars were pilot tested to determine the perceptions of students and teachers regarding the context-based, situated instruction. Guided by the theoretical frameworks of constructivism and contextualization, the study made use of the tradition of action ethnography to study culture and extracted significant biological concepts from the community funds of knowledge through thematic analysis and memory banking. It also utilized descriptive survey to determine the perceptions of biology teachers and students regarding the contextualized lessons and lesson plan exemplars. Four cultural practices (a) *pagpanginhas*, (b) *panalom*, (c) *pamawod*, and (d) *panguling* carried out in the daily basis were explored and studied and two key informants for each cultural practice were interviewed at the coastal barangay of Guimaras. Seven exemplary contextualized lesson plans were developed covering topics in osmosis, components of ecosystem, biodiversity

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

and taxonomy, energy transfer in ecosystem, carrying capacity and population growth and conservation biology. Thirty Grade 8 students of the rural high school nearest the coastal barangay served as the pilot testing participants and four biology teachers were tapped to utilize the developed contextualized lesson plan exemplars in their classroom instruction. The quantitative result revealed that students and teachers had positive and acceptable perceptions of the context-based, situated instruction. The study further showed how a contextualized classroom instruction based on the funds of knowledge that exist among the learners as part of the community to which they belong can create a transformative teaching-learning process that not only respects but also caters to the need of every learner. Lessons connected to the lived experiences of every learner enable him or her to appreciate and acknowledge that his/her subject has applications to his/her life as a worker, family member, and citizen and thus engages him/her in any activities that such learning requires. Thus, the science curriculum may be enriched with situated approaches to establish relevant and meaningful science education that relates to all learners and embraces not only their culture but also their individuality and applying contextualized lessons in biology pedagogy narrows the gap between classroom instruction and learner diversity, creating a more inclusive, situated, relevant science education that can last a lifetime.

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

Table of Contents

	Page
Title Page	i
Approval Sheet	ii
Acknowledgment	iii
Abstract	v
List of Appendices	x
Chapter	
1 INTRODUCTION	1
Background of the Study	2
Epistemological and Theoretical Perspectives	5
Statement of the Problem	7
Assumptions of the Study	7
Research Paradigm	9
Definition of Terms	10
Significance of the Study	11
Scope and Delimitation of the Study	13
2 REVIEW OF RELATED LITERATURE	14
Constructivism in Science Education	15
Contextualized and Localized Curriculum and Lesson Planning	17
Culturally Relevant Biology Education	19
Cultural Memory Banking	22

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

	Community Funds of Knowledge	24
	Summary	27
3	RESEARCH DESIGN AND METHODOLOGY	28
	Research Design	28
	Research Participants	31
	Study Locale	32
	Data-gathering Instruments	35
	Data Gathering Procedure	38
	Data Analysis	39
	Thematic Analysis	40
	Lesson Plan Development	41
	Ethical Considerations	44
4	RESULTS AND DISCUSSION	45
	Funds of Knowledge	46
	<i>Pagpanginhas</i> : Picking Sea Shells that Sell	47
	Memory Bank 1	55
	<i>Panalom</i> : Plunging into the Deep	56
	Memory Bank 2	62
	<i>Pamawod</i> : Lining with the Leaves	63
	Memory Bank 3	67
	<i>Panguling</i> : Traditional Charcoal Making	68
	Memory Bank 4	72

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City



Themes and Relevant Biological Concepts	73
Traditional Knowledge of the Cultural Practices	73
Environmental Concern and Sustainability of Ecological Services	74
Nature Dynamics	75
Individual Functioning	76
Relevant Biological Concepts	77
<i>Pamawod</i> and the Concept of Osmosis	77
<i>Pagpanginhas</i> and the Concept of Biodiversity and Classification	79
<i>Panalom</i> and the Concept of Nature Dynamics	80
<i>Panguling</i> and the Concept of Conservation Biology	81
Contextualized Biology Lesson Plan Exemplars	83
K-12 Learning Competencies	84
Diffusion and Osmosis Lesson Plan	87
Students' Perceptions of Contextualized Biology Lessons	91
Teachers' perceptions of Contextualized Lesson Plan Exemplars	108
5 SUMMARY, CONCLUSIONS, IMPLICATIONS, and RECOMMENDATIONS	111
Summary	111
Conclusions	114
Implications	115
Recommendations	116
REFERENCES	118
APPENDICES	125



WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

List of Appendices

Appendix	Page
A Curriculum Guide	126
B Survey Questionnaires	128
C Documentation	133
D Permission Letters	140
E Consent Form	144
F Semi-Structured Interview Guide	147
G Data Analysis Tables	149

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

120

References

- Alonday, R. (2010). Charcoal-making community as context for culturally relevant science education: An action ethnography, *Unpublished Master's Thesis*. Iloilo City: West Visayas State University, Iloilo City
- Banks, J.A & Banks, C.A.M. (2001). *Multicultural education: Issues and perspectives* (4th Edition). Boston: Ally and Bacon
- Berns, A. (2011). *World Wide Access, Content Areas: Career Pathways and Contextual Learnings*, CA. USA
- Bruner, J. (1986). Actual minds, Possible Worlds. Cambridge, MA: *Harvard University Press*. Retrieved from <http://www.psych.nyu.edu/bruner>
- Buenvendida, H. (2015). The coastal community as context for culture-based science literacy: Framework for community-based learning. Iloilo City: *Unpublished Dissertation*, West Visayas State University
- Clores, M. A. (2018). *Contextualization of Biological Concepts. Biology Teachers Association of the Philippines Regional Convention and Scientific Sessions 2018*. Damires Hills, Janiuay, Iloilo. Academic Lecture, February 9-10, 2018
- Cobern, W.W. (1993). Contextual constructivism: The impact of culture on the learning and teaching of science. Retrieved from <http://www.wmich.edu/slcsp/SLCSP115/slcsp115.pdf>
- Department of Education (DepEd) Curriculum Guide

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

121

- Demmert, W.G. & Towner, J.C. (2003). Final paper: A review of the research literature on the influences of culturally based education on the academic performance of Native American students. Portland, OR. Northwest Regional Educational Laboratory. Retrieved from: <http://www.eric.ed.gov/PDFS/ED463917.pdf>
- Dolores, Nueva Valencia, Guimaras Archives (MPDO)
- Eyssartier, C., Ladio, A.H., & Lozada, M. (2008). Cultural transmission of traditional knowledge in two populations of North-Western Patagonia. *Journal of Ethnobiology and Ethnomedicine*. BioMed Central The Open Access Publisher.
- Fraenkel, J. R. & Wallen, N. E. (2010). How to design and evaluate research in Education, International Edition. 1221 Avenue of the Americas, New York: McGraw-Hill Companies Incorporated
- Genzuk, M. (1999). Tapping into community funds of knowledge. Effective strategies for English language acquisition: Curriculum guide for the professional development of teachers grades kindergarten through eight (pp. 9-21). L.A. Los Angeles Annenberg Metropolitan Project/ARCO Foundation
- Hammond, L. (2001). Notes from California: An anthropological approach to urban science education for language minority families. *Journal of Research in Science Teaching*.
- Handa, V. (2008). Bridging communities and pre-service teacher education through community immersion: A collaborative action ethnography. *Unpublished dissertation*, University of Georgia, Athens, Georgia, U.S.A.

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

122

┌

└

- Handa, V.C. & Tippins, D.J. (2012). Cultural memory banking in pre-service science teacher education research in science education.
- Heckman, P. E., & Weissglass, J. (1994). Contextualized mathematics instruction: Moving beyond recent proposals. FLM Publishing Associations, Vancouver, British Columbia, Canada. Retrieved from flm-journal.org.
- Lichtman, M. (2013). *Qualitative research in Education: A user's guide*. Sage Publications, Inc. 3rd Edition
- Linn, M.C. & Burbules, N. (1993). Construction of knowledge and group learning. In K. Tobin (Ed). *The Practice of Constructivism in Science Education*. Washington D.C.: American Association for the Advancement of Science Press. (pp 79-137). Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.e>
- Miller, K. R. & Levine, J. (1991). *Biology Annotated Teachers Edition*. Englewoods Cliffs, New Jersey: Prentice Hall
- Moll, L., Amanti, C., Neff, D., & Gonzales, N. (1992). Funds of knowledge for teaching: Using qualitative approach to connect homes and classrooms: Theory into practice, pp 31,132-142.
- Morano, L., Lopez, C., & Tan, A, E. (2011). *Fundamentals Of Biology 1*. Lorimar Publishing, Inc. 776 Aurora Blvd., cor. Boston Street, Cubao, Quezon City, Metro Manila
- Municipality of Nueva Valencia Historical and Cultural Accounts Archives

└

┌

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

123

Nazarea, V. (1998). *Cultural Memory and Biodiversity*. Tucson, Arizona: University of Arizona Press

Nichols, S., Tippins, D., Morano, L., Bilbao, P. & Barcenal, T. (2005). Creating community-based science educational research: Narratives from a Filipino barangay. In G. Spindler (Ed). *Innovation in educational ethnography: Theory, methods and results* (pp.345-377). New York: Lawrence Erlbaum

Pearl, J. (2015). Localization and contextualization of the curriculum. Retrieved from <https://prezi.com>

Pioquid, A. F. (2015). *Sugilanon sa Katunggan: Co-Inquiry on Mangrove Conservation Knowledge and Practices for Culturally-Relevant Research and Instruction. Unpublished Dissertation, West Visayas State University, Iloilo City*

SABES/ACLS Lesson Planning Resource Guide, February 2008

Simons, E., Nicolas, G., Andrews, T. & Lock, S.C. (2016). *Traditional Knowledge-Fact Sheet*. Canada: Simon Fraser University

Straton, A. & Pearson, L. (2008). Importance of ecological services for sustainable development. CSIRO Sustainable Ecosystems, Internet Article.

Sumadic, K. S. (2013). *Border Crossings in a Multicultural Classroom: Science among the Indigenous Learners. Unpublished Masters Thesis. West Visayas State University Iloilo City*

Subong, P.E. (2005). *Statistics for Research*. Jaro, Iloilo City: Rex Bookstore

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

124

Taylor, M., Barr L., West, V. (2003) *Public policy in the community*. Internet article

Trends in International Mathematics and Science Study (TIMSS)

Torres, R. Z. (2015). Localization and Contextualization: Bringing Relevant Concepts in

Classroom. SunStar Pampanga. Retrieved from <https://www.pressreader.com>

Upadhyay, B.R. (2005). Using students' lived experiences in an urban science classroom:

An elementary school teacher's thinking. Retrieved from

www.interscience.wiley.com

Utech, J. L. (2008). Contextualized curriculum for workplace education: An introductory

guide. Massachusetts Worker Education Roundtable. Retrieved from

<https://www.umass.edu>.

William M.K. Trochim <https://www.socialresearchmethods.net/kb/qualapp.php>. Internet

Article

www.educatingmatters.wordpress.com