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Effect of Play Way Method on Interest of Primary School Pupils in Basic Science: Implications on School Counselling Practice

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ABSTRACT

Background: Science is the bedrock upon which the technological advancement of a nation is built. Unfortunately, most primary school teachers do not have adequate acknowledge and methods of teaching basic science. Hence, the need for this study. Objective: The general objective of the study is to investigate the effect of play-way teaching method on the interest of pupils in Basic science at the primary school level Methodology: The study adopted a quasi-experimental research design. This study was carried out in Udenu Local Government Education Authority of Enugu State. The sample for this study was 120 primary one pupils in four intact classes from the four schools randomly selected. 24 items Basic Science Interest Scale (BSIS) was used for data collection. The play-way and the conventional lesson plans was the training packaged used also validated by the three experts. The data collected for this study were analyzed using mean and standard deviation for answering the research questions while analysis of covariance (ANCOVA) was used for testing the hypotheses at 0.05 level of significance. Results: Based on the data collected and analyzed, the study revealed that the pupils taught basic science using play-way method developed more interest than those taught with conventional method. Conclusion: Based on these findings, the study among others recommended that students should be exposed to the use of play-way method in teaching and learning of Basic Science and curriculum planners should incorporate the use of play-way method in restructuring Basic Science curriculum in the country.

INTRODUCTION

Science is the bedrock upon which the technological advancement of a nation is built. It is a body of knowledge about living and non-living things in an environment. Science is important and interesting as it affects our everyday life. Science is an intellectual activity carried on by human beings that is designed to discover information about the natural world in which they live and to discover the ways in which this information can be organized into a meaningful pattern Oyedeji, 2002). Systematic enterprise builds and organizes knowledge in the form of testable explanations and predictions about the universe. Ivowi (1997) sees science as an organized body of knowledge that is derived from observations and can be verified or tested by further investigation. The main goal of science is to examine natural events systematically in order to discover facts about them and to formulate laws and principles based on these facts.

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However, the problems of basic science education in Nigeria are many and unfortunately, are not adequately being addressed by the government or its agents and are compounded by other teaching conditions such as inadequate basic science instructional materials, poor teaching methods, poor performance of pupils and decline in enrolment, low level of interest (Summers & Kruger, 1994, Harlen, 2000). This calls for a more interested teaching method such as play way method.

Play-way method of teaching is a learning method that enables the pupils to be active participants in the teaching learning process. Hall (2007) defined play-way method of teaching as a form of pupils' centered learning in which the teacher becomes the facilitator and encourages the pupils to work cooperatively in groups or individually (Ezeudu, 1995, Umo, 2001, Ezeamenyi, 2002, Aleke, 2010, Okoro, 2011 & Isukpa, 2014). This innovative teaching method encourages active participation of pupils in the learning process but also ensures the sustenance of pupils' interests in the teaching process. Interest is an important variable in learning because when one becomes interested in an activity, one is likely to be more deeply involved in that activity. According to Okonkwo (2004), interest can be regarded as the care or concern that someone has for something. An interest can also be a task that someone likes such as a game or a hobby. It is important that this study examines the effect of play way method on interest of primary school pupils in Basic Sciences, especially when gender of the pupils are considered (Hidi, 2000, Chukwu, 2001, Umo 2001, and Okoro, 2011).

Play is work to children. Researchers have engaged themselves in the study of play to find out how play is important to children. Abiodun (2014) investigated the effects of play-way method on the numeracy skills of early basic education pupils in Ekiti State, Nigeria. Isukpa (2014) investigated the effect of role play method on students academic achievement and interest of students in CRS in Ebonyi Central Education Zone of Ebonyi State. Aleke (2010) carried out research study on effect of play method on the achievement of primary school pupils in Social Studies. Peters (2012) carried out a research study on play materials and pupils in the development of social skills in pre-primary schools in Uyo Senatorial District of Akwa Ibom State. Since the researcher investigated the use of play materials in developing pupils' social skills, it relates directly to the present study involving the use of play way method with play materials to enhance academic achievement of pupils. These researchers have so far recorded mixed findings due to variances in design and methods adopted in their studies. Also, it seems that the focus of the previous studies have been much on academic achievement and less in interest. However, there is need for the present study to examine the effect of play way method on interest of primary school pupils in primary basic science.

Froebel's Theory of Play-way Learning:

The German educator, Friedrick Froebel was the propounder of play-way method of learning. Froebel believes that every child possesses at birth, his full educational potential and that an appropriate educational environment is necessary to encourage the child to grow and develop in an optimal manner. Froebel's vision was to stimulate an appreciation and love for children and to provide a new but small world where children could play with others of their own age group and experience their taste of independence. Froebel's philosophy of education is centered on free self-activity, creativity, social participation and motor expression.

Froebel believed that stimulating voluntary self-activity in the young child was the necessary form of pre-school education. Self-activity involves formulating a purpose, planning out and then acting on that plan until the purpose is realized. Froebel's significant contributions to early childhood education was his theory of introducing play as a means of engaging children in self activity for the purpose of externalizing their inner nature. Froebel's interpretation of play is characterized by free play which enlists all of the child's imaginative powers, thoughts, and physical movements by embodying in a satisfying form his own images and educational interests. According to him, play designates a child's mental attitude and should not be identified with anything performed externally; therefore, the child should be given complete emancipation from the necessity of following any given activity while he is engaged in playful self-activity. The theorist believed that through stimulating play that produces self activity, the goal of the child is the fullness of growth which brings about the realization of his budding powers and continually carries him from one plane of educational growth to another. To this end, he provided the children with many stimulating activities to enhance their creative powers and abilities through a series of instructional materials which he called gifts and occupations that help the children compare their relationships through testing and exploration activities.

Gifts, according to Froebel are objects provided for a child to play with such as a sphere, cube or cylinder which helped the child to understand and internalize the concepts of shape, dimension, size, and their relationships while occupations represent items such as paints and clay which the children could use to make what they wished. Through the occupations, children externalized the concepts existing within their creative minds. Therefore, through the child's own self-activity, and creative imaginative play, the child begins to understand both the inner and outer properties of things as he moves through the developmental stages of the educational process.

Frobel's educational plan involves working closely with the family unit. Frobel believed that parents provide the first, as well as, the most consistent educational influence a child's life. Since a child's educational

experiences occur within the family unit, he is already familiar with the home environment as with the occupations carried on within this setting. Naturally, through creative self activity, a child will imitate those things that are in direct and real relationship to him, things learned through observations of daily family life. This theory is of relevance to the present study because when children are provided with conducive learning environments under the guidance of the teacher and through their effective participation in the learning process using play-way method, effective learning will take place.

1. Methodology:

1.1 Design of the Study: The quasi-experimental design was adopted for the study to determine the effect of play-way method on the achievement and interest of primary school pupils in science. Specifically, the pretest-posttest, non equivalent control group design was employed for the study.

Area of the Study: The study was carried out in Udenu Local Government Education Authority of Enugu State.

1.2 Sample and Sampling Technique: The sample size of the study comprised 120 pupils drawn from four primary schools in Udenu Local Education Authority. The sample was obtained through a multi stage procedure.

1.3 Instrument for Data Collection: Basic science interest scale is a four rating scale meant to determine the interest of pupils in science contents before and after the training on play-way method of teaching and learning. The scale ranges from Strongly Agree (SA) (4), Agree (A) (3), and Disagree (D) (2), to Strongly Disagree (SD) (1). The items were developed from information acquired through review of relevant literature.

1.4 Development of Instructional Programmes: The researchers prepared two sets of lesson plans. One set for the play-way teaching method and the other set for the conventional lesson plan. For each lesson topic, a lesson plan was prepared by the researcher with the help of experts in Science Education. Each lesson plan was designed for use in teaching for 30 minutes a period.

1.5 Validation of the Instrument: The instrument for data collection was face validated by four experts of the Faculty of education, University of Nigeria Nsukka, three in Educational Foundations (Childhood Area), and one in Measurement and Evaluation. These experts were requested to study the items, assess the suitability of the language, adequacy and relevance of the items in addressing the research questions bearing in mind the purpose of the study. Their corrections and comments were used to modify the questionnaire. The modifications gave rise to the final draft which was produced, trial–tested and administered on the respondents.

1.6 Reliability of the Instrument: A test of internal consistency was conducted for the Basic Science Interest Scale using Cronbach Alpha. Cronbach Alpha was applied to instruments that are not scored dichotomously. An internal consistency reliability estimate of 0.81 was obtained.

1.7 Experimental Procedure: Before the commencement of the training, the researchers sought the co-operation of the head teachers of the schools involved to enable them build in their research programme into the school schedule without disrupting the latter. The head teachers thereafter introduced the researchers to the primary one teacher who served as the research assistants. The researchers took time to familiarize themselves with the teachers and discuss extensively with the teachers on the skills involved in the use of play-way teaching method, for the teachers in the treatment group and the conventional approach for the teachers in the control schools. The researchers were not directly involved in the execution of the treatment programmes but gave the validated lesson plans to the trained research assistants in both treatment and control schools. The primary one teachers in the intact classes in the treatment classes received training separately from those teachers in the control groups before involving them in the trail testing for the study. The objectives were to ensure that those primary one teachers who served as research assistants acquired the necessary competencies for implementing the programmes.

To determine the extent of mastery of the required skills by the research assistants, the researchers used them to train other subjects not involved in the study during the trial testing. A lot of mock sessions were carried out in groups with males only, females only, and male and female groups. The researchers monitored their performance during the mock sessions to determine the extent they could help in achieving the purpose of the study. Two weeks before the commencement of the training, the primary one teacher in the treatment groups used the prepared pretreatment training programme to teach the pupils the skills involved in the use of play-way method at different stages (briefing stage, interaction stage, forum stage and debriefing stage). This is because if the pupils do not know how to implement the roles involved in the play-way method, the teaching and learning process, using that method would be hindered. Before the commencement of the actual treatment, the Basic Science Interest Scale were administered to the subjects in the treatment and control groups. The pretest scores were used as covariates to the pupils' post-test scores. The primary one teacher administered the test with the researchers in the background monitoring the whole process. Efforts were made to subject all those who took the test under the same conditions. The test was scored with the validated marking scheme designed for it.

During the actual treatment, instructions in Basic science contents, which were drawn from primary one basic science curriculum contents, were given to those in the treatment group and those in the control group.

The purpose was to expose the two groups to relevant experiences in the content areas in which they were tested at the end of the study. Each group was taught separately using the appropriate lesson plan designed for the study. The classes for subjects in the treatment group and the control group were held during their normal time on the school timetable. Each group met for 30 minutes a day, twice a week, for three weeks.

The Basic Science Interest Scale was administered to the subjects in the treatment and control groups as post-test; a week after treatment had stopped. This was done along with the researchers administered the test through the same regular primary one teacher who taught the contents. The researchers mainly supervised the testing process. The administration of the test was conducted in such a way that the subjects were exposed to the same testing conditions. Efforts were made to minimize as much as possible, cheating of any kind by the subjects. The test was scored using the validated marking scheme designed for it.

1.8 Control of Extraneous Variables: The researchers ensured that extraneous variables, which could affect the result of the study, was controlled and to ensure that any change in behavior of the subjects was as a result of training, using play-way teaching method were put under control.

1.9 Method of Data Analysis: The data collected were analyzed in line with research question and hypothesis. Descriptive statistics such as mean and standard deviation were employed in answering the research questions. Analysis of covariance (ANCOVA) was used to test the hypotheses at $P<0.05$ level of significance. ANCOVA was used to determine if there were significant differences in the mean scores of the groups and subgroups.

2. Results:

Research Question one

What is the post mean interest scores of pupils taught Basic Science using play-way method and those taught using conventional method?

Table 1: Mean and standard deviation of interest scores of pupils taught Basic Science using play way method and those taught using conventional method

Methods	N	Pre-test		Post test		Difference
		Mean	Stand. Dev	Mean	Stand. Dev	
Play-way	62	46.00	5.75	85.75	9.75	39.75
Conventional	58	44.00	5.00	53.72	9.10	7.72

Table 1 shows mean and standard deviation of the mean interest scores of pupils taught Basic Science using play-way method and those taught using conventional methods. From the table the pre-test mean and standard deviation for play-way method is 46.00 and 5.75: the post test mean and standard deviation for play-way is 85.75 and 9.75 and the mean difference is 39.75. Similarly, the pre-test mean and standard deviation for conventional method is 44.00 and 5.00: the post test mean and standard deviation for play-way is 53/72 and 9/10 and the mean difference is 7.72.

Hypothesis one:

There is no significant difference in the mean interest scores of pupils in Basic Science when taught using play-way and conventional methods.

Table 2: Analysis of Covariance for Hypothesis 1

Sources of variation	Sum of squares	Df	Mean square	F	Sig.
Group	3.29	1	3.29	22.16	.000
Pre-test	.93	1	.93	6.24	.011
Main effect	1.23	1	1.23	8.30	0.005

The information in Table 2 reveals that t-value corresponding to group is 8.30. This value of F is seen to be significant at 0.005 and equally significant at 0.005. This is because 0.005 is less than 0.05 at ($P = 0.005$: $0.005 < 0.05$). Hence the HO_2 is accepted implying that there is no significant.

Research Question two:

What is the influence of gender on the mean interest scores of pupils taught Basic Science using play-way method?

Table 3: Mean and standard deviation of interest scores of male and female pupils taught Basic Science using play-way method.

Sex	N	Pre-test		Post test		Difference
		Mean	Stand. Dev	Mean	Stand. Dev	
Male	41	35.63	4.09	49.64	7.28	14.01
Female	21	39.01	4.67	46.67	8.37	7.66

Table 3 shows mean and standard deviation of the mean interest scores of male and female pupils taught Basic Science using play-way method. From the table the pre-test mean and standard deviation for play-way method for the male students is 35.63 and 4.09; the post test mean and standard deviation for play-way is 49.64 and 7.28 and the mean difference is 14.01. Similarly, the pre-test mean and standard deviation for female students is 39.01 and 4.67; the post test mean and standard deviation for play-way is 46.67 and 8.37 and the mean difference is 7.66.

Hypothesis two:

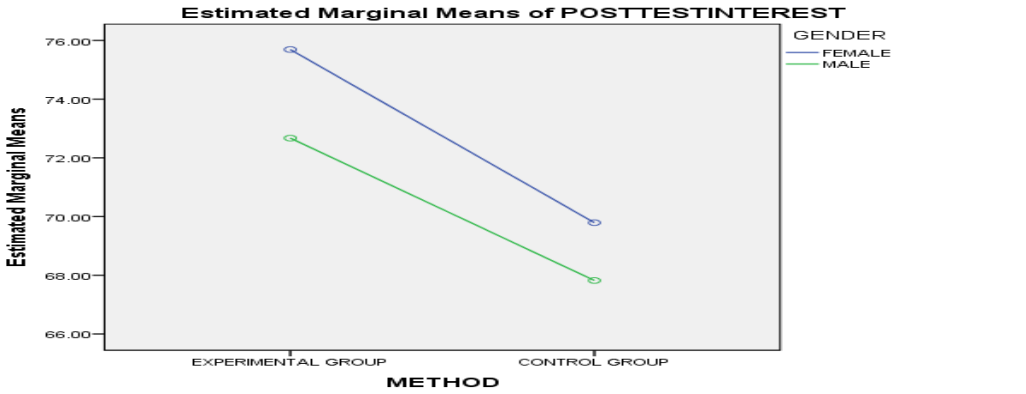
Gender is not significant factor in the mean achievement scores of pupils in Basic Science when taught using play-way and conventional methods.

Table 4: Analysis of Covariance for Hypothesis 2

Sources of variation	Sum of squares	Df	Mean square	F	Sig.
Group	.18	1	.18	1.20	.276

The information on table 4 shows that the f-value corresponding to group is 1.20. This value of F is significant at .276 but not significant at 0.05. This is because, 0.276 is greater than 0.05 that is (P = 0.276: .276 > 0.05). Therefore, the hypothesis of no significant difference is accepted, hence gender is not a significant factor in the mean achievement scores of pupils in Basic Science when taught using play-way and conventional methods.

The diagram below equally exemplified that no interaction effect of gender and play-way method on pupils' interest exist by showing that the two arrows never meet at a point:



Covariates appearing in the model are evaluated at the following values: PRETESTINTEREST = 50.6000

Discussion:

The results showed that the pupils taught Basic Science using play-way method developed more interest in Basic Science more than those taught with conventional method. The play-way method of instruction was superior to the conventional method in facilitating pupils' interest in Basic Science. The differences in interest might have been because of the fact that the pupils were required to interact with objects and find out facts for themselves, thereby imbibing the scientific processes involved in learning Basic Science which enabled them to develop more interest than their counterparts taught basic science using conventional method. The play-way method may have been more effective because the instructions were characterized by active pupils, involvement thereby capturing the interest of the pupils and maximizing comprehension of the subject matter.

The finding is in agreement with Ezeudu (1995), Umo (2001), Ezeamenyi (2002), Aleke (2010), Okoro (2011) and Isukpa, (2014) who earlier found that play-way also has a major role in children's interest and education, particularly in teaching and learning. Game play strategy has a significant effect on pupils' interest than the conventional method. The use of games for teaching the selected Mathematics content has a significant effect on pupils' interest in the subject. It was found out that the use of local games in teaching as child centered approach enhanced their level of interest in subtraction operation. Through playing games, a child develops interest and learns the ideas of equivalents. The interest level of pupils taught the selected Mathematics contents using local games was significantly higher than the interest level of pupils taught the same content using conventional method. Therefore, the introduction of play way would enhance pupils' interest in Basic Science.

The finding revealed that male pupils' develop more interest than the female students when taught with play-way method. The finding agrees with Hidi (2000), Chukwu (2001), Umo (2001) and Okoro (2011) who

reported that the interest level of boys was slightly higher than that of girls. Hidi (2000) found that the use of play-way method in teaching improved the achievement of the pupils' and stimulated their interest. Gender has a significant influence on the interest of pupils' in learning. Gender has influence on students learning in Science and Mathematics. Generally, males tend to be more active in issues of practical application than the females in experimental tasks due to their innate drive to explore situations. This affects gender interest and invariably performance in academic activities.

Conclusion:

Based on the findings of this study, the researchers concluded that the teachers could, through this study strive to adopt proper teaching methods that appeals to pupils senses which promote their interest in school work. They would equally understand that though interest is innate, the pupils still need activities that promote their interest in school work and achievement.

Implications:

The findings of this study have implications on school counselling practice. Since play way method of teaching is effective in increasing the interest of primary school pupils to study basic science, it would make more sense if the services of school counsellors are employed to ensure that the method is properly integrated in the primary school system. This is because school counsellors have understanding about the psychological impact of the teaching method (play way) and can assist both the teachers and the pupils to use the method adequately and appropriately. Without the services of the school counsellor it could be possible that this method of teaching could be over-used to the detriment of the pupils in terms of not having interest in any other method that would be appropriate in studying other subject areas.

REFERENCES

Abiodun, A.P., 2014. Effect of Play Way Method on the Numeracy Skills of Early Basic Education School Pupils in Ekiti State Nigeria Mediterranean. Journal of Social Sciences MCSER Publishing, Rome-Italy, 5(10): 123-134.

Agbo, I.A., 1997. Effect of play method of instruction on the students' achievement in Christian Religious Knowledge, Unpublished M. Ed thesis, University of Nigeria, Nsukka.

Aleke, I.D., 2010. Effect of Play way Method on the Achievement of Primary School Pupils in Social Studies. Unpublished M.Ed Project Report, University of Nigeria, Nsukka.

Anigbogu, M.A., 2002. Educating the girl child. Psychology News, (3): 17-18.

Chukwu, J., 2001. Effect of selecting local games on primary school pupils' achievement and interest in subtraction operation. Unpublished Ph.D Thesis, University of Nigeria, Nsukka.

Ezeamenyi, M.N., 2002. The effects of games on mathematics achievement, interest and retention of junior secondary school students. Unpublished Ph.D Theses, University of Nigeria, Nsukka.

Ezeudu, F.O., 1995. Effects of Concept maps on students' achievement, interest and retention in selected units of Organic Chemistry. Unpublished doctoral dissertation UNN.

Froebel, F., 2003. The education of man, New York: Appleton and Co.

Hall, S.T., 2007. Effect of mastery learning strategies on academic achievement of students in chemistry. The Nigerian Journal of Guidance and Counseling, 4(192): 97-107.

Harlen, W., 2000. The teaching of primary science in schools. London: David Fulham Publishers.

Hidi, S., 2000. An interest researcher's perspective on the effects of extrinsic and intrinsic factors on motivation. In C. Sansone and J. M. Harackiewicz (Eds) Intrinsic and Extrinsic Motivation: The search for optimum motivation and performance. New York: Academic Press. Retrieved April/29, 2008 from http://en.wikipedia.org/wiki/Reading Comprehension.

Hidi, S., 2001. Interest and reading: Theoretical and practical considerations. Educational Psychology Review, 13(3): 191-2008.

Isukpa, M.E., 2014. Effect of role play method on students academic achievement and interest of students in CRS in Ebonyi Central Education Zone of Ebonyi State. Unpublished M.Ed thesis, Department of arts Education University of Nigeria, Nsukka.

Ivowi, U.M.O., 1997. The Curriculum: A Presentation of UBE for Nigeria, Proceedings of the Education Mini Summit, Abuja, 29.

Okoro, I.F., 2008. Effects of cognitive styles, problem solving and expository methods of teaching on students' achievement in home economics. Unpublished Doctoral Thesis, Abia State University, Uturu.

Okoye, N.S., 2004. Factors affecting teaching and learning: the learner dimension. In K. A. Ugbomadu and N. S. Okoye (Eds) Principles, Methods and Strategies for Effective teaching. Onitsha/Agbor: KMENSUO Educational publishers.

Oyedeji, O., 2002. social competence – Cue evaluative ability in Nigeria youths: A case study of university undergraduates. African Journal for the Psychological Study of Social Issues, 4: 1-6.

Peters, V.V., 2012. Play Materials and Pupils' Development of Social Skills in Pre-primary schools. Unpublished M.Ed Project Report, University of Uyo.

Summers, M. and C. Kruger, 1994. A longitudinal study of a constructivist approach to improving primary school teachers subject matter knowledge in science. Teaching and Teacher Education, 10(5): 495-579.

Umo, U.C., 2001. Effect of Games on the achievement and interest of junior secondary school students in Igbo-grammar. Unpublished Ph.D Thesis, University of Nigeria, Nsukka.