



Department of Education Region VIII - Eastern Visayas

RESEARCH BULLETIN

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EFFICACY OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) INTEGRATION IN SCIENCE BY AREA II-B TEACHERS OF LEYTE DIVISION

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Introduction

The Philippine educational system has responded to one of the recent societal needs, which is to equip learners with information literacy skills essential in making them become globally competitive individuals. The various programs initiated by DepEd on strengthening the computer literacy of students equipped with essential skills to survive and flourish in an information-saturated environment. With the ICT integration across the curriculum, they are trained to become logical, critical and problem-solver learners.

In 2010, the guidelines on the implementation of the DepEd Computerization Program (DCP) was enacted through DepEd Order

No. 78, s. 2010 (DepEd, 2010). The said DepEd Order stipulated the aim of DCP which is to provide public schools with appropriate technologies that would enhance the teaching-learning process and eventually meet the challenges of the 21st century. The implementation of DCP has prepared the department in the change of its curriculum which intensifies ICT utilization in teaching. A closer look at the K to 12 implementation would reveal that the Science framework focuses on the development of scientifically, technologically and environmentally literate Filipino who manifests skills as a critical problem solver, responsible steward of nature, innovative / creative citizen, informed decision maker, and effective

CONTENT HIGHLIGHTS

1

Efficacy of Information and Communication Technology (ICT) Integration in Science by Area II-B Teachers of Leyte Division

3

Impact of Flipped Classroom on Grade 7 Students' Performance In English Grammar

5

Homework in Class, Lessons at Home: Flipped Classroom and the Academic Performance in Grade VIII Mathematics

7

RRC Activity Updates

communicator (Tan, 2012). This aim embedded in the Science agenda can be achieved with ICT integration in the said subject.

With the various reports published on the significance of ICT in education and the nationwide implementation of the DepEd computerization program, it is expected that there is a growing number of school recipients in Leyte Division. There is a need to look into how the

computers have been utilized specifically in Science teaching. It is at this assumption that the researchers decided to embark on this research in order to study the extent on which ICT integration in Science is practiced in Area II B of Leyte Division.

The general objective of this study was to determine the efficacy of ICT integration in Science by teachers in Area II-B of Leyte Division and examine their current practices of ICT integration so that the results will become a springboard for future plans in the academe. After all, it is through the conduct of researches that one can really see the concrete problems related to programs and projects. In short, through this research, one can discover if indeed ICT integration is functional in Leyte and determine ambiguities in its implementation for improvement purposes.

Methodology

The study utilized the descriptive research design and the respondents were 67 Science teachers of the 13 schools in Area II-B-Leyte Division (municipalities including Dulag, Burauen, La Paz, Julita, Dagami, and TabonTabon). They are the teachers who are either major/non-major of any Science subject and are handling Science classes both in Junior High School and Senior School for academic year 2019-2020.

The questionnaire crafted

for the purpose of this research was pre-tested in order to identify vague or ambiguous items and to pinpoint problems in the administration of the instrument. After the revision, approval of the Schools Division Office and the school heads involved were sought. Questionnaires were administered to the teacher-respondents from November 2019 until March 2020.

Responses were analyzed using descriptive statistics. To safeguard the identity of the schools and the respondents, their names were held anonymous and the results were handled with utmost confidentiality. The results were analyzed without divulging identification of the respondents.

Results and Discussion

The results of the study indicate that Science teachers are provided by the Department of Education with the essential equipment to be able to integrate ICT in their classes. Almost all of the schools are recipients of DepEd Computerization Program and have been given desktop computers for learners, projectors, and laptops. There is also a sufficient number of Science teachers in Area II-B. The larger the school, the more Science teachers are employed.

Despite this profile, it was found out that teachers do not really maximize the use of these technological tools in enhancing the teaching-learning process. They would only utilize the tools when they prepare

reports and learning plans but do not use them as instructional tools in class activities. Interesting and engaging educational applications are rarely used by teachers. Hence, Science teachers in Area II-B have moderate efficiency in integrating ICT in the teaching-learning process.

Teachers are expected to have acquired knowledge and skills in forming and organizing their classes in non-traditional ways by merging the ICT with new pedagogy. However, various factors hamper Science teachers' efficiency to integrate ICT in Science classes. The major barriers to this are teacher's inability to access a good net connection, lack of ICT trainings, lack of technical knowledge on the use of technological tools, and lack of software and hardware instructional materials.

In light of the results of this study, two implications are being advanced. The first one points to the fact that teachers play significant roles in facilitating students' learning.

However, the study concluded that integrating ICT in Science lessons is still a challenge. Thus, the Leyte Division Office, including school administrators and district heads, are encouraged to support and provide opportunities for more trainings in the field of ICT. Likewise, coaching sessions must be proactively carried-out in every school for efficient integration of ICT in Science classes. With adequate support from the

administration, teachers may acquire positive attitudes and confidence in integrating ICT with their usual classroom practices.

The second implication is geared at improving the accessibility of the schools to ICT resources and infrastructure. Majority of the respondents mentioned problems on internet connection and lack of hardware and software for Science teaching. This issue involves strong commitment and support not only from the Department of Education but most especially from the local government units to provide funds for this purpose. Having these materials are of great importance to the ICT integration for it will help teachers

develop strategies and activities that can enhance teaching-learning.

Furthermore, the results of the study are useful in designing policies that are responsive to the needs of the learners that are to provide teachers confidence and competence to use ICT in their teaching practices. Finally, this study needs further investigation to justify and validate conclusions made. Hence, suggestions for further research are highly encouraged.

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IMPACT OF FLIPPED CLASSROOM ON GRADE 7 STUDENTS' PERFORMANCE IN ENGLISH GRAMMAR

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Introduction

Project Jugaban NHS Web-Based English was an intervention strategy that aid the delivery of learning among students. This intervention strategy used the concept of flipped classroom that will impact the students' performance specifically in the English learning area.

Recently, researchers have provided questions about the effectiveness of traditionally lecture-based teaching methods (Barr and Tagg, 1995). In spite of the fact that innovations in ICT enable new techniques for

pedagogy, traditional lectures were still the main and central teaching method (Bligh, 2000).

On the other hand, Ritchhart et al. (2011) showed that many educators have started to worry about the complexities of teaching and learning for understanding as opposed to knowledge-based

education. Educators were struggling to discover new strategies that enable learners to increase the effectiveness and incentives of the learning process (not just interest). Active learning was one technique.

The flipped classroom was a reversed way of traditional teaching in which learners used new materials outside of class, such as at home, usually in the form of books or videos, and then perform their additional work, such as problem-solving, discussion or debates, in the classroom.

The flipped classroom model was an instructional model in which students learn basic subject matter knowledge prior to in-class meetings, then come to the classroom for active learning experiences. Previous research

“majority of these responses indicated that the students value having authority to control the video, like repeating the video, and watching the videos anytime, anywhere and appreciated the collaborative and competitive in-class activities”

had shown that the flipped classroom model can motivate students towards active learning, can improve their higher-order thinking skills, and can improve their collaborative learning skills. However, most current studies focus on students' experiences with flipped classroom learning. Because so few studies address the instructor's perspective, and instructors' perspectives on technology integration can directly influence their practice of incorporating technology in instruction, this study sought to focus on intervention strategy.

Methodology

At the beginning of the experiment, a placement test designed by Macmillan publishers was completed by the experimental and control groups to determine whether there were significant differences between them regarding their proficiency

levels in L2 grammar. During the implementation of the research process, the experimental and control groups studied the same nine grammatical topics. The following procedure was used with the experimental group: the researcher selected videos on topics corresponding to the nine areas. The teacher discussed the videos with the students at the beginning of each class so that the teacher could figure out whether all students had watched the video or not. During the discussion, the teacher clarified any misunderstood points and answered the students' questions.

In the control group class, the teacher taught the grammatical lessons without the help of any videos. After a lecture explaining the grammar, the teacher asked the students to do one of the textbook activities to check their understanding, then solve another exercise in groups or individually.

After the experiment, the students completed a posttest to evaluate if the flipped classroom strategy had impacted the experimental group's proficiency level regarding these grammar topics.

Results and Discussion

Comparison of Experimental and the Control Groups in English Grammar Evaluation. The independent sample t-test revealed there was no statistically significant

difference in the post-test scores for the experimental group ($M = 33.30$, $SD = 6.85$) and control group ($M = 30.78$, $SD = 8.19$), $t(41) = -1.08$, $p = 0.285$. A simple comparison of the mean scores of both groups indicates that the grammar knowledge of the experimental group was higher than the control group. Flipped classroom strategy seemed to have an effect on the means though it did not reach the level of statistical significance.

Table 2.
Independent sample t-test results for group differences in the post-test

Group	N	Mean	Std. Deviation
Control	23	30.783	8.19066
Experimental	20	33.3	6.85258

**significant at 0.05 level

Students' Attitudes and Perceptions of the Flipped Classroom. The satisfaction exploratory questionnaire and the semi-structured interview showed that experimental group students' opinions and attitudes toward the flipped classroom were positive, and that they agreed the strategy enhanced their communication, benefited their learning, and encouraged their autonomy.

Students' Perceptions and Suggestions about the Flipped Classroom. The students' responses showed that the most favored aspects of the flipped

classroom were watching videos and in-class activities. The majority of these responses indicated that the students value having authority to control the video, like repeating the video, and watching the videos anytime, anywhere and appreciated the collaborative and competitive in-class activities.

The collaborative and competitive activities were highly

suggested by the students and others recommended the addition of more videos and implementing the flipped classroom strategy in other subjects.

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HOMEWORK IN CLASS, LESSONS AT HOME: FLIPPED CLASSROOM AND THE ACADEMIC PERFORMANCE IN GRADE VIII MATHEMATICS

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Introduction

Among the most common causes of low Mean Percentage Score, below mastery of learning competencies, and poor grades are the amount of school work requirement, unreliable homework results, hard assignments, loss of independent study, and complaints on long lectures. The will to gain back learners' trust in their day to day classes through letting them see the meaning of the work required from them motivated this query. This study intended to level down learners' burden in their assignments, find more purpose in their one hour class in Mathematics, meet individual learner's needs, succeed in their daily classroom goals, and improve their academic performance by flipping the mathematics classroom.

The flipped classroom, which was first introduced by Eric

“Group exposed to the flipped classroom strategy established a positive statistically significant difference to the incremental scores of the group on the traditional approach. These findings suggest that learning in the flipped classroom increases learners’ academic performance compared with the traditional classroom setting”

Mazur (Collins, 2015), Salman Khan, Maureen Lage, Glenn Platt, and Michael Treglia, Jon Bergmann and Aaron Sams (Stohr & Adawi, 2018), inverts the learning process so that learners receive the lesson's new and easy

concepts of the lessons at home or outside the classroom through very short video clips and do the hard part of the lesson inside the classroom through collaborative activities with other learners and by the guidance and supervision of the teacher (Bishop, 2013; Educause, 2012; Abeysekera & Dawson, 2015; and Aljaser, 2017).

Methodology

A quasi-experimental research design utilizing experimental and control groups was used in the study.

A twenty-item pre-test and post-test from the Learners' Module in Grade VIII Mathematics was used to assess the extent of similarity of the two in terms of academic status. The data used were taken from the 15 least performing learners of the two groups based on their pre-test

results. The two groups underwent study within five (5) weeks learning similar competencies on Inequalities in a Triangle, and parallel and perpendicular lines.

The pre-test and post-test results of the two groups went through T-test of Independent/ uncorrelated means to check significant statistical academic performance of the groups before and after experimentation. To test for incremental scores, analysis of variance between pre and posttest of the two groups was used.

Results and Discussion

Results of the study indicated that the use of the flipped classroom to increase academic performance is successful. The post-test means of the two groups showed a statistically significant difference. The incremental scores from the group exposed to the flipped classroom strategy established a positive statistically significant difference to the incremental scores of the group on the traditional approach. These findings suggest that learning in the flipped classroom increases learners' academic performance compared with the traditional classroom setting, much to this significance is that these mean scores interpreted were from the fifteen least performing learners of the two classrooms under comparison.

Flipped classroom increases learner outcomes in terms of their academic performance (Collins, 2015; Al-Zahrani, 2015; Bergmann and Sams, 2012; Stohr & Adawi, 2018; Bishop, 2013; Fisher and Frey, 2008; Marlowe, 2012; Crouch & Mazur, 2001; Ronchetti, 2010; Bishop & Verleger, 2013; Abeysekera & Dawson, 2015; Alvarez, 2011; Aljaser, 2017; Fisher and Frey, 2008; Bates & Galloway, 2012; Day & Foley, 2006; Mazur, 2011; Strayer, 2012; Khan, 2011; Asef-Vaziri, 2015; and Karlsson & Janson, 2016; Al-Zahrani, 2015; Wagner et al., 2013; Al-Zahrani, 2015; Mason et al, 2013; and, Tune et al., 2013).

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RRC Activity Updates!

Jennylynd D. Daya, EPS II - PPRD



DepEd Region VIII in its advocacy to institutionalize research, just conducted the **2021 Eastern Visayas Virtual Basic Education Research Conference (EVVBERC)** anchored with the theme, *“Education in the New Normal: Educational Experiences, Practices and Policy Implication”*. The activity aims to showcase the completed researches of DepEd Region VIII teaching and non-teaching personnel within the scope of the Basic Education Research Agenda.

The entries were Action Research and Basic Researches. Thesis and dissertations were also presented for the purpose of disseminating the results of the studies.

The virtual event was attended by audiences from the different Schools Division Offices as well as the presenters of the studies. Emerging as winners are the following:

Best Paper - Basic Research

- 1st Place - Dina S. Superable and Dr. Harvie D. Villamor (RO-HRDD)
- 2nd Place - Visitacion M. Recto (Baybay City)
Ben Fermin O. Abuda (Eastern Samar)
- 3rd Place - Elen P. Canonoy and Louie Jay S. Morillo (Biliran)

Best Paper - Action Research

- 1st Place - Dina S. Superable (RO-HRDD)

- 2nd Place - Christy Pansy N. Nidoy (So. Leyte)
- 3rd Place - Beth Catherine M. Dongon (Baybay City)

Best Presentation - Basic Research

- 1st Place - Dina S. Superable and Dr. Harvie D. Villamor (RO-HRDD)
- 2nd Place - Ma. Liwayway N. Lumanta (Baybay City)
- 3rd Place - Visitacion M. Recto (Baybay City)

Best Presentation - Action Research

- 1st Place - Danilo M. Macapugas Jr. (Tacloban City)
- 2nd Place - Joseph I. Banez (No. Samar)
- 3rd Place - Christy Pansy N. Nidoy (So. Leyte)

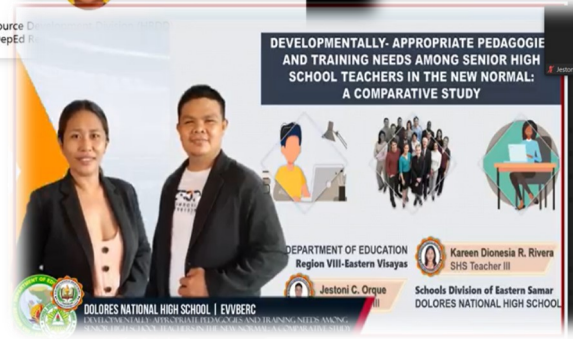
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ABOUT THIS PUBLICATION

This Research Bulletin is a quarterly publication of the Department of Education Region VIII. It highlights studies conducted by DepEd Teachers and Employees under the Basic Education Research Fund (BERF).

This publication is part of the Region's projects to disseminate the findings and recommendations of highlighted studies to promote the use thereof. The views and opinions expressed here are those of the authors and do not necessarily reflect those of the Office.

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