

**Administration of Behavior Modification as a Psychological Technique for Effective Classroom Management in Teaching and Learning of Chemistry among Senior Secondary School Students in Zonal Education Quality Assurance, Kankia, Katsina State**

Sa'adatu Atiku<sup>1</sup>, Abdulhameed Saidu<sup>2</sup> & Zainab Musa Iliasu<sup>3</sup>

<sup>1</sup>Counseling and Human, Development Centre, Ahmadu Bello University, Zaria, Kaduna State, Nigeria.

<sup>2</sup>Department of Sociology, Al-Qalam University Katsina, Nigeria

<sup>3</sup> Bayero University Kano, Department of Education, Kano, Nigeria

---

**Citation:** Sa'adatu Atiku, Abdulhameed Saidu & Zainab Musa Iliasu (2022) Administration of behavior modification as a psychological technique for effective classroom management in teaching and learning of chemistry among senior secondary school students in Zonal Education Quality Assurance, Kankia, Katsina State, *British Journal of Education*, Vol.10., Issue 8, pp. 67-73

---

**ABSTRACT:** *The study titled administration of behavior modification as a psychological technique for effective classroom management in teaching and learning of chemistry among senior secondary school students in Zonal Education Quality Assurance, Kankia, Katsina State. The study randomly sampled 120 SS II students from four senior secondary schools in Kankia Zonal Education Quality Assurance. It was quasi-experimental research design consists of two groups, experimental and control groups. The subjects consist of 60 students in each group randomly selected using simple random sampling technique, making a total of 120 students in both groups. The subjects in experimental group classroom were taught concept of chemistry balancing equation using behavior modification techniques while the subjects in the control group classroom were taught without behavior modification technique. Chemistry Achievement Test was used as instrument for data collection. Performance of the two groups were compared using post-test mean scores, t-test independent sample at a significant level  $p=0.05$ . The finding from the study shows that those students taught using behavior modification techniques performed better than those taught without the use of behavior modification techniques. Also, the study revealed no significant difference between the performance of male and female students taught concept of chemistry balancing equation using behavior modification technique. Based on the findings of the study, recommendations were made and these include; chemistry teachers should modify the behavior of their students for optimal performance and teachers should treat all the students equally regardless of their gender.*

**KEYWORDS:** behaviour, modification, psychological technique, classroom, management.

---

## INTRODUCTION

In social psychology and administration and planning, behavior consists of an organism's external reactions to its environment; behavior may be modified according to positive or negative reinforcements from the organism's environment or according to self-directed intentions. One of the roles of teachers in the school settings is to modify students' behavior in such a way that will reflect effective classroom management proper school planning which elicits good academic performance of students. Behavior management is a method of behavioral modification which focuses on maintaining order. A classroom is an environment with its own ecology including teachers, students and their interrelationships, the equipment, books and a range of activities which all interact to influence the behavior of the room's inhabitants (Barry, 2020). The first use of the term behavior modification appears to have been by Edward Thorndike (1911), his article *Provisional Laws of Acquired Behavior or Learning* makes frequent use of the term "modifying behavior. The experimental tradition in clinical psychology used it to refer to psycho-therapeutic techniques derived from empirical research. It has since come to refer mainly to techniques for increasing adaptive behavior through reinforcement and decreasing maladaptive behavior through extinction or punishment (with emphasis on the former). Behavior modification is focused on shaping and maintaining positive behaviors while discouraging negative behaviors. An example of this is the ways in which teachers manage the behavior of students in the classrooms through rules, schedules, and consequences.

Lauren (2021) behavior modification is the process of changing patterns of human behavior over the long term using various motivational techniques, mainly consequences (negative reinforcement) and rewards (positive reinforcement). The ultimate goal is to swap objectionable, problematic, or disagreeable behaviors with more positive, desirable behaviors. Behavior modification works with just about everyone and has many potential applications, from improving a child's behavior to motivating employees to work more efficiently and it also works for proper planning and administration in such a way that will help to enhance students and staff performance. Mahoney, Kazdin & Lesswing (1998) behavior modification is a treatment approach that replaces undesirable behaviors with more desirable ones by using the principles of operant conditioning. Based on methodological behaviourism overt behavior is modified with consequences, including positive and negative reinforcement contingencies to increase desirable behavior, or administering positive and negative punishment and/or extinction to reduce problematic behavior. Behavior management is similar to behavior modification; it is a less intensive version of behavior therapy. In behavior modification, the focus is on changing behavior, while in behavior management the focus is on maintaining modified behaviors. Both behavior modification and behavior management skills are of particular importance to teachers in the educational system. Teaching and learning cannot be effective if students are not disciplined. Teaching and learning of chemistry at secondary school level becomes

paramount importance because it is one of the core science subjects required by students at credit level before meeting requirements for admission into tertiary institutions to pursue science-oriented programmes (Sabiru and Binta, 2015).

Njorku (2005) the academic performance of students in chemistry has been very poor and unimpressive. The students' performance in chemistry in Kankia Local Government Area is not encouraging and on account of the students' performance as regard percentage pass in NECO and WAEC in 2018, the number of students who sat for chemistry in Kankia Zonal Education Quality Assurance were 480 students for NECO and 369 students for WAEC but only 120 and 89 students passed NECO and WAEC respectively at credit level. Also, in the recent year 2019, the number of students who sat for NECO and WAEC examinations were 540 and 420 respectively, on the analysis of the results it was shown that 110 and 98 students passed NECO and WAEC respectively at credit level. A lot of factors were put towards as contributing factors to this poor performance of students in this subject. Some researchers attributed the failure to poor teaching methods and inadequate laboratory equipment in the chemistry laboratories (Sabiru and Binta, 2015). For the concepts of chemistry to be taught effectively to chemistry students at secondary school level, students' behavior must be modified in such a way that there will be rewards for good performance and punishment for disruptive or deviant behavior. Madueke (2000) viewed that the use of approaches like behavior modification techniques through assertive training, cognitive restructuring, self-monitoring among others have been found to be effective in behavior change and contribute to good performance. Osegbo (2012) motivation of learners is an important aspect for effective teaching/learning process. Motivation is one of the techniques used for students' behavior modification because a student who is motivated by giving incentive will perform better than his/her classmates who are not motivated in anyway. Dunapo (2002) found that there is no gender difference in the performance of male and female students when their deviant behavior is brought under control and well managed by the teachers in the classroom. Teachers should effectively manage student behavior using a set of educational practices and strategies which prevent and effectively manage inappropriate behavior and, on the other hand, creating and maintaining an environment that promotes both teaching and learning. This will enable students to contribute more on their studies rather than to waste time on unwanted activities. Adikwu and Bala (2019) found that a well-organized and manage classroom setting enhance pupils learning and good academic achievement. Johansen, Little & Akin-Little (2011) found that many teachers had minimal pre-service training in behavior management and this makes it difficult for them to modify students' behaviors in a way that will help them to excel in their academic pursuit.

### **Statement of the problem**

The problem of this study was as a result of poor academic performance of students in chemistry in Kankia despite the efforts of parents, teachers and the fact that other researchers have carried out studies on improving the situations. Students become

frustrated when they fail chemistry because their hope of proceeding to pursue science related courses at higher institution of learning becomes a thing of the past. Good performance in chemistry requires behavior modification of the students and proper administration and planning by the managers. Many students perform poorly in chemistry examinations because their behaviors were not modified and the already modified ones were not well-managed by the teachers and school administrators. Behavior modification in such a way that if teachers fail to use reinforcement to encourage students, the good behavior may likely die off. Uzoka&Kadurumba (2012) behavior modification of learners accounts for about 50% of the variance of academic achievement. The source of behavior modification whether from teachers or parents may constitute to the students' performance in school work. This study focuses on the administration of behavior modification as a psychological technique for effective classroom management in teaching and learning of chemistry among senior secondary school students in Zonal Education Quality Assurance, Kankia, Katsina State with the aim of finding out whether the use of behavior modification techniques will lead to increase in chemistry performance. This will help to minimize the rate at which students fail chemistry at senior secondary school level.

### **Research questions**

1. Is there any difference in academic performance of chemistry students taught administering behavior modification techniques and those taught without behavior modification techniques?
2. Is there any difference in the academic performance of male and female chemistry students taught administering behavior modification techniques?

### **Research hypotheses**

1. There is no significant difference between academic performance of chemistry students taught administering behavior modification technique and those taught without behavior modification technique.
2. There is no significant difference in the academic performance of male and female chemistry students taught administering behavior modification technique.

### **METHODOLOGY**

The research design used was quasi-experimental research design. The design involves post-test only. The study involves control and experimental groups consisting of both male and female study subjects. The entire population of the study involves all the senior secondary school students offering chemistry in Kankia Zonal Education Quality Assurance, Katsina State. The population consists of 12 schools, out of which four schools were randomly selected using simple random sampling technique. The first two schools randomly selected were labeled A, and the remaining two schools were labeled B. Group A, had 60 subjects randomly selected and formed experimental group and similarly, group B had 60 subjects to form control group. The subjects in the two, experimental and control

groups were made up of male and female subjects. The experimental group was taught the concept of chemistry balancing equations for four weeks using behavior modification techniques which include praising students highly, giving students items such as biro, notebooks and counseling students and the control group was taught the same concept without the use of behavior modification techniques. After the treatment, a Chemistry Performance Test (CPT) constructed by chemistry teacher and validated by experts in test and measurement and chemistry education with reliability coefficient of internal consistencies 0.802 using Cronbach Alfa after pilot testing was administered to the students in both groups and after the administration of the test, the scores obtained were recorded and t-test independent sample was used to test the two hypotheses.

### Presentation of results

**Table 1: t-test independent sample of analysis of difference in performance of the experimental and control groups**

Group	N	X	S.D.	SE	DF	t-value	P	Remark
Experimental	60	81.08	14.02	3.46	118	3.2	0.02	SIG.
Control	60	48.87	7.55					

P-value = 0.05 (Significant level)

The result in the table above showed that p-value of 0.02 which was less than p-value (0.05) at significant level. The null hypothesis that stated that there is no significant difference between academic performance of chemistry students taught administering behavior modification technique and those taught without behavior modification technique was rejected, meaning that there was significant difference between experimental and control group and the difference was in favour of the experimental group. This indicates that those students taught chemistry concept of balancing equations with the use of behavior modification achieved significantly better than those taught without the use of any behavior modification technique.

**Table 2: t-test unrelated sample of analysis of difference in performance between male and female students in experimental group**

Group	N	X	S.D.	SE	DF	t-value	P	Remark
Male	42	42.86	12.11	1.05	8	0.42	0.30	NOT SIG.
Female	18	41.28	8.23					

P-value = 0.05 (Significant level)

The result in the table above showed that p-value of 0.30 which was greater than p-value (0.05) at significant level. The null hypothesis that stated that there is no significant difference in the academic performance of male and female chemistry students taught



administering behavior modification technique was accepted, meaning that there was no significant difference in the performance of male and female students. This indicates that male students taught chemistry with the use of behavior modification performed significantly the same way their female counterpart.

## **DISCUSSION OF THE FINDINGS**

From the results obtained above, table 1 shows that those students taught administering behavior modification technique performed better than those taught without behavior modification techniques, this is in line with the study of Madueke (2000). While the finding in table 2 shows that there is no significant difference between male and female students as regard their performance in chemistry, this indicates that male and female students performed the same way when both are taught chemistry using behavior modification technique, this study is in line with the study of Gbadamosi (2003).

## **CONCLUSION**

The administration of behavior modification techniques enhances chemistry academic performance among senior secondary school students. Therefore, teachers should not be sentimental in the administration of behavior modification techniques among the students because every student irrespective of gender has tendency to perform well if his/her behavior is well modified.

## **Recommendations**

Based on the findings the following recommendations were made:

1. Chemistry teachers should modify the behavior of their students administering techniques such as clapping, praising, counselling, etc. for optimal performance.
2. All students should be treated equally regardless of their gender.
3. Teachers should map out and plan ways of using positive technique of behavior modification in the school as this will help them to manage their classrooms.
4. Teachers should pay attention to the behavior modification technique that best address students' behavior modification towards the learning of chemistry.

## **References**

- Adikwu, J.M. & Bala, S.A. (2019). Classroom management and its influence on the academic achievement of pupils: implication for inclusive education. *Journal of educational psychology for inclusive education*.1(1), 153.
- Barry, S. P. (2020). Evidenced-based classroom behaviour management strategies. Ministry of education: special education, Hawkes Bay Region.
- Dunapo, S.O. (2002). Causative and sustaining factors to street hawking in Nigeria: implication to child development, in Okonkwo R.U and Okoye (Ed). *The learning environment of the Nigeria child*. Awka: education publisher.

- Johasen, A. Little, S. G. & Akin-Little, A. (2011). An examination of new Zealand teachers' attributions and perceptions of behaviour, classroom management and the level of formal teacher training received in behaviour management. *Journal of Kairaranga*, 12(2), 3-12.
- Lauren, G. (2021). What Is Behavior Modification? Psychology, Definition, Techniques Applications. Retrieved from <https://www.betterhelp.com/advice/behavior/what-is-behavior-modification-psychology-definition-techniques-applications/>
- Madueke, E. F. (2000). *The youths and violent.A way forward.Conflict resolution*.Enugu: Pekin Press.
- Mahoney, M. J., Kazdin, A. E., & Lesswing, N. J.(1998). "Behavior modification: delusion or deliverance?". *Annual Review of Behavior Therapy: Theory and Practice*. 2. Brunner/Mazel. pp. 11–40.
- Njorku, Z. C. (2005). Level of chemistry practical science skills acquired by senior secondary school (SSSII) students. *Nigerian Journal of Professionals Teachers*.
- Osegbo A.(2012). Assessment of the level of motivation on the academic achievement of NCE students of NwaforOrizu College of education, Nsugbe. *journal of the Nigerian educational Psychologist*.10 (1), 128.
- Sabiru D. Y., &Binta A.M. (2015). Effect of using ausubel learning theory on chemistry students' academic achievement and wait-time in chemistry formulae in secondary school in Katsina metropolis. Nigeria. *UMYU journal of educational research*. 15(1), 23-24.
- Thorndike, E.L. (1911). "Provisional Laws of Acquired Behavior or Learning". *Animal Intelligence*. New York: The Macmillan Company.
- Uzoka, R. N. &Kadurumba, U. U. (2012). Effect of motivation on academic performance of Nigerian primary school pupils in Abia State. *journal of the Nigerian educational Psychologist*.10 (1), 32.