

# **OPERATION “GALUGAD”: ELT-INFUSED GLOCALIZED MODULE ON EXPERIENTIAL LEARNING**

## **ABSTRACT**

Amidst social distancing issues in times of COVID19 pandemic, modular learning offers the best strategy to overcome problems in the delivery of instruction. Aimed to determine the effectiveness of the developed glocalized experiential learning-infused module in Earth and Life Science. Experiential learning is theorized to improve students’ mastery of science competencies. Using quasi-experimental research, pretest-posttest design, the participants are the Libacao National Forestry Vocational High School (SY 2019-2020) Grade 11 students. Data came from the module’s posttests and Student Evaluation of Learning Experience Questionnaire (SELEQ). The learning material consisted of glocalized print module and its video-based accompaniment. Results of SELEQ and Posttest revealed significant increase after using the module. Correlation analysis of SELEQ and Posttest revealed a significant positive linear relationship. Hence, when learning materials are glocalized, infused with experiential learning activities, learners are more likely to be engaged, improving their academic performance.

Keywords: *glocalization, learner’s material, video-based module, experiential learning,*

*COVID19*

## **INTRODUCTION / PURPOSE**

COVID-19, which was identified in December 2019, quickly became a global pandemic. This health pandemic has utterly disrupted an education system that many asserts was already losing its relevance. Social distancing and mass gathering protocols has affected the traditional teaching methods. Amidst this pandemic, distance education using print and non-print learning materials, offers a great opportunity to continue the provision of education. This study focused on the use of the validated Experiential Learning Theory (ELT)-enriched, glocalized module in Earth and Life Science.

The Philippines ranked in the low 70s in the 2018 Programme for International Student Assessment (PISA), a student assessment of 15-year-old learners across 79 countries done by the Organization for Economic Co-operation and Development (OECD). The Philippines ranked last among 79 countries in reading comprehension, mathematics and science (Paris, 2019). The National Achievement Test (NAT) results of the students in the Division of Aklan, revealed that the Science and Math scores are the lowest among the subjects being assessed (DepEd, 2019). Science is a subject that is best learned through hands-on and actual experience. It has been observed that the students lack this aspect of learning. The module created by the researcher is rooted in Experiential Learning Theory which emphasizes that through experiences, the student can best understand and retain the topics being discussed.

The Republic Act No. 10533, made into law last May 15, 2013, stated that, “The DepED shall adhere to the following standards and principles in developing the enhanced basic education curriculum: ... (d) The curriculum shall be contextualized and global (Official Gazzette, 2013). Thus, to address this demand, the researcher opted to make this research-based learning resource.

Glocalization is the simultaneous occurrence of both universalizing and particularizing tendencies in contemporary social, political, and economic systems. The term is a linguistic hybrid of globalization and localization which was popularized by the sociologist Roland Robertson (Rouse, 2018). The learning module that this study developed follows this same principle: localized to the learners in the Philippines and can be tailored to the global learners.

“Galugad” is a Tagalog term which literally translates to “exploration.” The activity-based instructions in the module were infused with experiential learning that accommodates differentiated learning. The said module was created and developed by the researcher (Nagal, 2020). The learning activities encourage the learner to explore (“galugad”) his surroundings and relate it to the concepts, hence, the title “Operation Galugad”.

The aforementioned arguments are only a few of the evidences that a learning material is necessary in conducting the daily classroom activities. The study is focused on the effectiveness of the developed ELT-enriched glocalized module in Earth and Life Science, specifically the competencies in Bioenergetics, to enhance students’ experiential learning and improve academic performance. More specifically, the researcher answered the following research questions: (1) What are the contents of the developed Learner’s Materials and its video accompaniment? (2) What is the students’ experiential learning level before and after exposure to the module? (3) Is there a significant difference in the students’ experiential learning level before and after exposure to the module? (4) What is the students’ performance in Bioenergetics before and after the intervention? (5) Is there a significant difference between the students’ performance in Bioenergetics before and after the intervention? And, (6) Is there a significant relationship between the student’s experiential learning level and academic performance?

## **METHODOLOGY**

### **Research Design**

This study used a Quasi-experimental research, specifically pretest-posttest design. The study treated data quantitatively. Quantitative aspects of the research focused on the results of the Student Evaluation of Learning Experience Questionnaire (SELEQ) and the students' performance in Bioenergetics.

### **Selection Criteria and Sources of Data**

The participants of this study are the Grade 11 students of the Libacao National Forestry Vocational High School, SY 2019-2020. The respondents for the SELEQ and posttest were chosen randomly from the population size of 141 students at 95% confidence level. A sample size of 104 students answered the tools before and after the interventions.

### **Data Analysis**

Data obtained from the SELEQ and posttest were the basis of the effectiveness of the interventions. The SELEQ was used to evaluate the experiential learning levels of students. The posttest was used to evaluate performance in Bioenergetics. The data were collected twice: before and after using the module. The data collected were analyzed using descriptive (mean, standard deviation) and inferential (t-test, Pearson's r) statistics. A Statistical Package for the Social Sciences (SPSS) version 2.0 software was used to compute the data.

### **Findings**

**Contents of the Learner's Material and its Video-Accompaniment.** The Learner's Material was developed from the least-mastered competencies in Bioenergetics: The Cell, Photosynthetic Reactions, and Acquisition and Utilization of Energy. Globalization and experiential learning were the focus in developing the globalized experiential learning-infused

module in Earth and Life Science. Globalization in learning materials is integrated through: (1) the use of Mother Tongue (Akeanon) in the video-based module; (2) using localized and indigenized materials in the experimentations and other experiential learning activities; and, (3) integrating a universal language (English) in the module and in the video subtitle. The use of varied activities emphasizing the experiential learning, multiple intelligences and differentiated strategies were incorporated in the elaboration and extension parts of the module. The use of gadgets, software, and videos integrates ICT in the module. The cover and chapter design of print materials were originally crafted by the researcher. Pictures and contents taken from public domains were properly cited in the references. The rest of the standards were taken from D.O. #411, s. 2018 (DepEd Division of Aklan, 2018). Table 1 shows the major features of the learning module and its video accompaniment.

(insert Table 1 here)

**Students' Experiential Learning Level Before and After Utilizing the Module.** Table 2 presents the experiential learning level of students based on two (2) episodes of the SELEQ scores. The pretest and posttest were composed of 55-item conditions thought to be part of experiential learning of students in Science. The pretest (SELEQ1) mean score of students was 2.60, *Moderate Experience Level*. After utilizing the module, the mean score (SELEQ2) improved to 3.51, *High Experience Level*.

(insert Table 2 here)

Analysis of paired samples t-test in Table 3 reveals that there was a significant difference (5%) in the students' experiential learning level before and after using the module (t-value=-11.393; p-value=0.000).

(insert Table 3 here)

Results revealed that the experiential learning of students has been dramatically improved from moderate to high level of experience implying the module's effectiveness.

#### **Performance of Students in Bioenergetics Before and After Utilizing the Module.**

Table 4 presents the students' performance on the pretest and posttest scores. The pretest and posttest were composed of 30-item multiple-choice test. The test was equally divided into three (3) parts. The parts of the tests were The Cell, Photosynthetic Reactions, and Acquisition & Utilization of Energy. Before utilizing the module, the mean scores of students for The Cell was 4.52 (*Least Mastered*), the Photosynthetic Reactions was 3.90 (*Least Mastered*), and Acquisition & Utilization of Energy was 4.36 (*Least Mastered*). After utilizing the Learner's Material, the mean scores improved to 7.35 (*Satisfactorily Mastered*), 7.04 (*Satisfactorily Mastered*), 6.79 (*Satisfactorily Mastered*), respectively. All scores have increased by 2-3 points at average.

(insert Table 4 here)

Analysis of paired samples t-test in Table 5 revealed that there was a significant difference (5%) in the students' performance in Bioenergetics before and after the utilization of module ( $t\text{-value}=-4.731$ ;  $p\text{-value}=0.000$ ).

(insert Table 5 here)

Results revealed that the students' performance in Bioenergetics improved using the module and its video accompaniment. Their scores were upped to Satisfactorily Mastered levels, implying that using the module has improved their learning experience and in turn, enhanced their performance in Bioenergetics.

**Relationship Between the Learning Experience Level and Performance in Bioenergetics of Students Before and After the Utilization of the Module.** Analysis of Pearson's  $r$  correlation test in Table 6 reveals that there was a significant relationship (5%)

between the Learning Experience Level and Performance in Bioenergetics of students (p-value=0.000).

(insert Table 6 here)

Further analysis of the correlation test in Figure 1 shows that there is a significant (1%) positive linear relationship (r-value=+1) between the two variables. That is, the higher the Learning Experience Level of students, the higher their Performance are in Bioenergetics.

(insert Figure 1 here)

These data further proved the premise that enhancing experiential learning also improves student performance at school. Thus, using glocalized experiential learning infused modules greatly helps in achieving the goals of a learning competency.

## **DISCUSSIONS / CONCLUSION**

When learning materials are glocalized, contextualized and infused with experiential learning activities, learners are more likely to be engaged in learning the concepts. Furthermore, conversational manner of teaching as well as the use of varied learning materials to supplement traditional teaching methods is proven to enhance understanding of the topics. Lastly, the videos accompanying the module are the best response to the 21st century-learners who are more visual when it comes to learning. The experiential learning level of a student is directly related to his performance in a competency. Thus, to enhance student performance in Science and any other subjects, experiential learning must be taken into consideration. The module helps in encouraging independent and supplemental learning in all grade levels.

## RECOMMENDATIONS

It is highly recommended that the module and its video accompaniment used in this research be utilized in other areas. Textbook developers must also ensure that the learning materials they create are easy to understand and contain varied activities for the benefit of the learners.

## ACKNOWLEDGMENTS

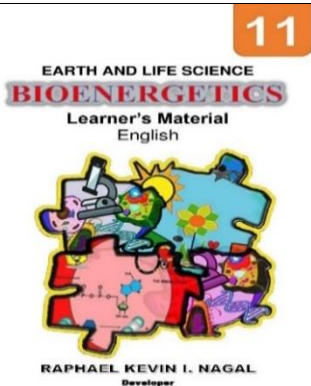



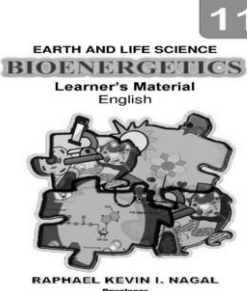


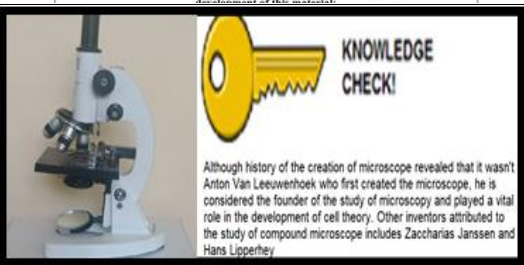
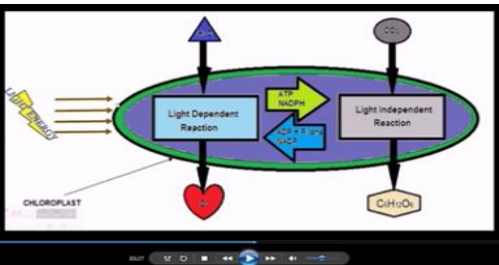
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Table 1. Major features of the learner's module and the video accompaniment.

Features	Learner's Module	Video accompaniment
Cover Page		
About the Developer's Page / Introductory Video	<p><b>ABOUT THE DEVELOPER</b></p> <p>Raphael Kevin Nagal y Inguin was born on October 24, 1986 at Madalag, Aklan. His parents are Dioleto Nagal y Nasaral and Teodora Inguin y Naig. He is the fourth child among the five siblings. Nicknamed as "Nono" within the family circle, he was commonly called by his second given name.</p> <p>Kevin took his elementary diploma as the First Honors of his batch at Madalag Elementary School. He was also the Class Valedictorian during his time at Madalag National High School. He passed the University of the Philippines College</p> 	
Title Page / Graphic Introduction		
Copyright Page	<p><b>Copyright Page</b></p> <p><i>Earth and Life Science - Grade 11 Learner's Material First Edition 2020 Copyright © Raphael Kevin I. Nagal</i></p> <p>All rights reserved. No part of this publication may be reproduced, distributed or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author, except in the case of brief quotations embodied in the critical reviews and certain other noncommercial uses permitted by copyright law. For permission requests, write to the author, addressed "Attention: Permissions Coordinator," to this email: kevcrui007@gmail.com.</p> <p>Borrowed materials (i.e. songs, stories, poems, pictures, photos, brand names, trademarks, etc.) included in this module are owned by their respective copyright holders. The author does not represent nor claim ownership over them.</p> <p>The author acknowledges the contributions of the following people in the development of this material:</p>	
Knowledge Checker / Graphic Illustrations		

Experimentations  
/ Experiential  
Learning  
Activities

**LET'S ENHANCE YOUR LEARNING:**

**Cheek to Cheek...**

**Experiment A:** All living plants and animals are made up of some combination of cells! There are various kinds of, such as connective, epithelial, muscle, and nervous cells, which grow together as tissue! Nervous tissue, connective tissue, and muscle tissue are, unfortunately, hard to examine up close without an invasive procedure. Fortunately, epithelial cells are available in abundance from your very own mouth for external examination! The epithelial cells we'll be examining in this experiment are from the inside of your cheek and are specifically classified as "Stratified Squamous Nonkeratinized Epithelium."

**Materials:** toothpick; Water; tissue paper; microscope and slide; cellphone camera

**Procedure:**

1. Place a drop of water on the slide.



Assessment

**LET'S CHECK YOUR KNOWLEDGE!**

**True or False.** Identify whether the following statements is True or False. Write your answers on the space provided before each number.

1. The cells are the basic unit of life.
2. Meiosis exists only in plant cells.

**LET'S MEASURE YOUR LEARNING!**  
**MULTIPLE CHOICE.** Encircle the letter of the correct answer.

1. Which of the following is FALSE about photosynthesis?  
a. The main product of photosynthesis is carbon dioxide.  
b. The main product of photosynthesis is oxygen and glucose.  
c. Photosynthesis makes use of carbon dioxide to make glucose.  
d. Photosynthesis occurs in two stages.
2. Which of the following is TRUE about the Calvin's Cycle?  
a. Its main process is to convert carbon dioxide to glucose.  
b. This process occurs in the presence of light energy.  
c. Oxygen is produced in this stage.  
d. Carbon dioxide is metabolized to form glucose.
3. Which of the following occurs during the light-dependent stage?  
a. Carbon dioxide is converted to glucose.  
b. Oxygen is released in the atmosphere.  
c. Carbon dioxide is metabolized to form glucose.  
d. Oxygen is released into the atmosphere.
4. All of these may happen at any stage of photosynthesis except  
a. Carbon dioxide is converted to glucose.  
b. Glucose molecules are converted to glucose.  
c. Oxygen is dissociated from water through photolysis.  
d. Oxygen is released into the atmosphere.
5. Chlorophyll is found in special cells in the leaves called  
a. Mesophylls.  
b. Chloroplasts.  
c. Protoplasts.  
d. Protoplasts.

**PLEASE PAUSE UNTIL YOU FINISHED THE TEST**

Table 2. Students' Experiential Learning Level Before and After Utilizing the Module  
**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	SELEQ1	2.60	104	0.71079	0.06970
	SELEQ2	3.51	104	0.61062	0.05988

Table 3. Difference in Students' Experiential Learning Level Before and After Utilizing the Module

Paired Samples Test									
Paired Differences (N=104)									
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1 -	SELEQ1	-0.92	0.82	0.08	-1.08	-0.76	-11.393	103	0.000
	SELEQ2								
*significant at 5% level									

Table 4. Performance of Students in Bioenergetics Before and After the Utilization of the Module

<b>Mean Scores (N = 104)</b>				
	The Cell	Photosynthetic Reactions	Acquisition & Utilization of Energy	<b>Average</b>
Pretest	4.52	3.90	4.36	<b>12.78</b>
Posttest	7.35	7.04	6.79	<b>21.17</b>
Difference	2.83	3.14	2.43	<b>8.39</b>

Table 5. Difference in the Performance of Students Before and After the Utilization of the Module

Paired Samples Statistics									
		Mean		N	Std. Deviation		Std. Error Mean		
Pair 1	POSTTEST1	12.78		104	5.06071		0.49624		
	POSTTEST2	21.17		104	3.07651		0.30168		
Paired Samples Test									
Paired Differences (N=104)									
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	POSTTEST1 - POSTTEST2	-8.39	6.18	0.61	-9.596	-7.193	-13.857	103	0.000

\*significant at 5% level

Table 6. Relationship Between the Learning Experience Level and Performance in Bioenergetics of Students Before and After the Utilization of the Module

<b>Correlations</b>			
		SELEQ	POSTTEST
SELEQ	Pearson Correlation	1	0.379**
	Sig. (2-tailed)		0.000
	N	208	208
POSTTEST	Pearson Correlation	0.379**	1
	Sig. (2-tailed)	0.000	
	N	208	208

\*\*, Correlation is significant at the 0.01 level (2-tailed).

Figure 1. Scatterplot of Relationship Between Learning Experience Level of Students and their Performance in Bioenergetics

