

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

MODIFIED FLIPPED CLASSROOM FOR GRADE 8 PHYSICS

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
(Physics)

by

Veronica B. Salinas

December 2022

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

APPROVAL SHEET

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

by

Veronica B. Salinas

Approved by the Research Committee:

LARRY D. BUBAN, Ph.D., Chair

ROBERTO G. SAGGE JR., Ph. D., Member

ELVIRA L. ARELLANO, Ph.D., Outside Expert

CHIVE G. GABASA Ph.D., Adviser

RICKY M. MAGNO, Ph. D.
Dean

December 2022

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

Salinas, Veronica B., "*Modified Flipped Classroom for Grade 8 Physics.*" Unpublished Master's Thesis, College of Education, West Visayas State University, Iloilo City, December 2022

Abstract

This quasi-experimental research was conducted to determine the physics achievement of 64 Grade 8 learners in physics class. A total of two (2) sections with thirty-two (32) students each were considered in this study. One section was the experimental group exposed to modified flipped classroom instruction in physics class and the other section was the control group who were exposed to non-flipped classroom instruction in physics class. The choice whether a certain group was subjected to modified flipped classroom instruction or non-flipped classroom instruction was done through the toss-coin method. This pretest-posttest method of research utilized a 60-item researcher-made achievement test in Physics. The statistical tools used were mean and standard deviations for descriptive statistics and t-test for independent and dependent samples for 0.05 alpha level for inferential statistics. The findings showed that the modified flipped classroom group and non-flipped classroom group were low in terms of the level of physics achievement before the intervention. After the intervention, the level of physics achievement of both advanced to average. No significant difference existed between the pre-test and the post-test on physics achievement of modified flipped classroom group and non-flipped classroom group. However, significant differences were noted between the pre -and post-treatment achievement of each group.

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

Moreover, the study revealed no significant difference in the mean gain achievement between the experimental and the control groups. This implied that both instructions have a positive effect on learners' physics achievement. It is encourage to use both instruction to enhance the Physics achievement of learners. This could be done by making use of mixed methods of instruction using both modified flipped classroom instruction and non-flipped classroom instructions to certain lessons wherein both instructions are suited and appropriate for the learners' needs. Furthermore, the study showed positive learning experiences of learners exposed to modified flipped. In fact, the learners find it helpful and beneficial to them.

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

TABLE OF CONTENTS

	Page
Title Page	i
Approval Sheet	ii
Acknowledgment	iii
Abstract	vi
Table of Contents	ix
List of Figures	xii
List of Tables	xiii
List of Appendices	xiv
 Chapter	
1 INTRODUCTION TO THE STUDY	1
Background of the Study	2
Theoretical Framework of the Study	5
Research Paradigm	7
Statement of the Problem	7
Hypotheses	8
Significance of the Study	9
Definition of Terms	10
Delimitation of the Study	11

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

2	REVIEW OF RELATED LITRATURE	13
	K to 12 Education in Science Curriculum	13
	COVID-19 Pandemic and Education	15
	Brief History of Flipped Classroom	16
	Definition of Flipped classroom Instruction	17
	Flipped Classroom and Technology	18
	Flipped Classroom and its Advantages	19
	Flipped Classroom and Academic Achievement	21
	Summary	23
3	RESEARCH DESIGN AND METHODOLOGY	26
	Research Design	26
	Methodology	28
	Research Locale	28
	Participants	28
	Data Gathering Procedure	30
	Data Analysis Procedure	32
4	RESULTS AND DISCUSSION	34
	Descriptive Data Analysis	34
	Inferential Data Analysis	36
	Qualitative Analysis	43

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

5	SUMMARY OF THE PROBLEM, CONCLUSIONS, AND RECOMMENDATIONS	47
	Summary	47
	Conclusions	50
	Implications	51
	Recommendations	55
	REFERENCES	57
	APPENDICES	69

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

LIST OF FIGURES

Figure	Page
1 Research Paradigm	8

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

LIST OF TABLES

Table		Page
1	Quasi-experimental Pretest-posttest Design	27
2	Pre-test and Post-test Achievement of Students Exposed to Modified Flipped Classroom and Non-flipped classroom	35
3	Difference in the Pre-test Mean Scores in Physics Achievement between the Modified Flipped Classroom and Non-flipped Classroom	37
4	Difference in the Post-test Mean Scores in Physics Achievement of Learners exposed to Modified Flipped classroom and Non-flipped Classroom	38
5	Difference in the Pre-test and Post-test Achievement of learners Exposed to Modified Flipped Classroom and Non-flipped Classroom	40
6	Mean Gain Achievement in Physics of Learners Exposed to Modified Flipped Classroom and Those Exposed to Non-flipped Classroom	41
7	Difference in the Mean Gain Achievement in Physics of Learners Exposed to Flipped Classroom and Non-flipped Classroom	42

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

LIST OF APPENDICES

Appendix		Page
A	Letters to the Validators	70
B	Letter to the Superintendent for the Conduct of the Study	74
C	Letter to the School Head for the Conduct of the Study	77
D	Letter to the School Head for the Conduct of Pilot Testing of Instruments	79
E	Letter to the Dean Allowing the Panel Members to Observe the Class	81
F	Parents' Consent Form	83
G	Table of Specifications	85
H	Sample Test Items of the Physics Achievement Test	87
I	Results of the Reliability Test of the 60-Item Physics Achievement Test	90
J	Sample Lesson Plan	92
K	Sample of classroom Observation Report	97
L	Photographs	99

References

- Abellar, R. (2012). Interactive physics computer simulations (IPCS): An alternative method of teaching high school physics. Unpublished master's thesis. West Visayas State University, Iloilo City, Philippines.
- Abeysekera, L., & Dawson, P. (2015). Motivation and cognitive load in the flipped classroom: definition, rationale and a call for research. *higher education research & development*, 34, 1-14. Retrieved from <https://doi.org/10.1080/07294360.2014.934336>
- Akçayır, G., & Akçayır, M. (2018) The flipped classroom: A review of its advantages and challenges. *computers & Education*, 126, 334-345. <https://doi.org/10.1016/j.compedu.2018.07.021>
- Alimen, R. (2008). Attitude towards physics and physics performance, theories of learning, and prospects in teaching physics. Retrieved from www.eisrjc.com/documents/Attitude_towards_Physics_and_Physics_Performance_1325819585.pdf
- American Association for the Advancement of Sciences. (1989). *Project 2061: Science for all Americans*. New York: Oxford University Press.
- American Association for the Advancement of Science. (1993). *Benchmarks for science literacy*. New York: Oxford University Press.
- Ardales, V., (2008). *Basic concepts and methods in research (3rd ed.)*. Educational House, Manila, Philippines. ISBN#978-971-513-245-9

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

59

- Awidi, I., & Paynter M. (2019). The impact of A flipped classroom approach on student learning experience. Retrieved from <https://www.semanticscholar.org/paper/The-impact-of-a-flipped-classroom-approach-on-Awidi-Paynter/ba7a3e9e66b5ff9be6c6f43ba58663d54dede4a6>
- Baker, (2002). The classroom flip||: Using web course management tools to become the guide on the side. In 11th International Conference on College Teaching and Learning, 2000.
- Baldelovar, R. (2017). Flipped and inquiry-based instructions: Effect on students performance in physics. Unpublished master's thesis. West Visayas State University, Iloilo City, Philippines.
- Barbour, C., & Schuessler, J. (2019). A preliminary framework to guide implementation of the flipped classroom method in nursing education. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/30439682/>
- Bell, M. (2015). An investigation of the impact of a flipped classroom instructional approach on high school students' content knowledge and attitudes toward the learning environment. (Master's Thesis)Brigham Young University. Retrieved from <http://scholarsarchive.byu.edu/etd>
- Bergmann, J. & Sams, A. (2012). Flip your classroom: Reach every student in every classevery day (1st ed.). International Society for Technology in Education; ISBN 9781564843159. Retrieved from <http://books.google.com/books?id=nBi2pwAACAJ>

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

60

Bishop, J. & Vergeler, M., (2013). The flipped classroom: a survey of the research.

Brame, C., (2013). Flipping the classroom. Vanderbilt University Center for Teaching.

Retrieved from <http://cft.vanderbilt.edu/guides-sub-pages/flipping-the-classroom/>.

Cabansag, M.G. (2014). Impact Statements on the K to 12 Science program in the enhanced Basic education curriculum in provincial schools, retrieved from www.researchersworld.com/vol5/issue2/Paper_04.pdf

Cheng I., Chen N., Yang X., Liu Y., Dong Y., & Zhai X. (2017). Effect of the flipped classroom on the mathematics performance of middle school students. *Educational Technology Research and Development* 68 (3), 1461-1484

Chicca J. (2018). Generation Z: Approaches and teaching-Learning practices for nursing professional development practitioner Retrieved from <https://pubmed.ncbi.nlm.nih.gov/30188477>

Chipp, T. (2013). Falls classrooms flipping out thanks to new program. *Niagara Gazette*. Retrieved from <http://www.niagaragazette.com/communities/x1746084890/Falls-classrooms-flipping-out-thanks-to-new-program/print>

Clark 2015. The Effects of the Flipped Model of Instruction on Student Engagement and Performance in the Secondary Mathematics Classroom. Retrieved from <https://eric.ed.gov/?id=EJ1051042>

Ernst, D. & Love, B., (2016). Inquiry-based learning and the flipped classroom model. Retrieved from <https://www.researchgate.net/publication/282577444>

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

61

Department of Education. (2012). K to 12 curriculum guide: Science. Philippines: Author

Department of Education. (2013). K to 12 curriculum guide: Science. Philippines:
Author

Eggen, P., & Kauchak, D. (1996). Exploring science in the elementary school.

Chicago:Rand McNally College Publishing

Evangelista, C., & Evangelista, M., (2013). Assessment and rating of learning outcomes
under the K to 12 Basic Education Curriculum. Divine Mercy College Foundation
Inc., Caloocan City, Philippines.

Evseeva, A., & Solozhenko A. V. (2015). Use of flipped classroom technology in
language learning. Retrieved from [https://www.semanticscholar.org/paper/Use-
of-Flipped-Classroom-Technology-in-Language-Evseeva-
Solozhenko/c1fc9191bb3be21c8669dadfb63790ed2c4bf888](https://www.semanticscholar.org/paper/Use-of-Flipped-Classroom-Technology-in-Language-Evseeva-Solozhenko/c1fc9191bb3be21c8669dadfb63790ed2c4bf888)

Flipped Learning Network & Sophia (2014). Growth in flipped learning: Transitioning the
focus from teachers to students for educational success. Retrieved from
<http://www.flippedlearning.org/survey>.

Fulton, K. (2012). Upside down and inside out: Flip your classroom to improve student
learning. *Learning & Leading with Technology*, 39(8), 12-17

Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative
potential in higher education. *Internet & Higher Education*, 7(2), p95–105.

Garrison, D. R., & Vaughan, N. D. (2007). Blended learning in higher education:
framework, principles, and guidelines. San Francisco, CA: Jossey-Bass.

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

62

- Gojak, L. (2012). To flip or Not to flip: That is not the question! National Council of Teachers of Mathematics. Retrieved from <http://www.nctm.org/about/content.aspx?id=34585>
- Green, G. (2012). The flipped classroom and school approach: Clintondale High School. Presented at the annual Building Learning Communities Education Conference, Boston, MA. Retrieved from <http://www.2012.blcconference.com/documents/flipped-classroom-school-approach.pdf>
- Hamdan, N., McKnight, P., Mcknight, K., Arfstrom, P., & Arfstrom, K. M. (2013). The flipped learning model: A white paper based on the literature review titled a review of flipped learning. Flipped Learning Network. Retrieved from <http://www.flippedlearning.org/cms>
- Herreid, C. F. (2002). Using case studies in science, and still covering content. In L. Michaelson, A. Knight, & L. Fink (Eds.) *Team based learning: A transformative use of small groups* (pp. 109-118). Westport, CT: Praeger
- Hodge, A., Love B., Gradgenette N., & Swift, A. (2014). A flipped classroom approach: Benefits and challenges of flipping the learning of procedural knowledge. Retrieved from <https://experts.nau.edu/en/publications/a-flipped-classroom-approach-benefits-and-challenges-of-flipping->
- International Society for Technology in Education. (2008). ISTE standards for teachers. Retrieved from <http://www.iste.org/standards/ISTE-standards/standards-for-teachers>
- Jenkins, C. (2012). The advantages and disadvantages of the

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

63

flipped classroom. Retrieved from LectureTools:

<http://info.lecturetools.com/blog/bid/59158/TheAdvantages-and-Disadvantages-of-the-flipped-classroom>

Kay, R., & Kletskin, I. (2012). Evaluating the use of problem-based video podcasts to teach mathematics in higher education. *Computers & Education*, 59, 612-627.

Khan Academy (2012). Watch. practice. Learn almost anything for free. Retrieved from [http:// www.khanacademy.org.about](http://www.khanacademy.org.about).

King, A. (1993). From sage on the stage to guide on the side. *College Teaching*, 41(1), 30-35. Retrieved from http://www.edweek.org/ew/articles/2012/10/0/06khan_ep.h32.html

Lederman, N.G. (2004). In L. B. Flick & N. G. Lederman (Eds.), *Scientific inquiry and nature of science: Implications for teaching, learning, and teacher education*. Dordrecht: Kluwer Academic Publishers.

Li Cheng, Albert D. Ritzhaupt, Pavlo D. Antonenko (2018). Effects of the flipped classroom instructional strategy on students' learning outcomes: a meta-analysis. Retrieved from <https://www.semanticscholar.org/paper/Effects-of-the-flipped-classroom-instructional-on-a-Cheng-Ritzhaupt/f839cb1380f365b034b19d5a971abe53eea83b6a>

MacGregor, J.T., & Smith, B.L. (1992). What is collaborative learning? In M. Maher A.M. Goodsell and V. Tinto, editors, *Collaborative Learning: A sourcebook for higher education*, (10-30). National Center on Postsecondary Teaching, Learning and Assessment, 1992.

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

64

Marlowe, C., (2012). The effect of the flipped classroom on student achievement and stress. . (Master's Thesis). An unpublished Master of Arts in Education Thesis, Montana State University, Bozeman, Montana. Retrieved from <http://scholarworks.montana.edu/xmlui/bitstream/handle/1/1790/MarloweC0812.pdf?sequence=1>

Merriam-Webster's Collegiate Dictionary (10thed.). (1993). Springfield, MA:

MerriamWebster

Mayer, R.E., Moreno R., & Sweller, J. (2020). E-Learning theory. Retrieved from

<https://e-learneducation.blogspot.com/2020/05/e-learning-theory-mayer-sweller-moreno.html>

Montgomery, J. (2015). The effects of flipped learning on middle school students' achievement with common core mathematics. (Master's Thesis). An unpublished Master of Arts in Education Thesis, California State University, San Marcos. Retrieved from http://csusm-dspace.calstate.edu/bitstream/handle/10211.3/143668/MontgomeryJared_Summer2015.pdf;sequence=1

Moore, K. D. (2005). Effective instructional strategies from theory to practice. Thousand Oaks, CA: Sage Publications.

National Research Council. (2000). Inquiry and the National Science Education Standards. Washington, DC: National Academy Press.

National Research Council. (1996). National science education standards. Washington, DC: National Academy Press.

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

65

Neumeier, P. (2005). A closer look at blended learning - parameters for designing a blended learning environment for language teaching and learning. *ReCALL*, 17(2), 163–178.

Newman, W.J., Abell, S.K., Hubbard, P.D., McDonald, J., Otaala, J., & Martini, M. (2004). Dilemmas of teaching inquiry in elementary science methods. *Journal of Science Teacher Education*, 15(4), 257-279.

O'Flaherty, J., & C. Phillips (2015). The use of flipped classrooms in higher education: A scoping review. Retrieved from <https://ctl.yale.edu/sites/default/files/files/OFlahertyandPhillips2015.pdf>

Overmyer, G. (2014). The flipped classroom model for college algebra: Effects on student achievement. (Doctoral Dissertation) Colorado State University, Fort Collins, Colorado José

Palazón-Herrera J., & Soria-Vílchez A. (2021). Students' perception and academic performance in a flipped classroom model within Early Childhood Education Degree. Retrieved from <https://www.semanticscholar.org/paper/Students%E2%80%99-perception-and-academic-performance-in-a-Palaz%C3%B3n-Herrera-Soria-V%C3%ADlchez/3bebbf9b44b2d9ed81c8b2ff37130a4d5d9427ff>

Papadopoulos, C., & Roman, A. (2010). Implementing an inverted classroom model in engineering statics: Initial results. In *Proceedings of the ASEE Annual Conference & Exposition*, Louisville, Kentucky.

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

66

Pearsons & Partners on Flipped Learning (2013). *Electronic Education Report*, 20(14), 5.

Retrieved from

<http://www.electroniceducationreport.com/content/pearsonpartners-flipped-learning>

Prefume, Y. (2015). *Exploring a flipped classroom approach in a japanese language classroom: A mixed methods study.*(Doctoral Dissertation). Baylor University

Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education-Washington*, 93:223-232

Ryan, M.D. & Reid, S.A. (2016) *Impact of the flipped classroom on student performance and re-tention: A parallel controlled study in general chemistry.* *J. Chem. Educ.*

Retrived from <https://doi.org/10.1021/acs.jchemed.5b00717>

Ruddick, K.W. (2012). *Improving chemical education from high school to college using a more hands-on approach.* Unpublished doctoral dissertation, University of Memphis.

Sahin, A., Cavlazoglu, B., & Zeytuncu, Y.E. (2014). *Flipping a college calculus course: A case study.* *Educational Technology & Society*, 18 (3), 142-152

Schmidt, Stacy M. P.; Ralph, David L. (2016). *The Flipped Classroom: A Twist on Teaching.* Retrieved from

<https://eric.ed.gov/?q=schmidt+ralph+flipped&id=EJ1087603>

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

67

Strayer, J. (2007). The effects of the classroom flip on the learning environment: A comparison of learning activity in a traditional classroom and a flip classroom that used an intelligent tutoring system. (Doctoral Dissertation) Ohio State University.

Stoddart, T., Abrams, R., Gasper, E., & Canaday, D. (2000). Concept maps as assessment in science inquiry learning: A report of methodology. *International Journal of Science Education*, 22(12), 1221–1246.

Svan, J. (2014). DODDS-Europe teachers find success with ‘flipped classroom’ approach. *Stars and Stripes*. Retrieved from <http://www.stripes.com/news/dodds-europe-teachers-find-success-with-flipped-classroom-approach-1.266254>

Talan, T., & Gulsecen, S. (2019). The effect of a flipped classroom on students’ achievement, academic engagement, and satisfaction levels. Retrieved from <https://www.semanticscholar.org/paper/The-Effect-of-A-Flipped-Classroom-on-Students%E2%80%99-and-Talan-G%C3%BClse%C3%A7en/fff5bcd2323afc00ddf3032821bdd76a6ef19076>

UNESCO (2021). The State of the Global Education Crisis: A Path to Recovery. Retrieved from <https://www.unicef.org/media/111621/file/%20The%20State%20of%20the%20Global%20Education%20Crisis.pdf%20.pdf>

WEST VISAYAS STATE UNIVERSITY
COLLEGE OF EDUCATION
GRADUATE SCHOOL
Iloilo City

68

- Van Alten, D. C.D., Phielix, C., Janssen, J., & Kester, L. (2019). Effects of flipping the classroom on learning outcomes and satisfaction: A meta-analysis. Retrieved from https://www.researchgate.net/publication/333548679_Effects_of_Flipping_the_Classroom_on_Learning_Outcomes_and_Satisfaction_a_Meta-Analysis
- Vygotsky, L.S. (1978). *Mind and society: The development of higher mental processes*. Cambridge, MA: Harvard University Press
- Wang, P., Yen, Y., Wu, H., & Wu, P. (2013). The learning effectiveness of inquiry-based instruction among vocational high school students. Center for Teacher Education, Cheng-Shiu University, Educational Research International IS ISSN-L: 2307-3713, ISSN: 2307-3721 Vol. 2 No. 2
- World Health Organization (2020). WHO announces COVID-19 outbreak a pandemic. Retrieved from <https://www.euro.who.int/en/health-topics/health->
- Zainuddin Z., & Halili, S.H. (2016) Flipped classroom research and trends from different fields of study. *International Review of Research in Open and Distributed Learning*, 17. <https://doi.org/10.19173/irrodl.v17i3.2274>
- Zappe, S., Leicht, R., Messner, J., Litzinger, T., & Lee, H. (2009). —Flipping the classroom to explore active learning in a large undergraduate course. In *Proceedings of the 2009 American Society for Engineering Education Annual Conference and Exhibition*. Austin, TX: ASEE
- Zuber, W. J. (2016). The flipped classroom, a review of related literature. Retrieved from <https://www.semanticscholar.org/paper/The-flipped-classroom%2C-a-review-of-the-literature-Zuber/08545b424090b5cc4f410a3d2b3832d1e8d976d8>