EFFECTS OF COMPUTER SIMULATION INSTRUCTIONAL PACKAGE ON PUPILS' INTEREST IN PHYSICAL EDUCATION IN NIGER STATE, NIGERIA

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Abstract
This study investigated the effects of Computer Simulation Instructional Package on primary school pupils' interest in physical education in Niger state, Nigeria. The research design used in this study is experimental research design. The sample size of this study comprises of 20 pupils each (10 males and 10 females) from 12 primary school which makes a total sample size of two hundred and forty (240) pupils (120 males and 120 females). One research instrument was used for the study. It is titled Questionnaire on Pupils Interest Towards Physical Education (QOPITPE). The instrument was validated by experts. A Pearson Product Moment Correlation Formula was used to determine the reliability coefficient which yielded 0.91, indicating that the instrument is very reliable for the study. Three research questions were raised, and three hypotheses were tested. Analysis of Variance (ANOVA) statistics was used for analysis before and after treatment, since the results was significant, ANCOVA was used to test the hypotheses at 0.05 significant level. The finding revealed that CSIP have an enhancing effect on the interest of the pupils towards physical education in individualized and cooperative learning settings. It is therefore recommended that physical education teachers should adopt and utilize the developed computer simulation instructional package in teaching and learning of physical education as this will help to improve their pupils' interest.

Keywords: Instruction, Motor skills, Physical Education, Simulation

Introduction

Physical Education and sports performance encourage learning of psychomotor skills in a play or movement exploration setting (Anderson, 2013). At both the primary and secondary schools, it is a phase of education that aims at imparting lifelong psychomotor skills through participation, which will lead to positive behaviour towards long term commitment for physical activities to build a healthy body (Wong, 2011). Previous research findings have shown that Physical Education is basically concerned with the arts and science of human movement as a discipline (Ojeme, 2009), All these movements have their foundation in fundamental motor skills.

Motor skills are the ABCs of movement. These basic skills are divided into two categories: locomotive skills, which involve moving the body from one point to another and manipulative skills, which involve moving objects with hands and feet (Dardens, 2013). It is essential for all children to learn motor skills so that they may be able to explore their environment and thus enhance their cognitive and social development. Such skills help children develop self-confidence and provide them with the opportunity to be physically fit and participate in recreational activities and computer simulation and games

Computer simulation is a computer-generated version of real-world objects or processes, it can take many different forms, ranging from computer renderings of 2-dimensional geometric shapes to highly interactive computerized laboratory experiments (Gambari,

Falode, Fagbemi & Idris, 2012). This means simulation is a computer program that allow learner to interact with a computer representation of real-life experience, this will allow learner to acquire summative assessment evidence for movement performances both in males and females.

Gender is a range of characteristics used to distinguish between male and female in order to ensure good classroom communication between teacher and students. Gender has been identified as one of the factors influencing students' performance in physical education at primary school levels (Yusuf, 2009). Research on gender by Yusuf, (2009) further suggest that the differences found are due to parents, peers, teachers and coaches, who provide opportunities and encourage girls and boys toward different activities. Gambari (2010) and Kiadese (2010) pointed out that male students performed better than female counterparts in science and technology subjects, while Nsofor, (2010) revealed no significant difference in the cognitive, affective and psychomotor skill achievement and interest of students in respect of gender. Furthermore, the finding of Subramaniam (2011), show that there was no significant difference between the mean performance scores of male and female Physical Education pupils taught with computer assisted instruction. This shows that the CAI could stimulate male and female pupils. Orjika (2014), found that students' achievement and interest in biology and gender was not a significant factor in students' overall interest in biology.

Interest is an important variable in learning because when one become interested in an activity, one is likely to be more deeply involved in the activity. According to Aire (2012), interest is a subjective feeling of concentration or curiosity over something. It is preference for particular type of activities, that is, tendency to seek out and participate in certain activities more than others (Agwagah, 2003). Aire (2012) added that interest is developed when teaching and learning is pupil centred. Some researchers Oladunjoye, (2013) and Popoola (2007) remarked that the rate through which interest influence learning has not been clearly established, thus, the need to explore on interest as a factor in relation to pupils' achievement in physical education. Traditional teaching method is not sufficient as the pupils' interest in Physical Education becomes more and more deteriorated due to the lack of variety in teaching aids and creativity of the teachers. Following these, Subramaniam (2011), indicated that situational interest has the potential to influence interest and predict future intention. The findings of the study conducted by Subramaniam (2011) revealed that there was a significant difference between the performance scores of Physical Education pupils taught with computer assisted instruction (CAI) strategy and those taught without the conventional method. Also, the finding of Orjika (2014) showed that CAIP had significant effects on students' interest in biology while Ohwojero (2013) who investigated the impact of computer education, find out that using computer in teaching student in the schools helped to arouse student's interest in both individualized and cooperative learning in physical education.

The cooperative learning strategy is an instructional strategy in which students work in groups towards achieving a common academic goal. In such classroom structure, students discuss subject matter, help each other learn, and provide encouragement for members of the group. The individualized learning strategy is an instruction method in which students work individually at their own pace, speed and rate towards an academic goal.

The Statement of the Problem

The subject Physical Education is to develop the individual physically, intellectually and morally. Considering the numerous physical, mental, social, moral, emotional and economic benefits an individual, group, community and the nation at large can derive from Physical

Education; it becomes imperative to advocate the teaching of Physical Education in schools especially in the basic schools because they form the foundation of human development.
The method of instruction of Physical Education in schools has changed from the traditional method which is not yielding positive result on the attainment of its goals of national policy on education in Nigerian. The common method of teaching Physical Education is still regimental and command type, especially in learning skill courses. This method contradicts the provisions in the National Policy of Education. There researcher traced the problem of decline in Physical Education participation and interest towards the subject to be the method of instruction employed by teachers, which has contributed to low motor skills development in pupils and decline in interest towards the subject at all levels of education in Nigeria. With this problem in the school system, most teachers resort to the teaching of Physical Education concepts through demonstration method with or without the appropriate instructional materials. This situation in the school system has made the teaching and learning of Physical Education boring, uninteresting and even meaningless to most pupils. These in turn brought about the decline in interest and development of basic motor skills that is acquired at the early stage of child development.

Therefore, as a step towards addressing these problems a more interactive strategy that will actively involve the pupils in the Physical Education activities becomes imperative. Consequently, the researcher sought to examine the Effects of Computer Simulation Instructional Package on pupils' interest in Physical Education in Niger state, Nigeria.

Research Questions

The following research questions guided the study

(i) Will there be any difference in the interest of pupils exposed to Physical Education using Computer Simulation Instructional Package in individualized and cooperative learning settings and those taught using demonstration method?

(ii) Is there any difference in the interest of male and female pupils taught Physical Education using Computer Simulation Instructional Package in individualized learning setting?

(iii) Is there any difference in the interest of male and female pupils taught Physical Education using Computer Simulation Instructional Package in cooperative learning setting?

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 alpha levels:

Ho_1: There is no significant difference in the interest of pupils exposed to Physical Education using Computer Simulation Instructional Package in individualized and cooperative learning settings and those taught using demonstration method.

Ho_2: There is no significant difference in the interest of male and female pupils taught Physical Education Computer Simulation Instructional Package in individualized learning setting.

Ho_3: There is no significant difference in the interest of male and female pupils taught Physical Education Computer Simulation Instructional Package in cooperative learning setting.

Methodology

The research design used in this study is experimental design. Three treatment level as independent variables, interest as dependent variable and gender as moderating variable. The interest inventory was administered before and after students' exposure to treatment hence, the adoption of experimental design. The inventory is divided into two parts, Part one consist of bio-data of the pupils, while part two consist of twenty (20) items on the

interest of the pupils. All the items in the instrument were constructed to elicit responses from the pupils with respect to their interest in the subject through simple questions. The instrument was validated by experts, after scrutiny by experts in form of modifications, some items were dropped, before the instrument was adjudged valid.

The population of the study comprised of all the 80,836 primary school pupils, (46,479 males and 34, 357 females), in 12,897 primary schools from the three senatorial zones A, B, and C of Niger State. The target population in these schools were primary five (5) pupils. The choice of primary 5 is based on the fact that the pupils at this age range are undergoing fundamental development which can be enhanced by movement activities in physical education.

The sample of this study was made up of 12 primary schools out of the 12,897 primary schools in Niger State. The twelve (12) primary schools comprised of primary five (5) pupils from 2014/2015 academic session in Niger State. The state were grouped into zone A, B, C, in each of the zone four schools were purposively selected. Subsequently, Experimental I was assigned to Niger South zone A, (taught using Individualized Learning Strategy); Experimental Group II was assigned to Niger East zone B, (taught using Cooperative Learning Strategy) while Control Group was assigned to Niger North zone C, (taught using the Demonstration method. The reason for purposively sampling the schools was to select schools with the following criteria; enough classroom space, school type (public schools), Common environmental conditions such as manpower, gender composition, enrolment of students for primary school common entrance examination for minimum of five years.

A total of twenty (20) pupils, ten (10) males and ten (10) females were selected from each school for the purpose of treatment, analysis and discussion. The technique adopted for the selection of the twenty pupils for the study was stratified random sampling technique. Within the strata, the pupils were further being stratified along gender (male and female). From each stratum, 20 pupils (10 males and 10 females) was selected using the hat – draw method. This gave a sample size of 20 pupils (10 males and 10 females) from each school and a total sample size of two hundred and forty (240) pupils (120 males and 120 females).

To test the reliability of the instruments, pilot test was conducted within the targeted population but outside the school sampled for the study. The result obtained from pilot test conducted was used for reliability test of the instruments. Pearson product Moment Correlation formula was used for (QOPITPE) which yielded 0.91 indicating that the instruments are very reliable for the study. The data collected was analyzed by using inferential and descriptive statistics. Analysis of Variance (ANOVA) statistics was also used to analyze the scores, ANCOVA was again used to analyse the three hypotheses. Scheffe's post hoc multiple comparison tests was further computed where certain factors were found to have significant effect on the interest of the pupils in Physical Education.

Results

Research Question One: Will there be any difference in the interest of pupils exposed to Physical Education using Computer Simulation Instructional Package (TCSIP) in individualized and cooperative learning settings and those taught using demonstration method?

Table 1: Mean and Standard Deviation of Interest of Experimental Group I, II and the Control Group at Pre-test and Post-test

Group	N	Pre-test		Post-test		Mean Difference
		$\bar{X}$	SD	$\bar{X}$	SD	
Individualized	80	56.00	11.14	59.49	15.77	3.49
Cooperative	80	37.16	9.48	54.01	18.34	16.85
Demonstration	80	31.40	10.37	39.25	13.62	7.85

Table 1 reveals the mean and standard deviation of interest of pupils taught Physical Education through CSIP in Experimental Group I (individualized), Experimental Group II (Cooperative) and those taught using demonstration methods in the Control Group at pre-test and post-test. From the Table, it was observed that the mean of the three groups differ at post-test where Experimental Group I had the highest mean of 59.49 with standard deviation of 15.77, followed by Experimental Group II which had mean of 54.01with standard deviation of 18.34 while the Control Group had mean of 39.25 with standard deviation of 13.62. To determine whether the differences in the mean interest of the three groups at post-test were significant, Analysis of Covariance (ANCOVA) was used to test hypothesis four as presented in Table 2.

Hypothesis One: There is no significant difference in the interest of pupils exposed to Physical Education Computer Simulation Instructional Package (CSIP) in individualized and cooperative learning settings and those taught using demonstration method.

Table 2: Summary of Analysis of Covariance (ANCOVA) of Post-test Interest of Experimental Group I, II and the Control Group

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	17564.183	3	5854.728	22.706	.000
Intercept	33921.484	1	33921.484	131.556	.000
Covariate (Pre-test)	31.825	1	31.825	0.123	.726
Main Effect (Treatment)	10462.317	2	5231.159	20.288*	.000
Error	60825.150	236	257.848		
Total	700618.000	240			
Corrected Total	78416.333	239			

*: Significant at 0.05 levels

Table 2 shows the ANCOVA result of the comparison of post-test interest of pupils in Experimental Group I, II and the Control Group. An examination of the Table shows ($F(2, 239) = 20.288$, $p < 0.05$). On the basis of this, hypothesis four was rejected. Therefore, there was significant difference in the interest of pupils taught Physical Education using Computer Simulation Instructional Package (CSIP) in individualized and cooperative learning settings and those taught using demonstration method. Scheffe post-hoc analysis was carried out to locate where significant difference exists as presented in Table 3.

Table 3: Scheffe Post-hoc Analysis of the Post-test Mean Interest of Pupils in Experimental Group I, II and the Control Group

Treatment	Experimental I	Experimental II	Control
Exp. I (Individualized TCSIP)	-	-	20.237*
Exp. II (Cooperative TCSIP)	-	-	14.763*
Control (Demonstration)	-20.237*	-14.763*	-

* significant at p= 0.05 level

Table 3 shows the Scheffe post-hoc analysis of post-test mean interest of pupils in Experimental Group I, Experimental Group II and the Control Group. The table indicates that no significant difference exists between the mean of pupils taught Physical Education using CSIP in individualized and cooperative learning settings (mean difference = 5.48). The table however reveals that significant difference exists between the mean of pupils taught Physical Education using CSIP in individualized learning setting and those taught using demonstration method (mean difference = 20.24) and also between the mean scores of pupils taught using CSIP in cooperative learning setting and those taught using demonstration method (mean difference = 14.76).

Research Question Two: Is there any difference in the interest of male and female pupils taught Physical Education using Computer Simulation Instructional Package (CSIP) in individualized learning setting?

Table 4: Mean and Standard Deviation of Interest of Male and Female Pupils taught Physical Education through CSIP in Individualized Learning Setting at Pre-test and Post-test

Group	N	Pre-test		Post-test		Mean Difference
		$\bar{X}$	SD	$\bar{X}$	SD	
Male	40	56.80	7.24	71.20	11.62	14.40
Female	40	41.90	7.44	47.78	9.36	5.88

Table 4 reveals the mean and standard deviation of interest of male and female pupils taught Physical Education through TCSIP in individualized learning setting at pre-test and post-test. From the Table, it is observed that there is difference between the mean interest of the two groups at post-test where male pupils had mean interest of 71.20 with standard deviation of 11.62 while their female counterparts had mean interest of 47.78 with standard deviation of 9.36. To find out if differences existing among them were significant, Analysis of covariance was carried out and reported in Table 5.

Hypothesis Two: There is no significant difference in the interest of male and female pupils taught Physical Education Computer Simulation Instructional Package (TCSIP) in individualized learning setting.

Table 5: Summary of Analysis of Covariance (ANCOVA) of Post-test Interest of Male and Female Pupils taught Physical Education through TCSIP in Individualized Learning Setting

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10987.229	2	5493.614	48.797	0.00
Intercept	6535.390	1	6535.390	58.050	0.00
Covariate (Pre-test)	12.616	1	12.616	0.112	0.74
Main Effect (Gender)	5715.807	1	5715.807	50.770*	0.00
Error	8668.759	77	112.581		
Total	302757.000	80			
Corrected Total	19655.987	79			

*: Significant at 0.05 level

Table 5 shows the ANCOVA result of the comparison of post-test interest of male and female pupils taught Physical Education using CSIP in individualized learning setting. An examination of the table shows a significant main effect between the mean scores of the two groups ($F(1, 79) = 50.770$, $p < 0.05$). On the basis of this, hypothesis five was rejected. Therefore, the result revealed that there was significant difference in the interest of male and female pupils taught Physical Education using Computer Simulation Instructional Package (CSIP) in individualized learning setting.

Research Question Three: Is there any difference in the interest of male and female pupils taught Physical Education using Computer Simulation Instructional Package (TCSIP) in cooperative learning setting?

Table 6: Mean and Standard Deviation of Interest of Male and Female Pupils taught Physical Education through CSIP in Cooperative Learning Setting at Pre-test and Post-test

Group	N	Pre-test		Post-test		Mean Difference
		$\overline{X}$	SD	$\overline{X}$	SD	
Male	40	38.00	5.76	70.45	9.89	32.45
Female	40	36.33	12.14	37.58	5.43	1.25

Table 6 reveals the mean and standard deviation of interest of male and female pupils taught Physical Education through CSIP in cooperative learning setting at pre-test and post-test. From the Table, it is observed that there is difference between the mean interest of the two groups at post-test where male pupils had mean interest of 70.45 with standard deviation of 9.89 while their female counterparts had mean interest of 37.58 with standard deviation of 5.43.

Hypothesis Three: There is no significant difference in the interest of male and female pupils taught Physical Education Computer Simulation Instructional Package (CSIP) in cooperative learning setting.

Table 7: Summary of Analysis of Covariance (ANCOVA) of Post-test Interest of Male and Female Pupils taught Physical Education through CSIP in Cooperative Learning Setting

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	21687.795	2	10843.897	170.781	0.00
Intercept	16006.269	1	16006.269	252.083	0.00
Covariate (Pre-test)	72.482	1	72.482	1.142	0.29
Main Effect (Gender)	21666.715	1	21666.715	341.230*	0.00
Error	4889.193	77	63.496		
Total	259965.000	80			
Corrected Total	26576.988	79			

*: Significant at 0.05 level

Table 7 shows the ANCOVA result of the comparison of post-test interest of male and female pupils taught Physical Education using CSIP in cooperative learning setting. An examination of the table shows a significant main effect between the mean of the two groups ($F(1, 79) = 341.230$, $p < 0.05$). On the basis of this, hypothesis six was rejected. Therefore, the result revealed that there was significant difference in the interest of male and female pupils taught Physical Education using Computer Simulation Instructional Package (CSIP) in cooperative learning setting.

Discussion

The finding of this study on the effects of computer simulation instructional package on pupil's interest in physical education in individualized and cooperative learning settings and those taught using demonstration methods revealed that pupils taught physical education using Computer Simulation Instructional Package (CSIP) in individualized and cooperative learning settings performed significantly better than their counterparts taught using demonstration method. These results indicated that CSIP have an enhancing effect on the interest of the pupils towards physical education by enabling them to perform better than those taught using demonstration method. This could be further explained by the fact that CSIP has the potential to provide stimulating environment which thus motivates pupils to take a greater interest in performing activities. In view of these, this result was supported by Subramaniam (2011), who pointed out that the "power" of interest on student engagement and learning can be enhanced through the manipulation and modification of learning environment and contextual. It is also in agreement with Orjika (2014), who showed that CAIP had significant effects on students' achievement and interest in biology.

The finding on the mean interest of male and female pupils taught Physical Education in individualized and cooperative learning settings revealed that there were differences in the mean interest of male and female pupils taught using CSIP in both individualized and cooperative learning settings. Contrary to the finding of these study, Orjika (2014), found that students' achievement and interest in biology and gender was not a significant factor in students' overall achievement and interest in biology. Supporting the finding of these Ohwojero (2013), observed that the use of computer to teach student in the two schools helped to arouse student's interest and influenced gender. Hence this finding is contrary to the findings of Nsofor, (2010) who found out that there is no significant difference in the cognitive, affective and psychomotor skill achievement and interest of students in respect of gender. The enhancing effect of CSIP in individualized and cooperative learning settings, on the motor interest of male over female counterpart could be explained from the fact that male pupils are physically stronger in their body built and structure. They also have the

natural inclination to watch several programs (football films and other physical activities) with concentration and understanding on the television than the female. These tendencies might have equipped them with the ability to concentrate and follow the trend and perform the activities, while the female pupils might have to go through the activities several times before they can equalize with their male counterpart.

Conclusion

Based on the findings of this study, it can be deduced that the use simulation instructional package for teaching and learning physical education at primary schools has positive effect on pupils' interest. Through the use of simulation-based instructional media, physical education instruction can be easily delivered to learners in inspiring, understandable and exciting ways. This will undoubtedly positively improve pupils' interest in physical education considering that male perform better than their female counterpart. Computer simulation instructional package, if adopted by teachers and students can therefore be used to supplement classroom instruction in physical education.

Recommendations

Based on the findings of this study, the following recommendations were made:

(i) Pupils should utilize the opportunity offered by the package to engage in individualized study. The developed computer instructional package can be utilized for independent study, and also useful for revision and remedial purposes.

(ii) Physical education teachers should adopt and utilize the developed computer simulation instructional package in teaching and learning of physical education as this will help to improve their pupils' interest.

(iii) Regular trainings should be organized by school administrators in form of seminars, conferences and workshops for teachers and pupils in Nigerian primary schools. This will enable them capable of developing, utilizing and maximally benefit from relevant technological innovations in teaching and learning processes.

(iv) Development of innovative learning approaches such as simulation-based instruction should be integrated into the curriculum of teachers' education programme in Nigerian primary schools in-order to prepare pre-service-teachers for effective and efficient teaching later in field.

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