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Comparative Effects of Power Point and Video Instructional Packages on CRS Students' Academic Achievement

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Abstract

The study investigated effects of power-point and video instructional packages on Christians Religious Studies (CRS) students' academic achievement in Edo State, Nigeria. One research question and one null hypothesis were used. Quasi-experimental design of pre-test, post-test non-equivalent control group design was employed. The population consisted of 1,363 SS2 students offering CRS in Uhunmwode Local Government Area of Edo State, Nigeria and the sample size was 126 SS2 students drawn from three intact classes of three co-educational schools out of the 53 secondary schools in the study area. The instrument Christian Religious Studies Achievement Test (CRSAT) was used for data collection. Data collected were analyzed using mean to answer the research question and Analysis of Covariance (ANCOVA) to test the hypothesis. The results revealed that students taught CRS using power-point instructional package (PIP) significantly achieved better than their counterparts taught using either video instructional package (VIP) or conventional instructional medium (CIM). This implies that PIP is an effective and an alternative medium to enhance students' academic achievement in CRS. Therefore, recommendation was made that the stakeholders in education especially in Edo State should organize training workshops to improve CRS teachers' skills in the use of PIP.

Key words: Comparative effects; Power Point, video; Instructional media; Innovative; Academic achievement; Intact class

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INTRODUCTION

Christian Religious Studies (CRS) is the subject that inculcates and embraces morals, virtues, norms and mutual fellowship with people in the society. It is the academic field of multidisciplinary, secular study of religious belief, behaviour and institution that teaches students how to be good persons in the society using historical illustrations from Christian handbook called Bible. It can be called the subject of humanity since it promotes godly relationship with God and man. Okon (2010) opined that CRS is used to regulate the behavioral activities in the society as to knowing what is good and godly which the society uses to foster peace and maintain law and order as well.

Under the educational curriculum, CRS is compulsory for all secondary school students who are Christians (National Policy on Education, 2014). It is also a core subject for all art students at the senior school level and it is a compulsory subject for students who wish to study humanity at tertiary level. It has been one of the subjects that foster peace and unity among diverse cultures in the society as well as enhancing growth and development in general. Despite the importance accorded to CRS for the proper development and functioning of citizens in Edo State, academic achievement of students in CRS is still poor and below average (West African Examination Council, 2018). No wonder Kalu (2012) posited that students seem not to be interested in learning the subject anymore. For instance, the Senior School Certificate Examination result (SSCE) conducted by West African Examination Council (WAEC) in 2016, 2017 and 2018 provided evidence of poor students' achievement in CRS.

Also, the WAEC Chief Examiner's Report of 2018 in CRS revealed poor achievement of students in the sub-divisions of CRS. These situations are worrisome in view that academic achievement is central to students' learning process.

Students' academic achievement is a product of education or learning which is commonly measured by examination or continuous assessment. Academic achievement is that level of accomplishment which depends on value judgment, opinions and standards (Eze, 2014). In the view of Ojukwu (2017), academic achievement is seen as the outcome of education, the extent to which a student achieve the educational goals. Despite stakeholders' worries and efforts to improve the dwindling fortune in the subject, students' academic achievement in CRS has remained unsatisfactory. Perhaps, the causes of students' poor academic achievement in CRS may be attributed to lack of interest in CRS (Kalu, 2012), students' disenchantment with morals or being greatly distracted or affected by the social and societal problems bedeviling our country Nigeria. Furthermore, it could also be possible that the way the subject is being taught is poor especially regarding the instructional delivery medium used in teaching the subject, which may be the conventional way of teaching.

In secondary schools in Edo State, teachers use what many authors called traditional talk and chalk or conventional way of teaching involving either the use of chalkboards or marker-boards with oral presentation by the teacher on the concepts being taught. Ikwuka, Etodike and Okoli (2020) posited that this teaching medium is seen as teacher centered approach where emphasis is laid on covering the subject matter during a specific period of time without allowing the learner to participate in construction and internalization of knowledge. The domineering nature of conventional teaching strategy has been criticized by researchers who posited that it renders learners passive in class in different subjects such as English language, Accounting, Civic education, etc. (Ikwuka et al. 2020; Ifeacho, 2019; Ikwuka, 2010). In this conventional instructional strategy which is called conventional instructional medium in this study, the teacher is the sole provider of knowledge with students as passive learners without any stimulating package. The researchers therefore recommend activity based classroom with stimulating instructional delivery package(s) especially at the primary and secondary school levels that could enhance teaching-learning process, thereby leading to better academic achievement. In view of this and in consideration of students' poor achievement in the subject, a search for other instructional delivery packages such as power point instructional package (PIP) and video instructional package (VIP) which could enhance students' academic achievement in CRS better than the conventional instructional medium become necessary.

Power point is part of the Information and Communication Technology (ICT) program developed by Microsoft in 1987, its presentation can be regarded as a good instructional medium and a key for facilitating an effective teaching-learning process. Power-point instructional package is an innovative teaching strategy based on providing audio and visual facilitation in the course of being taught by a teacher to the students (Ugwuanyi et al., 2020). Power-point instructional package is a teaching technique predominantly used by instructors using Liquid Crystal Display (LCD) projector with any form of computer to display lessons on the wall and supported by oral description and explanations (Sewasew et al., 2015). Sewasew et al pointed out that using this new technology to support lessons is advisable from pedagogical point as teaching-learning process is simplified and facilitated very well. According to Anigbo and Orie (2018), power-point being a computer software created by Microsoft, allows the user to create slides with recordings, narrations, transitions and other features in other to present information and by so doing help to enhance students' academic achievement as learning is facilitated and made easier. Similarly, Ngonso (2018) ascertained that among mass communication students, power point helped to improve students' learning capacity. It gives the user the opportunity to incorporate visual and auditory aspect to a presentation. In the same vein, Effiong and Ekpo (2016) opined that Power-point package could be used to support the teacher during the presentation of information, enhance the success in the lesson, enhance the achievement of students, and improve the interest and motivation of the students during the lesson. Instruction on the projector screen during power-point presentation could be attractive to the learners and sustain their interests during lesson. Power-point presentation creates more powerful sensory alerts when compared with traditional education materials (Effiong & Ekpo, 2016). Another electronic device which serves as good instructional package, which the researcher is interested on in this study is video instructional package.

Video is a medium which uses electricity for effective functioning. It stimulates both the auditory and visual senses. Instructional video is tied to specific instruction in schools and is directed to small or target audience. Video instructional package is a kind of multimedia that can transmit verbal and non-verbal information with the combination of audio and visual materials (Akinbadewa & Sofowora, 2020; Gambari et al., 2018). Video instructional package develops continuity of thought and offers a reality of experience that motivates learners during instruction (Gambari et al., 2016).According to Hapsari and Hanif (2019), learning is strongly influenced by the use of instructional media as attractive package containing animated videos and practice questions which make students learn while their interest is captured due to the

efficacy of motion/non motion graphic video. Regarding technical and pedagogical issues, Evi-Colombo et al. (2020) averred that technical and pedagogical affordances of video annotation which is easy to install and operate makes video instructional package an easily followed package by learners. For instance, Hoogerheide et al. (2019) contended that generating an instructional video as homework activity is both effective and enjoyable.

Similarly, Gambari et al (2018) asserted that in video programmed instruction, teacher produces an instructional video-package which is played on a video-player connected to a television monitor which is put on for the learner to view. Earlier, Ikwuka (2010) posited that the beauty of video instructional package is that at interval, the teacher may choose to stop playing and explain certain points or facts or probably wait till the end of the lesson. This "stop and play" quality of video instructional package in views of Ikwuka makes it ideal for accompanying learners. Several authors (e.g. Evi-Colombo et al., 2020; Akinbadewa & Sofowora, 2020;Hapsari & Hanif, 2019; Hoogerheide et al., 2019; Gambari et al., 2018) have contended that despite the gains of video instructional package in learning, video instructional package for learning should not be seen as a substitute for the teacher but rather as complementary tool for teaching and learning since it also has shortcomings such as loss of user interest due to over exposure to its content or repeated video playing.

To enhance learning outcome, video instructional package could be used in conjunction with any other conventional medium to improve students' achievement. Video instructional package offers students opportunity to pause, rewind, replay and download lesson content then later review the lessons either in the classroom or in their homes.

Empirical evidence for the comparative effects of power point and video instructional media on students achievement in CRS appears to be limited in secondary schools in Edo State in particular and Nigeria in general. Therefore, the purpose of the study was to determine the comparative effects of power-point instructional package and video instructional package on Nigerian senior secondary students' achievement in C.R.S.

RESEARCH QUESTION

What are the mean achievement scores of students taught CRS using power point instructional package, video instructional package, and those taught with conventional instructional medium?

RESEARCH HYPOTHESIS

There is no significant difference in the mean achievement scores of students taught CRS using power point instructional package, video instructional package and those taught with conventional instructional medium.

METHOD

The study adopted a quasi-experimental design using intact classes. The design involved the three major components namely: independent and dependent variables, experimental and control groups, pretest and posttest. The independent variables were the CRS power point and video instructional packages, and these were the treatment for the experimental group 1 and 2, while the dependent variables were the students' achievement in pretest and posttest. The reason for the use of intact classes was informed by the fact that the participants were already in their classes and the school authority do not allow disrupting them. The study was carried out in Uhunmwode LGA, Edo State, Nigeria. The choice of this area for carrying out this study was informed by the fact that the people value education and consider it a very important industry. The population of the study comprised all the 1,363 SS2 students who offer CRS in the 52 public secondary schools during the first term of 2019/2020 academic session in the study area. The sample size for the study was 126 SS2 students drawn from three co-educational public secondary schools out of the 52 public secondary schools, involving intact classes. Simple random sampling technique was used to sample the three schools out of the 52 secondary schools. The three intact classes were assigned to experimental groups 1 and 2, and one control group, which comprised two experimental groups of 42 (19 males and 23 females) for experimental group 1 taught with PIP, 38 (17 males and 21 females) for experimental group 2 taught with VIPand control group of 46 (20 males and 26 females) taught with CIM. This gives a total of 126 students for the study.

The instrument used for data collection is Christian Religious Studies Achievement Test (CRSAT) which is made up of 50 multiple choice questions. The questions were drawn from WAEC past questions (2016-2018) on CRS topics that were taught during the period of the study. The questions are on Creation, the Call of Abraham, the Baptism of Jesus Christ, and Christians living among non-Christians. CRSAT has 50 objective test items, each correctly answered item is scored two marks, totaling 100 marks, while each wrong answer is scored zero. The instrument was validated by three experts. The instrument CRSAT together with the purpose of the study, scope, research question and hypothesis were given to the experts. They were requested to assess the instrument in terms of relevance and clarity to the topic. Their suggestions and corrections were incorporated into the production of the final copies of the instrument. Reliability of the instrument was ascertained using split-half method. This was conducted on 20 students using a school from

another LGA in Edo State which is out of the study area but have the same characteristics as those in the study area. The reliability of the instrument was obtained using Kuder-Richardson 20 (KR-20) which yielded a coefficient of 0.77 and this is considered satisfactory for the study.

EXPERIMENTAL PROCEDURE

Before the teaching commenced, the researchers visited all the three participating schools and sought the permission of the principals to use their SS2 students as the participants and their CRS teachers as research assistants for the study. The study covered a period of six weeks. First week was used to train the three research assistants and administered pretest to the three groups. The teaching lasted for four weeks, that is, between 2nd and 5th week. The three groups met 40 minutes twice in a week for four weeks. The control group were taught CRS contents of Creation, the Call of Abraham, the Baptism of Jesus Christ and Christians living among non-Christians using CIM. The Experimental Group 1 were taught the same CRS contents using PIP, while the Experimental Group 2 were taught the same contents using VIP. The 6th week was used for revision and the administration of the posttest. The scripts were collected, marked, scored and collated for data analysis. The posttest was used to evaluate the effect of the treatment on the students' achievement in the course of the study. Measures such as teacher variable, initial group difference, class interaction, Howthorne effect, experimental mortality etc. were adopted to control some extraneous variables that may influence this study.

Data collected from the pretest and posttest were analyzed using mean and standard deviation to answer the research question, while Analysis of Covariance (ANCOVA) was used to test the hypothesis at 0.05 level of significance.

RESULTS

Research Question 1: What are the mean achievement scores of students taught CRS using power point instructional package, video instructional package, and those taught with conventional instructional medium?

Table 1
Mean achievement scores of students taught CRS with Power point Instructional Package (PIP), Video Instructional Package (VIP) and those taught with Conventional Instructional Medium (CIM)

Source of variation	N	Pretest mean	Posttest mean	Mean gain	Pretest SD	Posttest SD	Remark
PIP	43	23.53	37.09	13.56	4.27	5.58	Effective
VIP	38	23.89	34.65	10.76	4.26	5.73	Effective
CIM	45	22.95	24.05	1.10	3.45	2.66	Not effective

Data in Table 1 reveal that the students in experimental groups who were taught CRS with PIP have pretest mean score of 23.53 and posttest mean score of 37.09 with mean gain of 13.56 in CRS, while those taught CRS with VIP have pretest mean score of 23.89 and posttest mean score of 34.65 with mean gain of 10.76 in CRS. Also, students in the control group who were taught CRS with CIM have pretest mean score of 22.95 and posttest mean score of 24.05 with mean gain1.10. With posttest mean gain of 13.56, PIP was more effective in enhancing students' achievement in CRS than VIP with mean gain of 10.76 and CIM with mean gain of 1.10. The finding implies that both PIP and VIP enhanced students' achievement in CRS; however, students taught using PIP with mean gain of 13.56 achieved better than those taught with VIP with mean gain of 10.76 and those taught with CIM with mean gain of 1.10.

Hypothesis 1: There is no significant difference in the mean achievement scores of students taught CRS using power point instructional package (PIP), video instructional package (VIP) and those taught with conventional instructional medium (CIM).

Table 2
ANCOVA on mean achievement scores of students taught CRS using power point instructional package (PIP), video instructional package (VIP) and those taught with conventional instruction medium (CIM)

Dependent Variable: posttest

Source	Type III sum of squares	Df	Mean square	F	Sig.
Corrected model	202.651[a]	6	33.775	1.174	.325
Intercept	6023.805	1	6023.805	209.321	.000
Pretest	1.800	1	1.800	.063	.803
Treatment	20.077	2	10.039	3.34	.026*
Error	3424.555	119	28.778		
Total	175382.000	126			
Corrected total	3627.206	125			

a. R Squared = .156 (Adjusted R Squared = .080) *significant at p < .05

Data in Table 2 show that the 2-ways Analysis of Covariance for the posttest mean scores of students taught CRS using power point, video and conventional medium

was ascertained at $F(6, 126) = 3.3$, $p < .05$. Since the probability value is less than 0.05 at .026* and adjusted $R^2 = .080$, significant mean difference was observed on students' achievement scores in CRS across the instructional media. The null hypothesis one is therefore rejected. Hence, there are significant differences in the mean scores of CRS of SS 2 students taught using power point instructional package, video instructional package and conventional instructional medium. This implies that initial posttest group differences across the instructional media (power point, video and conventional) were significant.

DISCUSSION

The findings of the study revealed a significant mean effect of the treatment for students taught using PIP which was evident in their mean gain. The students exposed to the power-point achieved better than their counterparts exposed to video and conventional. This difference in academic achievement for students taught using PIP, VIP and CIM can be attributed to the fact that PIP stimulated and captivated students' interest causing change in learning behaviour mainly; better understanding, comprehension and retention of the learned concepts taught and accessed during evaluation process.

This finding agrees with Effiong and Ekpo (2016) who found that instructional packages such as PIP improves the interest and motivation of the students during lesson enhance success in the lesson and enhance the achievements of students. For example, Ugwuanyi's et al. (2020) findings on the relative effect of animated and non-animated power-point presentations on physics students' achievement found that animated PPT significantly enhanced the achievement of students in physics than the non-animated PPT presentation; this provides evidence that supports the conceptual model of the current study that the use of PIP enhanced the learning outcomes of students in CRS in Edo State. More support on the findings of effect of power point on academic achievement can be found in studies (Anigbo & Orie's 2018; Effiong & Ekpo's 2016; Sewasew et al. 2015) that PIP improved students' academic achievement in computer science (database management system) in Colleges of Education in Rivers State, and that the use of the interactive effect of PIP enhances learning, guide learners better, and assist them in recalling important information in Mathematics, English, Chemistry, and Business Studies. These findings concur with the present finding which revealed that the use of PIP captivated students interest, leads to better understanding and retention of the concept taught and enhanced academic achievement.

This implies that the use of PIP significantly enhanced students' academic achievement in CRS better than VIP. The findings further revealed that VIP also improved the students' CRS achievement since students' in the VIP group had mean gain that is higher than their counterparts in CIM; however, this recorded Improvement (mean gain) did not reach significant proportions.

This finding agrees with the study of Evi-Colombo et al., (2020) who found that there are negative effects of video instructional packages on learning outcomes. Their reason was that over exposure to visual stimuli has counter-effect which could lead to lack of sustained interest and distracted attention; altogether over exposure to any stimuli has negative outcomes. Specifically, Bates (2016) contended that sustained interest in stimulating visuals depends on how interesting the content is perceived by the viewers in order to attract and retain viewers' attention. Also, without proper arrangement and management of the visuals, they may not actualize their intended learning objectives. However, the findings of this study disagrees with the findings of researchers such as Akinbadewa and Sofowora, (2020), Hapsari and Hanif, (2019) and Hoogerheide et al., (2019) who found out that using video as instructional package for biology, graphic animation and for homework activity were effective and enjoyable.

Furthermore, the finding is against the Gambari's et al., (2018) who found that video based cooperative learning helped students in geometry and Ikwuka (2010) who discovered that video instructional package enhanced students' academic achievement in oral English.

Following Evi-Colombo's et al., (2020) and Bates' (2016) findings; it is considered that participants from the area of the study (Edo State, Nigeria) being dominantly Christians may have been over-exposed to the CRS contents of the video such that the technology loses it appeal and stimulation to them. This is most likely considering that most Christian families in the area engage children earlier enough in Christian teaching using various media such as stories, graphic books, and videos and the children have many other sources of watching the videos even before schooling age. The impact of this on the students may not be unconnected to over-exposure effects; hence it is understandable that VIP alone did not significantly improve students' CRS learning outcome.

The expertise required to teach with VIP is also considered as a possible challenge to the efficacy of VIP. On the disadvantages of VIP, many authors e.g. Ugwuanyi et al. (2020) and Bates (2016) argued that students often reject videos that require them to do analysis or interpretation; they often prefer direct instruction that focuses primarily on comprehension. This contention could possibly be the reason for the current insignificant effect found using VIP alone as instructional package for teaching CRS in Edo State.

There are many considerations apart from empirical evidence which support that PIP would stimulate higher learning outcomes in students especially in

secondary education. For instance, the use of power-point instructional package (PIP) stimulates the interest of the students as the gadget is not common in the classroom and children especially adolescents' interests are known to be easily stimulated by innovative gadgets or something which is different from the norm. This is typically so in the views of Bates (2016) who emphasized that teaching aids using gadgets helps students in linking concrete events and phenomena to abstract principles and vice versa and provides alternative approaches that can help students having difficulties in learning abstract concepts.

CONCLUSION

The findings of the study revealed that the use of PIP and VIP enhanced students' achievement in CRS. Given significant mean gains recorded in the students mean scores when PIP was used alone and when VIP was used alone, the researchers conclude that using PIP and VIP independently improved students CRS achievement, however, only PIP alone significantly and positively enhanced the students' academic achievement in CRS.

RECOMMENDATIONS

The following recommendations are made in the light of the above findings:

Frequent training on how to effectively use power point and video instructional packages in teaching and learning CRS should be organized for CRS teachers by the Government and stakeholders in education to make sure that CRS teachers have mastered the skills for use in the classroom.

The school administrators should provide adequate facilities such as multimedia projector, laptops, video camera, video monitor, DVD and standby power supply for the effective utilization of power point and video instructional packages to enhance the teaching and learning of CRS.

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