_____

Impact of Using Computer-aided Instruction (CAI) in the Performance of Grade 8 Students in Araling Panlipunan

Marlex M. Estrella
Jalajala National High School
marlexm.estrella@gmail.com

Abstract

This study aimed to assess the impact of using computer-aided instruction (CAI) in the performance of Grade-8 students in Araling Panlipunan of Jalajala National High School, school year 2017-2018. The researcher used experimental research design. This study focused on randomly selected eighty (80) students from the two sections as controlled and experimental group. The researcher administered teaching using traditional instruction and computer aided-instruction. A researcher made 20-item questionnaire is used to gauge the performance of students during pre-test and post-test.

During pre-test, controlled group got the mean percentage score of 23.50% while the experimental group got the mean percentage score of 27.00% and that both belonged to non-mastery level. During post-test, controlled group got the mean percentage score of 48.13% with non-mastery, while experimental group got the mean percentage score of 68.50% with nearing mastery level. It was revealed that there is no significant difference in the pre-test results between controlled and experimental group, since the P value of 0.136 is greater than .05 level of significance. In terms post-test results, it was revealed that there is significant difference, since the P value of 0.000 is less than .05 level of significance.

Based on the findings, it is concluded that teaching using computer-aided instruction has better impact on student's performance. It is also recommended that Araling Panlipunan teachers should teach frequently using computer-aided instruction. Teachers should increase their competencies in crafting computer-aided instruction through seminars, training and school based learning action cell (LAC).
Keywords: computer-aided instruction, student's performance, impact

Keywords: There should be at least three (3) keywords to   assist in indexing the paper and identifying qualified reviewers

Introduction

Educational equipment like computers and computer-related peripherals, have grown massively and have invaded many areas of our lives. The so called 21st century learners, the ICT citizens are fun of using it as stage to bring entertainment, communications, researches and even tool for storage. Principals, teachers and parents are also giving efforts to provide the said stuff in recognition of its value in students' learning. Instructions in formats like power point presentations, videos, illustrations and sounds are examples of media in which computer is of great help. Teachers who are using computer-aided instructions capture students' interest and extend more focus.

In light of this, the Department of Education through Department of Education Order No. 76 series 2010 known as Policy Guidelines on the Implementation of the 2010 Secondary Education Curriculum in the delivery of curriculum reiterates the use of ICT as integral and shall pursue in school through various instructional media. Department of Education Order No. 31 series 2012 known as Policy Guidelines in the Implementation of Grades 1 to 10 of the K to 12 Basic Education Curriculum encourages to utilize web-based resources and video materials to enrich and deepen students' understanding. Essentially the demands in using computer and its peripherals to provide CAI in teaching is high. The term "learning through computers" as discussed by Serin (2011) involves the use of computer as an aid for teacher to do his/her presentations and/or to get learners to practice and drill. Computers are used to enhance interactive activities, to provide immediate feedback and facilitates retention and to enable learner at diverse level to work

on their pace. This innovation is definitely favorable to meet learning outcomes and students' performance along with other basic resources in school. As cited by Tolbert (2015) computer-aided instruction was defined as the use of computer in education to teach and learn while providing instruction in remediation to test comprehension. According to Mann (2009) computer aided-instruction or computer-assisted instruction (CAI) frequently means different things to different people and that method used active developer is associated with a particular definition of multimedia learning. Multimedia learning just computer-aided instruction utilizes computer desktop, laptop, media player and others. Whitworth (2007) stated that in social studies classrooms, using technology, students may gain access to expansive knowledge, broaden their exposure to diverse people and perspective and engage in critical thinking activities necessary for citizenship education.

In a study conducted by Ragasa (2008) comparing the results using two methods of teaching, it was determined that the achievement posttest of the treatment group whom though using computer aided instruction has higher estimated marginal means as compare to controlled group taught using traditional method. In the comparison conducted by Alvarez (2010) focusing on the pre-test and posttest results using computer aided-instruction and its effects on student's achievement in science and technology III, it was found out there is no significant difference on the mean scores of both controlled and experimental group. The posttest results on the other hand revealed improvement in students performance and that there is a significant difference between controlled group taught not using computer-aided instruction and experimental group taught using computer-aided instruction.

Teachers of Jalajala National High School (JNHS) create, store, implement and adhere the use of computer in teaching Social Studies among students. JNHS also provided computer laboratory, and acquired more televisions, DLPs and speakers to be utilized in teaching. Teachers are doing sort of sharing and banking of computer-aided instruction over time. It was observed that many teachers are using the said equipment in the delivery of instruction as students thrive to meet the expected aftermaths. According to data, about twenty-seven (27) or 75% out of thirty-six (36) teachers are using computer-aided instruction in their weekly teaching. About thirty (30) of them

attended several seminars and training related to information and computer technology. This figure means that majority of teachers are using computer aided instruction and attending capability enhancement. In school year 2016-2017 and 2017-2018, the students got the mean percentage score from June to October of 60.16% and 63.19% in Araling Panlipunan, which means it is below the target of mastery level. With this condition, the researcher is very much interested in conducting this study to assess the impact of using computer-aided instruction (CAI) in students' performance in Araling Panlipunan. The result of this study will provide concrete data for curriculum supervisor and school head in the impact of CAI in students' performance. It will serve as gauge as to continue the frequent use of CAI in teaching and learning episodes. It may add reason among stakeholders to increase their support in school's pursuit to provide facilities and equipment related to information and computer technology.

This study focused on randomly selected eighty (80) students from Grade 8-Aguinaldo as controlled group and students from Grade 8-Rizal as experimental group under Araling Panlipunan subject of Jalajala National High School for the school year 2017-2018. It made used of researcher made twenty-item questionnaire in determining their performance in Araling Panlipunan during pre-test and posttest. Specifically this study aimed to determine performance of grade 8 students in Araling Panlipunan in pre-test and posttest using two methods, teaching using traditional instructions and computer-aided instructions. Likewise, it sought to answer if there is any significant difference that exists between pre-test and posttest results using two methods of teaching, teaching using traditional instruction and computer-aided instruction.

Theoretical Framework

This study was anchored on the Theory of Effective Computer-based Instruction for Adults. According to Lowe (2004) this theory presents components that impact effectiveness of computer based-instruction for adults. It includes learning outcome, self-directedness, computer self-efficacy, learning goal level, instructional strategy design, computer based instruction (CBI) design and external support. The learning outcomes deals with meeting goal through relevant instruction carried out through computer. Self-directedness deals on approach allowing learners to become motivated in assuming

ones responsibility and collaborative control of mental and contextual processes for meaningful educational results. Computer self-efficacy deals on ones capacity to successfully engage in CBI. The learning goal level deals as necessary performances enabling effective cognitive and psychomotor domains towards the desired outcomes. Instructional design speaks of essential process for content in terms of sequencing, presenting, decision-making and delivery. CBI design talks about programming content and design, while external support deals process and design outside the CBI.

This study and the abovementioned theory is related since both speaks instruction using computer. It also focuses with learning outcome set to achieve before administering two methods of teaching and as measured by researcher's made questionnaire during pre-test and post-test. The computer-aided instruction played a vital role in achieving the learning outcome subjected into analysis and interpretation. The instructional strategy design coincides on how the prepared instruction and materials that utilized computer realized during the two-week teaching and learning episodes between controlled and experimental group. Part of this research is the preparation of two-week lesson plan, power point presentation, and printed text, illustrations, downloading of video-clip, exit forms and assessment tools. The respondents whom instruction aided by computer determined efficacy in terms of their mean percentage score.

Methodology

This study used the experimental method of research. According to Matira (2016), experimental research is a research design wherein the researcher manipulates one or more independent variable or grouping variables and then observes the impact of that manipulation on one or more dependent or outcome variables. The basic question posted in this research concerns on what extent a particular intervention causes a particular outcome. The researcher found this design suitable since this study have grouping variables for controlled and experimental and it sought to determine particular effects or outcomes in students' performance in teaching using traditional instructions and teaching using computer-aided instruction.

The researcher sought permit from the school head and district supervisor to conduct the study. Teachers from Bayugo National High School and Bagumbong National High School determined the

validity of researcher made twenty-item questionnaire. Necessary lesson plan, power point presentation, video-clip printed materials and assessment tools as part of teaching using computer-aided instructions were turned over to Grade 8 Araling Panlipunan Teacher in preparation for the conduct of research. Considering the three (3) learning competencies in preliminary weeks of fourth quarter, the teacher started teaching using two methods, teaching using traditional instructions and teaching using computer-aided instruction for controlled and experimental group respectively. Pre-test and post-test are administered as gauge of their performance. Both test are retrieved and subjected for data analysis and interpretation.

The researcher also sought the parental consent for students who joined the study and explained well that all data derived from their participation will be treated with high level of confidentiality and will be utilized to serve the aim of the study.

Findings

Upon implementation of the study, the researcher came up with the following presentation of data, analysis, findings and reflections.

Table 1. Performance of Grade 8 Students in Araling Panlipunan during Pre-test and Post-test Using Two Methods of Teaching

Group	Methods of Teaching Used	Mean Percentage ore (MPS)		Mastery Level	Difference
		Pre-test	Post-test		
Controlled	traditional instruction	23.50%	48.13%	Non-mastery	24.63%
Experimental	computer-aided instruction (CAI)	27.00%	68.50%	Nearing mastery	41.50%

Table 1 shows the performance of grade 8 students in Araling Panlipunan during pre-test and post-test using two methods of teaching. In terms of pre-test controlled group got the mean percentage score of 23.50% while experimental group got the mean percentage score of 27.00%, both group are under non-mastery level. In terms of post-test, controlled group got the mean percentage score of 48.13% under non-mastery level, while experimental group got the mean percentage score of 68.50% under nearing mastery level. Comparing pre-test and post-test results, controlled group got the difference of 24.60% while

experimental group have difference of 41.50% respectively.

It can be noted that teaching using computer-aided instruction (CAI) has better impact in students' performance as compare to teaching using traditional instruction. The post-test revealed that experimental group after teaching using CAI, the students performed nearing mastery level as compare to controlled group whom students performed under non-mastery level.

Table 2. T-Test on the Significant Difference between the Pre-Test and Post-Test Results

Group	Pre-test			Post-test		
	Mean	SD	P-value	Mean	SD	P-value
Controlled	4.70	1.70	0.136	9.63	4.14	0.000*
Experimental	5.40	2.39		13.70	3.29	

*p < 0.05

Table 2 shows the t-test on the significant difference between the pre-test and post-test results between controlled and experimental group. It can be gleaned from the table above, that there is no significant difference in the pre-test results between controlled and experimental group using two methods of teaching, since the P value of 0.136 is greater than .05 level of significance, therefore the null hypothesis which states that there is no significant difference that exist in the pre-test results between controlled and experimental group using two methods of teaching, is failed to reject. The two groups of respondents are found on the same level of understanding before the lesson was taught and before administering the two methods of teaching. The post-test results between controlled and experimental group using two methods of teaching revealed significant difference, since the P value of 0.000 is less than .05 level, therefore the null hypothesis which states that there is no significant difference that exist in the post-test results between controlled and experimental group using two methods of teaching is rejected. It can be noted that the impact in using computer-aided instruction in the performance experimental group is better comparing to the performance of controlled using trading instruction or without using computer aided instruction.

Conclusions

Based on the presentation, analysis and interpretation of data, the following conclusions were generated:

1. During pre-test, both the respondents from controlled and experimental group performed with non-mastery level. During the post, respondents from experimental group taught using computer aided instruction performed better with nearing mastery level compared to controlled group taught using traditional instruction who still performed with non-mastery level.

2. There is a significant difference in the performance of the respondents between controlled and experimental group during post-test using both methods of teaching. Teaching using computer aided-instruction resulted with favorable impact in the respondents' performance in Araling Panlipunan.

Recommendations

Based on the findings and conclusions, the following recommendations are hereby presented:

1. Araling Panlipunan teachers should frequently administer computer-aided instruction in teaching Araling Panlipunan 8 and to the rest of the grade level.

2. Continuous enhancement of teachers' knowledge and skills in crafting lessons using computer aided instruction in the form of power point presentations, printed materials, video-clip, mp3 format, offline and on-line application and other application may be conducted within schools and other educational venue.

3. Instructional leaders and supervisors may continuously encourage teachers to apply computer aided instruction in their daily teaching and learning episodes.

4. Future Researchers may replicate this study with bigger number of respondents and consider other factors like perception of students, problems encountered in the delivery of CAI, administering more types

of assessment and even conducting qualitative analysis to supplement relevant conclusions.

References

Alvarez, M. D. (2010). *The Effect of Computer-aided Instruction on the Academic Perofmance of Third Year Students in Science and Technology III at Cawayan Integrated Shool, Division of Nothern Samar.* Retrieved January 5, 2018 from https://www.academia.edu/326799/_THE_EFFECT_OF_COMPUTER-AIDED_INSTRUCTION_ON_THE_ACADEMIC_PERFORMANCE_OF THIRD_YEAR_STUDENTS_IN_SCIENCE_AND_TECHNOLOGY_AT_CAWAYAN_INTEGRATED_SCHOOL_DIVISION_OF_NORTHERN_SAMAR

Lowe, J. S. (2004). *A theory of effective computer-based instructions for adults* . Retrieved November 4, 2017 from https://digitalcommons.lsu.edu/gradschool_dissertations/1143

Mann, B. (2009, February). *Computer-Aided Instruction*. Retrieved November 25, 2017 from https://www.researchgate.net/publication/228176284

Ragasa, C. Y. (2008, November 1). *A Comparison of Computer Assisted Instruction (CAI) and Traditional Method of Teaching of Teaching Statistics* University of the East, Manila:. Retrieved December 10, 2017 from https://www.jse.amstat.org/v16n1/ragasa.html

Serin, O. (2011). *The effects of computer based-instruction on the achievement and problem solving skills of science and technology students. TOJET The Turkish Online Journal of Educational Technology, 10(1)*. Retrieved January 5, 2018 from https://www.tojet.net/artciles/v10il/10119.pdf

Tolbert, E. J. (2015). *The Impact of Computer-aided Instruction on Student Achievement.* Retrieved December 10, 2017 from https://digitalcommons.gardner-webb.edu/education_edt

Withworth, S. A. (2007). Secondary World history teacher's integration of technology into the classroom: a mixed method approach. Retrieved Novermber 25, 2017 from https://scholarcommons.usf.edu/etd.

Proposed

Area Thrust	Objectives	Programs/ project	Person Involved	Time Frame	Budget	Source of Fund	Success Indicator
Staff Development	1.Increase teachers' competencies in crafting CAI	**Project APSLAC** (Araling Panlipunan - School's Learning Action Cell) 1. Conduct of skills inventory in ICT among AP Teachers. 2. Crafting of AP-SLAC Plan. 3. Conducting AP-SLAC	Principal AP Coordinator AP Teachers Invited Speaker	June 15-30, 2018	Php 1,500.00	MOOE	Conducted and properly documented AP-SLAC

_____

		4. Atten seminars and training related to ICT 5. Viewing of AP Class Demonstration using CAI 6. Sharing of thoughts 7. Awarding of Certificates					
Curriculum Development	2. Enrich Araling Panlipunan Instructions	**PROJECT EAPI** (Enrich Araling Panlipunan Instructions) 1. Revisit previous year's least mastered skills in Araling Panlipunan 2. Consolidate the data and craft computer aided instructions 3. Presentation and critiquing of CAI 4. Banking of CAI through flash drive, CDs and book binding.	Principal AP Coordinator AP Teachers	July 1-15, 2018	Php 1,500.00	MOOE	Teachers produced and stored 40 CAIs for lesson execution.
Students' Development	3. Increase students achievement in Araling Panlipunan	**PROJECT GE-CAI** (Go for Excellence through Computer Aided Instructions) 1. Continue the Action Research about Impact of CAI to Students Performance in Araling Panlipunan 2. Creating GC in every grade and section and sharing of ppt, word, pictures and videos 3. Using power point presentation in quiz bee during History Month and AP Month	Principal AP Coordinator Supply Officer AP Teachers	August 1-30, 2018 and September 1-30, 2018	Php 2,500.00	MOOE and Canteen Fund	At least proposed an action research , GCs was created, CAI were shared and quiz bee using CAI was conducted
Facilities Development	4. Add CAI peripherals (flat televisions, speakers, extension cord and DLPs)	**PROJECT AMM-CAI** (Acquire More Materials for utilization of Computer Aided Instructions) 1. Include in PIA and AIP the acquisition of any of flat televisions, extension cords, speakers and dlp. 2. Look for possible sponsors/projects or alot budget as possible. 3. Procure the items, install, entrust and maintain.	Principal Custodian SPT AP Teachers	October 1 - December 31, 2018	Php 15,000	MOOE and Donations	Procured and maintain any of flat television, speaker, cord or DLP.