

The Use of Blended Learning Approach to Improve the Students' Academic Performance in Meteorology and Oceanography 1



Mary Jean L. De La Cruz, Ph.D.

Faculty, BSMT Department

John B. Lacson Foundation Maritime University (Arevalo), Inc.
Sto. Niño Sur, Arevalo, Iloilo City 5000

ABSTRACT

This quasi-experimental study aimed to determine the effectiveness of blended learning approach to the academic performance of the first year Bachelor of Science in Marine Transportation (BSMT) students in Meteorology and Oceanography 1 at JBLFMU-Arevalo during the second semester of school year 2018-2019. The participants of this research were two sections comparable with each other who were enrolled in the course Meteorology and Oceanography 1. There were 30 students composed of 15 in the experimental group and 15 in the control group. Validated and reliability-tested researcher-made questionnaire was utilized to gather the data needed for the study. The independent variables were the blended learning approach and the lecture-class discussion method while the dependent variable was the academic performance as scores in Meteorology and Oceanography 1. The statistical tools used were mean, standard deviation, Mann-Whitney test, and Wilcoxon-Signed ranks test set at .05 level of significance. The effect size was computed to determine the effectiveness of the intervention which is the blended learning approach to student's academic performance in Meteorology and Oceanography 1. Results showed that in the pretest, though the experimental group had a higher mean score than the control group, The Mann-Whitney test showed no significant difference in the mean scores of the two groups. When blended learning approach was introduced, findings showed that there were significant differences in the mean scores of pretest of experimental and control groups as well as in the posttests of both groups. Furthermore, a significant difference was observed between the mean gains of both groups. Lastly, the Cohen's *d* effect size revealed a 2.22 (>1.0) which has a very large effect size indicating that 98% of the control group

(lecture-class discussion method) who are below the average person in experimental group (blended-learning approach). This simply means that blended-learning approach is an effective way to improve students' performance in the course Meteorology and Oceanography 1. It is recommended that this approach may be utilized to complement other method of teaching and learning as well as for individual learning.

BACKGROUND OF THE STUDY

- Azizan (2010) stated that either pure e-learning or traditional learning hold some weakness and strengths, it is better to mix the strengths of both learning environments to develop a new method of delivery called blended learning.
- This study is anchored under the learning theories for online education specifically the Theory of Connectivism that learning and knowledge exists within networks by George Siemens (2004).
- This study was conducted because the instructors of the JBLFMU-Arevalo may benefit from the findings of this study. The results will provide them the different learning methods influencing the learning capabilities and experiences of students.

STATEMENT OF THE PROBLEM

This study aimed to determine the effectiveness of blended learning approach to the academic performance of the first year BSMT students in Meteorology and Oceanography 1 during the second semester of school year 2018-2019.

1. What are the pretest score performance of the experimental and control groups?
2. What are the posttest score performance of the experimental and control groups?
3. Is there a significant difference in the pretest score performance between the experimental and control groups?

RESULTS AND DISCUSSION

2

Prettest Score Performance in Meteorology and Oceanography 1 of the Experimental and Control Groups

Table 2

Prettest Score Performance in Meteorology and Oceanography 1 of the Experimental and Control Groups

Compared Group	n	M	Descriptive Rating	SD
Experimental	15	29.07	Good	2.46
Control	15	26.87	Good	4.03

Table 3

Posttest Score Performance in Meteorology and Oceanography 1 of the Experimental and Control Groups

Compared Group	N	M	Descriptive Rating	SD
Experimental	15	40.47	Very Good	3.04
Control	15	33.40	Good	3.66

3

Posttest Score of Performance in Meteorology and Oceanography 1 of the Experimental and Control Groups

4

Mann-Whitney Test Result for the Significant Difference in the Prettest Score Performance in Meteorology and Oceanography 1 between the Experimental and Control Groups

Table 4

Mann-Whitney Test Result for the Significant Difference in the Prettest Score Performance in Meteorology and Oceanography 1 between the Experimental and Control Groups

Compared Group	U	W	Z	Asymp. Sig. (2-tailed)
Experimental	73 ^{ns}	193	-1.649	.100
Control				

Note. ns means not significant at .05 level of probability.

Table 5

Mann-Whitney Test Result for the Significant Difference in the Posttest Score Performance in Meteorology and Oceanography 1 between the Experimental and Control Groups

Compared Group	U	W	Z	Asymp. Sig. (2-tailed)
Experimental	14.50*	134.50	-4.084	.000
Control				

5

Mann-Whitney Test Result for the Significant Difference in the Posttest Score Performance in Meteorology and Oceanography 1 between the Experimental and Control Groups

4. Is there a significant difference in posttest score performance between the experimental and control groups?
5. Is there a significant difference in the pretest and posttest performance of the experimental group?
6. Is there a significant difference in the pretest and posttest performance of the control group?
7. What are the mean gains of the experimental and control groups?
8. Is there a significant difference in the mean gains of the experimental and control groups?
9. How effective is the blended learning approach in terms of students' performance in Meteorology and Oceanography 1?

METHODOLOGY

Research Design

The quasi-experimental method of research was employed in this study specifically the Non-equivalent Control Group design.

Participants

Toss coin was used to determine the experimental (n=15) and control groups (n=15)

Instrument

A validated and reliability-tested researcher-made pretest/posttest was used.

Data Collection

The data needed for this study were gathered through the use of researcher-made pretest and posttest that were administered to both experimental and control groups.

Data Analysis

Mean Scale, Descriptive Rating, and Indicators for interpreting the Pretest and Posttest Scores

Table 1
Mean Scale, Descriptive Rating, and Indicators for Interpreting the Pretest and Posttest Scores

Mean Scale	Descriptive Rating	Indicators
48.04 - 60.0	Excellent	Students have mastered all the

Note. Asterisk (*) means significant at .05 level of probability.

6

Wilcoxon-Signed Ranks Test Result for the Significant Difference in the Pretest and Posttest Score Performance in Meteorology and Oceanography 1 of the Experimental Group

Table 6
Wilcoxon-Signed Ranks Test Result for the Significant Difference in the Pretest and Posttest Score Performance in Meteorology and Oceanography 1 of the

Experimental Group

Compared Test	Z	Asymp. Sig. (2-tailed)
Pretest	-3.413*	.001
Posttest		

Note. Asterisk (*) means significant at .05 level of probability.

7

Wilcoxon-Signed Ranks Test Result for the Significant Difference in the Pretest and Posttest Score Performance in Meteorology and Oceanography 1 of the Control Group

Table 7
Wilcoxon-Signed Ranks Test Result for the Significant Difference in the Pretest and Posttest Score Performance in Meteorology and Oceanography 1 of the

Control Group

Compared Test	Z	Asymp. Sig. (2-tailed)
Pretest	-3.316*	.001
Posttest		

Note. Asterisk (*) means significant at .05 level of probability.

8

Mean Gains of the Experimental and Control Groups

Table 8
Mean Gains of the Experimental and Control Groups

Compared Group	Pretest	Posttest	Mean Gain
Experimental	29.07	40.47	11.40
Control	26.87	33.40	6.53

Table 9
Mann-Whitney Test for the Significant Difference in the Mean Gains of the

Experimental and Control Groups

Compared Group	U	W	Z	Asymp. Sig. (2-tailed)
Experimental	41*	161	-2.983	.003
Control				

Note. Asterisk (*) means significant at .05 level of probability.

Blended learning approach is 98% effective!

9

Mann-Whitney Test for Significant Difference in the Mean Gains of Experimental and Control Groups

CONCLUSIONS

- Blended learning is an effective intervention to improve the students' academic performance in Meteorology and Oceanography 1 over the traditional method which is the lecture-class discussion.
- This is evident in students' posttest performance, mean gain, and effect size. This simply means that students

Score	Quality	Competencies
36.03 - 48.03	Very Good	Students have mastered most of the competencies
24.02 - 36.02	Good	Students have mastered at the average competencies
12.01 - 24.01	Fair	Students have mastered few competencies
1.0 - 12.0	Poor	Students have mastered very few competencies

REFERENCES

- Akkoyunlu, B., & Soyulu, M. Y. (2006). A study on students' views about blended learning environment. *Turkish Online Journal of Distance Education*, 7 (3), 43-56.
- Azizan, F. Z. (2010). Blended Learning in Higher Education Institution in Malaysia. *Proceedings of Regional Conference on Knowledge Integration in ICT*. Retrieved from http://library.oum.edu.my/oumlib/sites/default/files/file_attachments/odi-resources/4334/blended-learning.pdf

perform better in Meteorology and Oceanography 1 when exposed to blended learning approach.

RECOMMENDATIONS

- Methods of teaching such as blended learning mode need to be introduced, where the presence of an instructor is supported by the use of modern technology.
- Blended learning may be utilized to complement other method of teaching and learning as well as for individual learning.
- Trainings and seminars may be conducted for instructors from time-to-time to bring up-to-date and get acquainted with latest technological innovations like blended learning.
- JBLMFU-Arevalo may embrace and support the use of blended learning and e-learning platform.
- Encouraged the application of PBL and OBTL on blended learning approach modules and its entirety as to assist the cognitive functions of learner centered pedagogy.

ACKNOWLEDGMENT

This study is funded by Commission on Higher Education (CHED) through Institutional Development and Innovation Grant (IDIG).