

Material Reinforcement, Cognitive and Affective Behaviours among Primary School Pupils'

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Abstract

This research paper aimed at determining the impact of material reinforcement on primary school pupils' cognitive and affective behaviours in the classroom situations. Two research purposes, research questions and two hypotheses guided the study. Expose-factor research design was adopted. The sample for the study was 557 pupils. Questionnaire was used in data collection. Mean standard deviation and t-test were applied in answering the research questions while t-test was used in the analysis of the data. Results obtained indicated that material reinforcement influenced both cognitive and affective behaviours of primary school pupils significantly.

Keywords: material reinforcement, cognition, cognitive behaviours, affective behaviours, reinforcement

1. Introduction

The importance of rewards and feedback in intellectual processes like thinking, knowing and memory cannot be glossed over. Therefore, the need to learn and modify human behaviour is based on the outcomes which the person's actions receive. The material encouragements that increased behaviour is otherwise called reinforcement. Reinforcement is referred to as any means of improving a desired behaviour (Munger, 2007). Reinforcement is a process of strengthening response through the presentation of stimulus reinforcement. Reinforcement is anything that is given as a reward for desirable behaviour exhibited with anticipation that it will increase the likelihood of the desired behaviour occurring again (Ofordile, 2002). Operationally, reinforcement is that eventual phenomenon that increases probability of desired behaviour manifesting again. Reinforcement could be inform of materials reinforcement which is one of the key variables of this paper. According to Igbo and Ojukwu (2008), stated that material reinforcement acts as a source of motivation to learners which is necessary in acquiring knowledge.

Material reinforcement has probability the capability of increasing prosocial and desirable behaviour in Classroom situations (Swain & McLaughlin, 2001). Material reinforcement appears to be a good mode of encouraging behaviour. Supporting this, Holroyd and Coles (2002) maintained that material reinforcement is valuable in the first two decades of life, affording the naïve developing child an effective method of identifying advantageous behaviours. In essence, it helps children to discern and learn new actions in changing contexts. Indeed, children seem to need material reinforcement better since most children find delight in gifts such as biscuit, chips, pen, pencil, and exercise book.

Material reinforcement also increases pupils' intrinsic motivation with regard to their academic achievement and advancement (Mohammadu, 1994). Anuma and Idoli (2012), Ofordile (2002) asserted that material reinforcement increases behaviour, for reinforcement to be optimally useful, it must be delivered soon after the desired behaviour has occurred. On the other hand, excessive and inordinate postponement of reinforcement leads to accidental reinforcement of other intervening behaviour (Ofordile, 2002). However, token economy and social reinforcement shall be considered as material reinforcement. In this context, material reinforcement can include physical objects such as money, biscuits, sweets, pencil, and books as well as award of points (Ihiegbullem, 2010). Azikiwe (1998) indicated that material reinforcement could be a pencil, beautiful drawings and sweets which the teacher uses to strengthen response from learners. Material reinforcement is the application of tangible rewards like edibles, toys, pencil and notebook for desirable academic achievement in school

(Amuma & Idoli, 2006; Cotton, 1988). Ihiegbulem (2010) defined material reinforcement as whatever the teacher uses to motivate learners towards exhibiting desired academic behaviour. Contextually, materials reinforcement is the presentation and application of anything that has physical properties that do not weaken a desired response (behaviour) rather strengthen such desired behaviour to be repeated.

On contrary, Sutherland (2000) decried that teachers rarely use reinforcement mode in classroom. Sutherland lamented that teachers are infrequent in distribution and administration of material reinforcement which had been identified as being problematic towards strengthening a correct response in schools. However children have been shown to have poorer performance in switching to new behaviour due to incessant misuse of reinforcement. (Koollschijin, Seje, De-Rooij, Mombouts, & Crone, 2011). A robust opinion puts that children tend to have particular difficulty with learning when reinforcement contingencies changes (Shepherd, Jackson, & Groom, 2014).

In fact, it is the researchers' observation that the learning difficulty and poor performance of primary school pupils are anchored on lack of material reinforcement among primary school teacher in Obollo-Afor education zone of Enugu State. Teachers in this study area seem not to be making use of reinforcement. Teachers, psychologists, and counsellors lament that the material reinforcement has purchasing value and ought to be provided by government. Onwuasoanya (2006) opined that non availability of materials reinforces for counselling and teaching is another constraint for the utilization of reinforcement in modifying behaviour. Onwuasoanya lamented that the problem is the finance to purchase the materials, which the counsellor and teacher may not be able to do with their salaries in order to help children in primary schools.

Primary education according to Federal Republic of Nigeria in its National Policy on Education (FRN, 2004) is referred to as the education given in institutions for children aged 6 to 11. Onuoha and Ifelunni (2008) defined primary education as education given normally to children aged between six and eleven years and above. In operational terms, primary education is educational level which emphasizes on basic knowledge and skills in younger children. These children need to be rewarded with material reinforcement which can powerfully change their behaviour (Mirzamani, Ashoon, & Sereshki, 2011).

Merriam (2015) sees behaviour as the interaction between intrinsic components and extrinsic factors. Reese (1996) defined behaviour as any observable or measurable movement of an organism, including external movement, internal movement and their effect. Ofordile (2002) opined that behaviour is the activity of organisms, that include a broad range of activity; highly visible motor response such as walking, speech and the manipulation of objects; internal activity such as thinking and emotion, as well as the subtle and involuntary activity of smooth muscles and glands. In essence, behaviour encompasses all the activities of human beings. Cognitive behaviour according to Onwuasoanya (2008) is the broad term that refers to all intellectual processes that involve perceiving, believing, thinking, remembering, knowing and deciding. Contextually, it has to do with mental exercise through which information is processed which leads to specific behavior (Aguokogbuo, 2005). Cognitive behaviour has also been defined by Aguokogbuo (2005) as knowing, remembering, and reproduction of something that has been learned. The author also emphasized that cognitive behaviour vary from the simple recall of martial learned to highly original and creative ways of combining and synthesizing new ideas and materials. In operational term, cognitive behaviour is a mental action like alertness and responses, which increase task performance.

It is observed by Sburlea and Poel (2012) that children's cognitive processes cannot be substantially completed without reinforcement. So, if children's action or behaviour is accompanied with reinforcement, the action would be repeated. In contrast, Chater (2009) challenges the reinforcement as a means for understanding particular cognitive and neural mechanisms. Chater argues that instead, brain literally reflects the operation of a more general rational task (Shephard, Jackson, & Groom, 2013).

Apart from the relevance of reinforcement in cognitive performance, it is also used in affective behaviour. Affective behaviours are inextricably integrated with each other (Picard et al., 2004). Affective behaviour is defined by Aguokogbuo (2005) as attitudes manifested towards objects such as love or hate, interests and appreciation. In this study, affective behaviour is individual's emotional state such as anger, fear, and sadness. There are positive and negative affect. Positive affect include joy, love, happiness while negative affect are fear, anger and sadness (Damasio, Grabowki, Bechara, Damasio, Ponto, Paruizi, & Hichwa, 2000). Cognitive behaviour can be encouraged through stereotype priming where people are primed to think about a particular person or profession exhibiting high cognitive ability, prior to engage in a task requiring cognitive ability (Sburlea & Poel, 2012). In view of this current study, the cognitive behaviour of pupils changes and strengthened each time a stimuli (reinforcement) is associated or paired with learning.

It is not an overstatement to say that concept is consciously or subconsciously formed each time there is stimulus-Response association. Solso, Malin O. and Maclin M. (2008) observed that reinforcement can facilitate formation of learning or bond. So, the association of learning of a concept response is a result of reinforcement of desired behaviour which helps the operant (pupils) to form a concept (Presko, 2008; Schacter & Buckner, 1998). This, therefore, opined that reinforcement is a crucial variable in enhancing pupils' cognitive competence (Sburlea & Poel, 2012). Cognitive learning in both classical conditioning and operant conditioning involves the storing of new information, which guides the behaviour (Kosslyn & Rosenberg, 2001). The authors emphasized that the fact the cognitive learning is more than simply associations between stimuli and responses, it is note-worthy that reinforcement is a useful tool for understanding not only cognition itself but also give success to learners.

Studies have varied opinions regarding the influence of positive and negative affect on behaviour. There is some indication that positive affect increases intrinsic motivation (Estrada, Isen, & Turken, 1994). Another study indicated that a positive mood is not best for all kinds of thinking, but that some affective states help some kind of thinking better than others (Picard et al., 2004). The differences regarding reinforcement, cognitive and affective behaviours in various studies therefore call for the need to find out the influence of material reinforcement on junior primary school pupils' cognitive and affective domains behaviours.

2. Review of Related Studies

A study was conducted by Amuma and Idoli (2006) on effects of material and non-material reinforcers on academic performance of girls on health sciences in the senior secondary school in Abia State. A quasi-experimental design was used. 120 SSII students were selected from 6 secondary schools located in three educational zones of the state. A stratified random sampling was used to select 240 students. The results of the tests calculated were based on ANOVA, and z-test. The results indicated that the mean scores of students materially reinforced and non-materially reinforced students differ significantly in favour of the students that non-material reinforced students. The relationship between the study and this present study lies on material and reinforcement.

Another study was conducted by Luecha (2011) on the effect of using token economy and social reinforcement to simulate preschool students' vegetable and fruit consuming behaviour. Two research objectives guided the study. The sample of the study was five students of 4-5 years of age. The research instruments were Wilcoxon Signed Rank Test and Evaluation Form for individual behaviour of eating vegetables and fruits throughout period baseline, treatment and withdrawal. The result also indicated that preschool children who obtain token economy and social reinforcement could change their behaviour of eating vegetable and fruit. The study is therefore, relevant to this present study because both focus on what reinforcement can do on preschool children.

San (2013) carried out study on the effect of a school wide token economy system on learning attitude, social interaction, and challenge behaviour of the mental retardation. A descriptive, single-subject case study that is a multiple baseline design across subjects was adopted to record the effect of Implementing School Wide Token Economy System (SWTEC). A multiple baseline design was used. Three students with mental retardation participated in the study. The instrument for data collection was a developed essay-based test-Behavioural intervention. Mean and percentage scores were used in analysing the data collected. The study found that the behaviours of three students were improved when they recognized the value of two tokens that got edible items in school store and praise from teachers. The relationship between the study and this present lies on that the two studies focus on pupils and reinforcement which is relevant for the present study.

Fiksdal (2014) conducted research on a comparison of the effectiveness of a token economy system, a response cost condition, and a combination condition in reducing problem behaviour and increasing students' academic engagement and performance in two first grade classrooms. The study adopted experimental design with sample of two first grade elementary school of 30 students located in a small town in West-Central Wisconsin.

Students in C.S. Classroom were between 80-95 months old with one average age of 86.3 months old. Ninety-four percent of the students were Caucasian and 1% of the students were Hispanic. Students in S.M classroom were between 80-92 months old with an average age of 85-71 months old. Sixty-nine percent of the students were Caucasian, 30% were African American, and 1% was Asian. Data on problem behaviour were collected via frequency counts from directly observing the classroom each day. Again, Data on academic engaged time was collected via momentary time sampling with 15 second intervals from directly observing the classroom each day. Results from the analysis showed that both token economy and combination conditions were more effective at increasing student engagement during mathematics for both classrooms. Results from the second phase of the study showed that token economy was slightly better at increasing student engagement

during mathematics compared to the combination condition for C.S. classroom. The relevance of the study to this current study lies on the fact that both address academic behaviour with regards to reinforcement.

Another study was conducted by Thielker, Kwok and Senisa (2014), on the relationship between positive reinforcement and locus of control. The study was carried out in Holyoke and 60 students from the Mount Holyoke collegewere used as population. The design adopted was correlational design. The instrument used was a 33 questioned Locus of Control Attribution Style Test. After the data collection, A 2x2 independent groups ANOVA was used to determine if locus of control and reinforcement was significantly related. The result indicated that no significant relationship was found between locus of control and positive reinforcement. The importance of the study to this current study is that the result found showed that reinforcement has no relationship with operant behaviour.

Kennedy and Jolivette (2008) carried out a study on the effect of positive verbal reinforcement on the time spent outside the classroom for students with emotional and behavioural disorders in a residential setting. The design of the study was experimental design. The participants were 2 sixth-grade students with Emotional Behavioural Disorder (EBI) who were both aged 12 years. The instrument used was Problem Behaviour Questionnaire. There were a high number of separations and ISS referrals during academic instructional time. Percentage counts and ANONA were used to analyse the data. The result indicated that positive reinforcement influenced the students learning positively. The study relates to this present study for the fact that both focus on reinforcement.

In addition, Ihiegbulem and Igwebuike (2011) carried out a study on the effect of token economy on academic achievement of secondary school students: Implications for counselling. The study centred on effect of token economy on academic achievement of secondary school students. Demonstration Secondary School, Federal Collage of Education (Technical) Omoku, River state, Nigeria, was used for the study. Four research questions and two null hypotheses were used. The design employed was a quasi-experimental research. The population of the study comprised 198 junior secondary 3 Integrated Science and 96 senior secondary I Biology students. The sample was 160 students that comprised 80 Biology students and 80 Integrated Science students. The procedure of the experiments include: the junior secondary 3 integrated science students had two arms, A and B. Experimental and control groups were used. During teaching, the experimental group was motivated with token economy while the controls were not motivation. The methods of data analysis adopted by the study were mean scores, t-test and f-test of homogeneity of groups' variances. The result found that extent of academic achievement of the experimental group was moderate, while that of the control group was not. It was also found that the extent of academic achievement of the experimental group (Biology students) motivated was moderately high while that of the control group (not motivated) was nearly moderate. The study, is related to this current study since it focused on reinforcement which is an independent variable of this present study.

Mirzaman, Ashoori and Sereslki (2011) carried out a study on the effect of social and token economy reinforcements on academic achievement of students with intellectual disabilities. The purpose of the study was to investigate the effect of social and token economy reinforcements on academic achievement of 9th grade by students with intellectual disabilities in an experimental science class in Tehran province in Iran. The method used for this study was pre-test, post-test experimental study with a control group. The boy students with intellectual disabilities from three junior high schools participated in the study. The sample consisted of thirty, 9th grade boy students with intellectual disabilities in the selected schools, the schools were chosen by the multistage cluster method. To measure the progress of students in the science class, a teacher made test and the Wechsler intelligence tests for matching the groups for IQ were used. Lashe Method and Teachers' Perspective were used to ascertain the validity of the instrument. The reliability coefficient was obtained by the reliability of related tests, Data were analysed using one-way variance analysis and shefe prosecuted test. The results showed that there was a significant increase in academic achievement of students with intellectual disabilities when using token economy than using social reinforcement compared with using the control group. Also, when using social reinforcements, the academic achievement of students was more than the control group. The relationship between the study and this current study lies on the use of reinforcement in intellectual behaviour.

Another study was carried out by Deidrick (2010) on motivating students using positive reinforcements. The purpose of the study was to explore behaviour modification by using rewards to encourage positive, observable behaviour changes in middle school students with special needs in a district-based special education classroom. Another purpose of this study was to determine the effects positive reinforcement and reward they have on behaviour modification. The participants include six, sixth grade students, seven, seventh grade students, and one special education teacher in middle-class, Suburban Middle School located outside Binghamton, New York. The study used 3,950 students in the district and 1,000 students in the school. The participants were divided into four groups; Group A, B, C and D. Data was collected through observation and frequency count of the number of

times the study had prompted students to use manners before the reward system was compared to the frequency count of the number of times the study had to prompt students to use manners after the reward system to understand the effectiveness of rewards regarding behaviour modification. The results showed the number of times students were prompted to use these specific manners. The relationship between the study and this present study is based on the substantial use of reinforcement in behavioural learning.

Sburlea and Poel (2012) conducted research on the effects of light, priming and positive reinforcement on cognitive performance. The design adopted for the study was experimental design. The sample selected for the study was 36 pupils. The participants completed a detailed-oriented task (memory exercise) presented on computers with red, blue or neutral background colour. They studied a list of 36 words for two minutes and were asked to recall as many words, as they could after a 20 minutes. From data analysed. The result demonstrated that red (Versus blue) can enhance performance on detailed oriented (Versus Creative) Cognitive tasks. It was also found that warm colours as being more effective modulators of cognitive performance in a memory related task than cold colours. The relevance of the study and current study lies on the fact that both focus on cognition and cognitive application.

Azuka (2008) carried out a research on the effect of cognitive learning on child's development in Amanyi development center in Isi-Uzo Local government area of Enugu State. The purpose of the study was to find out the extent to which classroom teaching and learning can improve the cognitive development of the children. Experimental design was used for the study. The population comprised all the primary school pupils in the center. A random sampling was used to select 30 pupils. Questionnaire was the instrument used for the study an instrument. Percentage was used to analyse the data. The result indicated that cognitive learning enables the children solve problems both inside and outside the classroom. The finding is relevant to this current since it conforms to one of the objectives of the present study which is to find out the influence of reinforcement on cognitive behaviour of children.

3. Statement of the Problem

It is worrisome that despite several emphasis and empirical evidence on the importance of behavioural intervention mode like reinforcement, there is still an increased on probability of utilization of material reinforcement among primary school teachers in Obollo-Afor Education Zone. Even those teachers that utilize reinforcement during teaching and learning make it monotonous which seems to have posed learning difficulty towards acquiring new cognitive and affective behaviour among primary school children.

It is also disturbing that there is no accepted assertion that material reinforcement has positive pro-active consequence on children's cognitive and affective behaviours. Despite the fact that studies have concluded that reinforcement is very important in behavioural intervention but still teachers rarely use material reinforcement in classroom. Consequently, children tend to have particular difficulty with learning when reinforcement contingencies changes. In addition, evidence supported that material reinforcement isunavailable in primary schools for teachers and guidance counsellors to use. With all these in mind the researchers are poised to ask, could it be that material reinforcement are being under-utilized in strengthening primary school pupils' cognitive and affective behaviour? It is based on this that this study was carried out.

The general purpose of this study was to find out the influence of material reinforcement on primary school pupils' cognitive and affective behaviours in Obollo-Afor Educational Zone of Enugu State in Nigeria. Specifically, this study will seek to:

- 1) Determine the influence of material reinforcement on primary school pupils' cognitive behaviours.
- 2) Ascertain the influence of material reinforcement on primary school pupils' affective behaviours.

4. Research Questions

The following research questions guided this study:

- 1) What is the influence of material reinforcement on primary school pupils' cognitive behaviours?
- 2) What is the influence of material reinforcement on primary school pupils' affective behaviours?

5. Hypotheses

The following null hypotheses postulated to guide this study and tested at 0.05 probability level.

H₀₁ Material reinforcement does not have significant influence on cognitive behaviour of primary school pupils.

H₀₂ Material reinforcement does not have significant influence on affective behaviour of primary school pupils.

6. Research Method

The study adopted ex-post facto research design, Nworgu (2015) defines ex-post facto design as a study that involves a particular phenomenon which has taken place but cannot be manipulated by the researcher. The choice of this design for this study lies on the fact that material reinforcement which is independent variable is already in existence therefore cannot be manipulated. Also, the design allows the researcher to look at the influence of independent variable on the cognitive and affective behaviours of primary school pupils. The study was carried out in Obollo-Afor education zone of Enugu State. Obollo-Afor Education zone consists of Igbo-Eze North, Igbo-Eze North and Udenu Local government areas. There are 209 public primary schools in this education zone. The inhabitants of this zone include civil servants, traders and farmers. This area of study was considered appropriate because the primary school teachers appear to be neglecting the importance of reinforcement in behaviour of primary school children.

The population of the study comprised all the 17,928 middle basic primary school pupils in all 209 public primary schools in Obollo-Afor Education Zone of Enugu State. This totals to 17928 which comprised all the 4270 primary school pupils in Udenu Local government area, 2075 primary pupils in Igbo-Eze South and 11583 primary pupils in Igbo-Eze North respectively. Igbo-Eze North Local government has 119 primary schools. Igbo-Eze south has 18 primary schools and Udenu has 72 primary schools respectively (Source: Enugu State Universal Basic Education Board (ESUBEB) 2014/2015).

The sample size of this study was 557 which were 10% of the pupils' population in Obollo-Afor education zone. According to Ali (2006) when a population is in many thousands 5% of the population can be used for the study but when it is few thousands 10% sample of the population can be used. Multi-stage sampling technique was used in this study. Firstly, all the 3 local government areas were randomly selected using simple random sampling without replacement. The choice of this was to ensure even representation of the subjects. Secondly, purposive sampling technique was used to select 12 primary schools in Igbo-Eze North, 5 primary schools in Udenu and 3 schools in Igbo-Eze South local government areas respectively. Thirdly proportionate sample was adopted to select 360 pupils from Igbo-Eze North, 64 pupils from Igbo-Eze South and 133 pupils from Udenu local government areas respectively.

The instrument for data collection in this study was a questionnaire developed by the researchers tagged: Reinforcement, Cognitive and Affective Behaviours Questionnaire "(RE CABQ)". The instrument has 27 items put into two clusters. Cluster one elicits information on material reinforcement. Cluster two focused on cognitive and affective behaviours respectively. The items of the instrument had four point response options of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) which are weighted 4, 3, 2 and 1 respectively. After the development of the instrument, three copies were given to three experts for face validation. Two of these experts are from Educational Foundations while one is from Science Education Department, all from Faculty of Education, University of Nigeria, Nsukka. The validates were requested to look at the appropriateness, relevance and clarity of the items with reference to the specific purposes. The suggestions and corrections from the experts were used to develop the final draft of the instrument.

A trial testing was carried out to determine the reliability of the instrument. This was done by giving 30 copies of instruments to elementary five pupils in Nsukka Education zone of Enugu State. This was to determine the internal consistency of the instrument. A statistical analysis was done using Cronbach Alpha coefficient and the result gave Alpha Co-efficient value of 0.83 and 0.78 for cluster one and two, respectively. The reliability Co-efficient values obtained indicate that the instrument is highly reliable to be used for the study. To collect data for this study, a total of 557 copies of the questionnaire were administered by the researcher and two research assistants. The two research assistants administered the instrument to pupils in Igbo-Eze North and Igbo-Eze South while the researchers administered the instrument to pupils in Udenu local government area. Mean and Standard Deviation were used to answer the research questions, while t-test statistics was used to test the null hypotheses at 0.05 probability levels. A criterion mean score of 2.50 was adopted as a benchmark for acceptance. That is any item that scores 2.50 and above was taken as agree and any mean score below 2.50 was taken as disagree for research question, while t-test score with associated probability level that is lower than the set probability of 0.05 was rejected.

7. Results

Table 1. Mean, standard deviation and t-test analysis of MREINF on cognitive behaviours (COGBE) of primary school pupils

Variables	n	\bar{x}	SD	df	T	Sig	Deci
MREINF	557	3.07	0.34	556	29.34	0.00	S
COGBEH		2.63	0.30				

$\alpha = 0.05$, S = Significant.

Data in Table 1 showed the mean and standard deviation of the respondents on the influence of material reinforcement (MREINF) on primary school pupils' cognitive behaviours (COGBEH). Result indicated that the mean and standard deviation scores of the respondents on material reinforcement (MREINF) and pupils' cognitive behaviours (COGBEH) are 3.07 and 2.63 with standard deviations of 0.34 and 0.30 respectively. Since the mean of the respondents on MREINF is greater than the mean of respondents on COGBEH, it implies that MREINF influences pupils' COGBEH. Thus, material reinforcement (MREINF) influences pupils' Cognitive behaviours (COGBEH).

It equally shows that t-value of 29.34 with associated probability value of 0.00 was obtained with respect to the influence of MREINF on cognitive behaviours (COGBEH) of primary school pupils. Since the associated probability value of 0.00 was less than 0.05 set as level of significance, the null hypothesis (H_{01}) was rejected. Thus, inference drawn is that there was a significant influence of material reinforcement on cognitive behaviours of primary school pupils.

Table 2. Mean, standard deviation and t-test analysis of MREINF on affective behaviours (AFFBEH) of primary school pupils

Variables	n	\bar{x}	SD	df	T	Sig	Dec
MREINF	557	3.07	0.34	556	34.05	0.00	S
AFFBEH		2.52	0.27				

$\alpha = 0.05$, S = Significant.

Table 2 revealed the mean and standard deviation of the respondents on the influence of material reinforcement (MREINF) on upper primary school pupils' affective behaviours (AFFBEH). Result showed that the mean and standard deviation scores of the respondents on material reinforcement and affective behaviours are 3.07 and 2.52 with standard deviations of 0.34 and 0.27 respectively. Since the mean of the respondents on material reinforcement is greater than the mean of respondents on affective behaviours, it implies that material reinforcement influences pupils' affective behaviours. Thus, material reinforcement should be encouraged to build pupils' affective behaviours.

The result also indicates that t-value of 34.05 with associated probability value of 0.00 was obtained with respect to the influence of material reinforcement (MREINF) on affective behaviour (AFFBEH) of primary school pupils. Since the associated probability value of 0.00 was less than 0.05 set as level of significance, the null hypothesis (H_{02}) which stated that material reinforcement does not have significant influence on affective behaviours of primary school pupils was rejected. Thus, inference drawn is that there was a significant influence of material reinforcement on affective behaviour of primary school pupils.

8. Discussion of Findings

The finding revealed that material reinforcement (MREINF) influences pupils' cognitive behaviours (COGBEH). There was a significant influence of MREINF on cognitive behaviours (COGBEH) of primary school pupils. Among the MREINFs that influence COGBEH include pencil, toy, sweets, biscuits, pea nut, eraser and caddy. This is in line with Luecha (2011) who suggested that material reinforcement appears to be regulating children's responses. It is therefore important to note that teachers' use of material reinforcement helps to condition cognitive behaviours of pupils. This is confirmed by observations of Munger (2007) and Igbo (2010) that

material reinforcement is a means of improving a desired behaviour and increases the chances of becoming a habit. This collaborates with Luecha (2011) that preschool children who obtain token economy and social reinforcement change their behaviours. It also agrees with San (2013) that the behaviours of students are improved when they recognized the value of material reinforcement. To that respect it is disheartening as teachers seem to be neglecting the impact of material reinforcement in teaching and learning process. Probably, this could be one of the reasons why there are massive poor performances in Nigerian schools.

The result of the study, further disagrees with Thielker, Kwok and Senisa's (2014) which found that reinforcement has no relationship with operant behaviour. This could be attributed to other environmental or demographic variables. The finding indicated that Material reinforcement (MREINF) influences pupils' affective behaviours. There was a significant influence of MREINF on affective behaviours (AFFBEH) of primary school pupils. Some of the reinforcement materials include pencil, toy, sweets, biscuits, pea nut, eraser and books and they help children to be aware, willing and pay great attention to lessons at school and at home. These materials make them to participate, attach much value and act consistently in all school activities. This does not concur with Kennedy and Jolivette (2008) who found that reinforcement decreased students overall verbal comments. This is in consonance with Ihiegbuelm, Ihiegbulem and Igwebuikwe (2011) that the extent of academic achievement of students who were motivated was moderate, while that of the students that were not motivated was low. The finding aligns with Mirzaman, Ashoori and Sereslki (2011) that there was a significant increase in academic achievement of students with intellectual disabilities when using token economy than using social reinforcement which was used for the control group. This is interesting for teachers to note the crucial role of tangible and edible object in changing affective behaviours of children in basic education. No wonder children do not allow adults to collect whatever they possess. It becomes discouraging that most of the school teachers are not ready to invest in reinforcement as observed by Onwuasoanya (2005) that teachers are not willing to spend their salaries to buy material reinforcers.

9. Conclusion and Implications

The finding revealed that material reinforcement (MREINF) influences pupils' cognitive behaviours (COGBEH). There was a significant influence of MREINF on cognitive behaviours (COGBEH) of primary school pupils. Among the MREINFs that influence COGBEH include pencil, toy, sweets, biscuits, pea nut, eraser and caddy. By implication, if material reinforcement is not presented to pupils there is likelihood that their attention span will be short-changed and as such poor cognitive behaviour may manifest. It also implies that if material reinforcement is not given priority to motivate pupils in classroom, it will be difficult for them to recall, grasp, learn and comprehend instruction in the classroom situations. In addition, the implication is that the pupils may not be interested to solve and handle difficult task in the school if presentation of stimuli is ignored and withdrawn.

The finding indicated that Material reinforcement (MREINF) influences pupils' affective behaviours. There was a significant influence of MREINF on affective behaviours (AFFBEH) of primary school pupils. By implication, teaching needs to be facilitated with material reinforcement to encourage and sustain desired affective behaviours. On the other hand, teachers' use of material reinforcement during teaching and learning will encourage pupils from paying adequate attention. Another implication is that those children will attach value and link abstract concepts in the process of learning.

References

- Aguokogbuo, C. N. (2005). *Curriculum development and implementation for Africa*. Nsukka: Chuka Education Publishers.
- Ali, A. (2006). *Conducting research in education the social sciences*. Enugu: Tashiwa networks.
- Amuma, C., & Idoli, N. B. (2012). Effects of materials and non-material reinforcers on academic performance of girls on health science in the senior secondary schools in Abia State. *Global Journal of Education Research*, 12(1), 187-209.
- Azikiwe, U. (1998). *Language teaching and learning*. Onitsha: Africana FEP Publishers Limited.
- Azuka, E. O. (2008). *Effect of cognitive learning on a child's development in Amenyi development center in Isi-Uzo, Local government Areas of Enugu state* (Unpublished M.Ed Thesis). University of Nigeria, Nsukka.
- Chater, N. (2009). Rational and mechanistic perspectives on reinforcement Learning. *Cognition*, 113(3), 325-364. <http://dx.doi.org/10.1016/j.cognition.2008.06.014>

- Damasio, A. R., Grabowski, T. J., Bechara, A., Damasio, H., Ponto, L. L. B., Parvizi J., & Hichwa, R. D. (2000). Subcortical and cortical brain activity during the feeling of self-generated emotions, nature neuroscience. *Nature Neuroscience*, 3, 1049-1056.
- Diedrich, J. L. (2010). *Motivating students using positive reinforcement* (unpublished maser's thesis). The Collage of Brockport: State University of New York.
- Estrada, C., Isen, A. M., & Young, M. J. (1994). Positive affect influences creative problem solving reported source of practice satisfaction in Physicians. *Motivation and Emotion*, 18, 282-299. <http://dx.doi.org/10.1007/BF02856470>
- Federal Republic of Nigeria. (2004). *National policy on education* (4th ed.). Lagos-Nigeria: NERDC Press.
- Fiksdal, B. L. (2014). *A Comparison of the effectiveness of a token economy system, a response cost condition in reducing problem behaviour and increasing student academic engagement and performance in two fist classrooms* (An Unpublished Ph.D Dissertation). Minnesota state University, Mankato.
- Holroyd, C. B., & Coles, M. G. H. (2002). The neural basis of human error processing: Reinforcement learning, dopamine, and the error-related negativity. *Psychological Review*, 109(4), 679-709. <http://dx.doi.org/10.1037/0033-295X.109.4.679>
- Igbo, J. N., & Ojukwu, V. N. (2008). Extrinsic motivation as enhancement strategy for social studies performance among primary school children. In B. G. Nwogu (Ed.), *Education in the information Age: Global Challenges and Enhancement Strategies. Processing of First International Conference of the Faculty of Education* (pp. 41-45). University of Nigeria Nsukka.
- Ihiegbulem, O. T. (2010). *Guidance and counselling functions of the teacher in the universal basic education programme*. In B. Ubong (Ed.), *Qualify and education for All*. Omoku: Fecet Services Limited.
- Ihiegbulem, O. T., Ihiegbulem, V. N., & Igwebuikie, D. (2011). The Effect of token economy on academic achievement of secondary school students: Implications for counselling. In *Proceedings of the International Conference on Teaching, Learning and Change* (pp. 782-789).
- Kennedy, C., & Jolivet, K. (2008). The effect of positive verbal reinforcement on the time spent outside the classroom for students with emotional and behavioural disorders in a residential setting. *Journal of Behavioural Disorders*, 33(4), 211-221.
- Koolschijn, P. C. M. P., Schel, M. A., De-Rooij, M., Rombouts, S. A. R. B., & Crone, E. A. (2011). A three-year longitudinal functional magnetic resonance study of performance monitoring and test-retest reliability from childhood to early adulthood. *J. Neurosci*, 31, 420-424. <http://dx.doi.org/10.1523/jneurosci.6415-10.2011>
- Kosslyn, S. M., & Rosenberg, R. S. (2001). *Psychology. The Brain, the Person the World*. Boston: Allyn & Bacon.
- Luecha, T. (2011). *The effect of using token economy and social reinforcement of stimulate preschoolstudents' vegetable and fruit consuming behaviour*. A paper presented in International conference on social Science and Humanity IPEDRS, 5, Singapore.
- Merriam, W. (2016). *Definition cognition*. Retrieved from <http://www.merriam-webster.com/dictionary/cognition>
- Mirzamani, S. M., Ashoori, M., & Sereshki, M. A. (2011). The Effect of social and token economy reinforcement on academic achievement of students with intellectual disabilities. *Iranian J. Psychiatry*, 6(1), 20-24.
- Mohammadi, F. (1994). *Token economic used primary schools in Tehran* (Unpublished Master's Thesis). Department of Psychology, University of Allame Tabatabaee.
- Munger, D. (2007). *Basic concepts: Reinforcement and punishment*. Retrieved from <http://www.basicconcept.org.comon/10/09/2015>
- Nworgu, B. G. (2015). *Educational research; Basic issues and methodology* (3rd ed.). Nsukka. University Trust Publishers.
- Ofordile, C. (2002). *Behaivour modification (principles and applications)*. Enugu: Thinkers corner.
- Onuoha, J. C., & Ifelunni, I. A. (2008). Gender gap in Secondary education in south eastern Nigeria: Implication. *Journal of Educational Researcher*, 8, 115-121.
- Onwuasoanya, P. N. (2006). *Behaviour modification techniques in counselling*. Nsukka: Great AP Express Publishers.

- Onwuasoanya, P. N. (2008). *Cognitive restructuring in counselling*. In P. N. Onwuasoanya (Ed.), *Counselling Psychology for Nigeria*. Nsukka, Great AP Express Publishers.
- Picard, R. W., Paper, F. S., Bender, W., Blumberg, B., Breazeal, C., Cavallo, D., ... Strohecker, C. (2004). Affective Learning-a Manifesto. *BT Technology Journal*, 22(4), 253-260. <http://dx.doi.org/10.1023/B:BTTJ.0000047603.37042.33>
- Presko, J. (2008). Bright light therapy. *Neuroendocrinol Lett*, 29(1), 33-64.
- Reese, J. (2009). *Reinforcement*. Retrieved August 10, 2015, from <http://www.education.com/reference/article/reinforcement/>
- San, H. S. (2013). *The Effects of a school-wide token economy system on learning attitude, social interaction and challenge behaviour of the mental retardation*. A paper presented at the 20th Asian Conference on Intellectual Disabilities.
- Sburlea, A. I., & Poel, M. (2012). *The effect of light, priming and positive reinforcement on cognitive performance*. Retrieved from <http://www.cogitiveperfromance.com.on12/09/2015>
- Schacter, D. L., & Buckner, R. L. (1998). *Priming and the Brain*. Proceeding of the National Academic of Sciences. [http://dx.doi.org/10.1016/s0896-6273\(00\)80448-1](http://dx.doi.org/10.1016/s0896-6273(00)80448-1)
- Shephard, E., Jasckson, G. M., & Groom, M. J. (2014). Learning and altering behaviours by reinforcement: Neurocognitive differences between children and adults. *Formal of Development Cognitive Neuroscience*, 7, 94-105. <http://dx.doi.org/10.1016/j.dcn.2013.12.001>
- Solso, R. L., Maclin, O. H., & Maclin, M. K. (2008). *Cognitive Psychology* (8th ed.). Pearson.
- Sutherland, K. S. (2000). Promoting positive interactions between teachers and students with emotional/behavioral disorders. *Preventing School Failure: Alternative Education for Children and Youth*, 44(3), 110-115. <http://dx.doi.org/10.1080/10459880009599792>
- Swain, J. C., & McLaughlin, T. F. (1998). The effects of bonus contingencies in a classwide token program on math accuracy with middle-school students with behavioral disorders. *Behavioral Interventions*, 13(1), 11-19. [http://dx.doi.org/10.1002/\(SICI\)1099-078X\(199802\)13:1%3C11::AID-BIN6%3E3.0.CO;2-1](http://dx.doi.org/10.1002/(SICI)1099-078X(199802)13:1%3C11::AID-BIN6%3E3.0.CO;2-1)
- Thieker, U., Kwlok, M., & Serisais, M. (2014). *The relationship between positive reinforcement and locus of control*.

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