EFFECT OF SKINNER'S OPERANT CONDITIONING THEORY ON BASIC ONE PRIMARY PUPILS' PERFORMANCE IN KEYBOARD SETTING IN IDEMILI NORTH LOCAL GOVERNMENT OF ANAMBRA STATE

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Abstract

Behaviourists such as Skinner believed that change in behaviour hinges on external forces from a learner's environment than the learner's internal factors. Learners have peculiar issues when it comes to learning music. Some of them have issues with rhythm or tone levels. The traditional method of standing in front of students to deliver class lessons as one would a sermon is unhelpful in this regard. The learners require practical modelling and active participation. While some learners may have innate responses to musical sounds, the motivation and models for imitation they get or do not get decides their learning of music in their class lessons. This paper, therefore, proposes the use of learner-inclusive class performance during keyboard lessons in Basic two as a conscious effort to apply Skinner's Operant conditioning theory. A survey method was used to gather various information that informed the applications and suggestions in this paper. The researcher carried out applied this in a practical classroom situation to determine its present-hour authenticity.

Keywords: Class Performance, Operant Conditioning

Introduction

It is necessary to constantly evaluate and improve teaching approaches and methods to meet up with the ever-increasing educational needs and changing society. In line with the teaching of music, music educators are frequently in search of newer ways to solve the need of the learners. Music requires the cognitive, affective and psychomotor aspects of the educational domain. To ensure learning, proper motivation and a good learning

environment are of utmost necessity. Along this line, Skinner's learning theories come to mind. The theory of B.F. Skinner is based upon the idea that learning is a function of change in overt behavior. Changes in behavior are the result of an individual's response to events (stimuli) that occur in the environment. A response produces a consequence such as defining a word, hitting a ball, or solving a math problem. When a particular Stimulus-Response (S-R) pattern is reinforced (rewarded), the individual is conditioned to respond. The distinctive characteristic of operant conditioning relative to previous forms of behaviorism (e.g., connectionism, drive reduction) is that the organism can emit responses instead of only eliciting response due to an external stimulus.

Reinforcement is the key element in Skinner's S-R theory. A reinforcer is anything that strengthens the desired response. It could be verbal praise, a good grade or a feeling of increased accomplishment or satisfaction. The theory also covers negative reinforcers — any stimulus that results in the increased frequency of a response when it is withdrawn (different from aversive stimuli — punishment — which result in reduced responses). A great deal of attention was given to schedules of reinforcement (e.g. interval versus ratio) and their effects on establishing and maintaining behavior.

One of the distinctive aspects of Skinner's theory is that it attempted to provide behavioral explanations for a broad range of cognitive phenomena. For example, Skinner explained drive (motivation) in terms of deprivation and reinforcement schedules. Skinner (1957) tried to account for verbal learning and language within the operant conditioning paradigm, although this effort was strongly rejected by linguists and psycholinguists. Skinner (1971) deals with the issue of free will and social control.

Several of his research centred on the use of consequences to control the behaviour. This ends up creating motivation towards a set goal or discouragement from it depending on certain objectives. This is very useful for music educators who require learners to be motivated if they must make music appropriately.

The traditional teaching method of a teacher standing in front of students and delivering music lessons while the students sit back and listen isn't helpful for music learning. Music requires a practical and participatory approach not only to aid assimilation but also to encourage the improvement of the practicality of the students. Lessons such as learning musical instruments require more than merely understanding what the teacher has displayed in front of the class. Beyond that, the students require to be able to play what the teacher has played. Hence, the need to move away from the traditional teaching method. Most behaviourists put forth observation, imitation, role-playing and simulation are necessary parts of learning. This is particularly essential in the teaching of music.

Conceptual Framework

Jeffreys (1971) opined that teaching is never all-giving and learning is never all-receiving…the teacher is bound to learn something from his pupils' (p. 58). Emielu added, 'Undoubtedly, a lot can be achieved in music education if teachers take into consideration the intrinsic motivation of the student. A child who successfully passes through the music learning process should know beyond answering questions in class verbally and develop a practical skill which is usually imbibed through imitative process and participation. 'It is expectedthat every learner who has completed the nine years ofcontinuous basic education schooling should have acquiredappropriate levels of literacy, manipulative and life-long skills aswell as ethical, moral and civic values needed for laying a solidfoundation for life-long musical learning' (Nwachukwu, 2012). Akinboye (1992) in Omomia (2008) argued that reinforcement is a central concept in the human acquisition of skills and performance competence.

Theoretical Framework

Omomia & Omomia (2014) stated that:

> B. F. Skinner's theory of reinforcement emphasizes the relevance of reward and punishment. This has impacted, to a large extent the promotion of teaching and learning. In effect, Skinner's theory has been applied often in most educational institutions. Students' educational outcomes can be improved based on positive reinforcements (p. 174).

Skinner believed that the consequences that follow the actions of learners determine their behaviour. Hence, the way teachers respond, and what they do or refrain from doing decide the behaviour of the learners. The steps taken to control behaviour and get responses is what he called operant conditioning. The operant conditioning process is divided into three: Reinforcement, Punishment and Extinction.

1. *Reinforcement***:** This comes in two ways: positive and negative reinforcement.

    (a) *Positive Reinforcement*: This is the application of a positive which results in the repetition or continuation of the desired behaviour. A child who works hard and does well on a test and is awarded grades will likely work hard and perform better in a future assessment.

    (b) *Negative Reinforcement:* This is the withdrawal of a negative reward if the desired outcome occurs. For example, a teacher withdraws the penalty of being denied break time for students who copied their notes. Wolfgang argued that negative reinforcement is ―when a student has something unpleasant, taken

away from him/her for doing something good (for example, give the student a—no homework pass‖).

2. *Punishment:* This is presenting of undesirable response as a way of discouraging a negative behaviour from recurring. An example is the subtraction of marks for a question not answered properly.

3. *Extinction*: This is the withdrawal of previous positive reinforcement to diminish a learned behaviour. This is also called non-reinforcement.

Application of Skinner's Operant Conditioning in Education

Skinner's learning theory has been proven by many to be a useful tool in motivating or changing behaviour in young learners. It included various approaches in which reinforcement and punishment are applied to either discourage or encourage behaviour related to learning. Omomia & Omonia (2008) agreed that, if a student gets out of his seat frequently, we can set a timer for, say ten minutes, and each time he remains on his seat after that duration, a token (reward) is given to him. Another example is the creation (on some occasions with the contribution of students) of a system of positive incentives for the class. This could be by rewarding positive behaviour before punishing negative behaviour. For example, if students are asked to turn in their homework, you reward those who turned in their homework consistently. Those who did not turn in their homework, even without being punished will likely be induced to follow suit with those rewarded for turning in their homework consistently. It is suggested that positive reinforcement should be immediately applied to easily associate it with the positive behaviour being rewarded.

Five fundamental steps guide the behaviour change process under the behaviourism guidelines:

(i) Set behaviour goals
(ii) Determine the appropriate reinforcers
(iii) Select procedures for changing behaviours
(iv) Implement procedures and record results and
(v) Evaluate progress and revise as needed (Skinner, 1953).

Omomia and Omomia (2014) added that 'the purpose of instruction is to alter behaviour in the desired direction. In applying Skinner's theory in the classroom, he believed that teachers should supply immediate feedback to students. Rafiu, Ansar and Sami (2020) stated that 'Skinner's operant learning principle has a classroom implication for increasing the likelihood of the desired behaviour. Simply praising the student builds up self-efficacy and motivates them to learn. The results of the review can be used to implement evidence-based practice and policy.

Below, the various aspects of Operant Conditioning are applied in teaching the topic, of keyboard setting. Reinforcement, punishment and extinction are used as motivation/demotivation techniques to elicit the expected responses which lead to desired behavioural outcomes in line with the performance objectives of the lesson. The issue of concern here is whether operant conditioning theory and gender have any effect and influence respectively on pupils learning keyboard setting.

Gender refers to the socially constructed roles, behaviour, undertakings and characteristics that a particular society considers suitable for men and women. The distinct roles and behaviour may give rise to gender inequalities that is differences between men and women that systematically favour one group. Gender is a set of characteristics distinguishing between male and female, particularly in the cases of men and women which depending on the context, may vary from sex to social role to gender identity (Angel, et al., 2015; Bland, 2003). It is a sociological concept that ascribed certain roles for males and females. Gender role expectations affect how males or females perform in educational settings. Gender is a set of characteristics distinguishing between males and females. It refers to the socially constructed roles, behaviour, activities and attributes that a particular society considers appropriate for men and women (David, 2004; World Health Organization, 2015). Traditionally, gender stereotype has over the years continued to limit females' capabilities and constrain their ability to participate in all aspects of human endeavour. Gender issues themselves affect all aspects of society to the extent that access of women to certain professions/competencies in higher institutions is constrained by these same-sex-role stereotypes. Gender is a sociological concept which indicates those responsibilities or tasks that are amenable or at least perceived are such to males and females (David, 2004). According to Munger (2005), girls seem to prefer the colour pink and boys blue. From early to older ages, the choice of illustration and colour differ (Munger, 2005). This has to be put into consideration in illustrating English textbooks for primary school pupils for more effective instruction. Gender has been seen to be related to language learning. Many researchers are of the view that the gender of a learner is significant in assessing his/her achievement in a language class. Offorma (2007) found that girls achieved more than boys in foreign language acquisition. Some other studies have shown that females show some superiority over males in language achievement (Umoh, 2003; Nwafor, 2002). Ogo (1995) noted that female secondary school students tended to be more relaxed in a language class than males. In the study it is pertinent to ascertain the influence of gender on pupils performance in keyboard setting.

Research Questions

1. What is the effect of Operant Conditioning theory and conventional theory on the mean achievement scores of pupils' in keyboard setting?

2. What is the influence of gender on the mean achievement scores of pupils' in keyboard setting?

Hypotheses

Ho_1 There is no significant difference in the mean achievement scores of pupils taught keyboard setting using Operant Conditioning and conventional theory.

Ho_2 There is no significant difference in the mean achievement scores of male and female pupils in keyboard setting.

Design of the Study

This study employed a quasi-experimental 2 x 2 factorial research design. Intact classes were used for the study. The design was represented thus after Fraenkel, et al., (2009) who noted that a quasi-experimental factorial design is a quasi-experimental design modified to permit the investigation of additional independent variables. The treatment variable is theory at two levels: Operant Conditioning (x_1) and Conventional Theory (x_2), while the moderator variable is gender at two levels: Male (y_1) and Female (y_2). Consequently, the design is a 2 x 2 pretest-posttest non-equivalent control group factorial design.

E	O_1	x_1	y_1	z_1	O_2
C	O_1	x_2	y_1	z_1	O_2
E	O_1	x_1	y_2	z_1	O_2
C	O_1	x_2	y_2	z_1	O_2

Where O_1 and O_2 are pretest and post-test scores respectively.

E = Experimental Group; C = Control Group

Participants

The researcher enrolled 75 basic 2 pupils in the experiment. The age range was narrow: from five (31 pupils) to seven (44 pupils) years old. There were 27 males and 48 females. The researcher divided the participants into two groups of 33 and 42 participants each without any criteria of choice. The researcher experimented with two primary schools in

Idemili North Local Government Area, Anambra State, Nigeria. The researcher used the purposive sampling technique to select the two primary schools from 12 public primary schools in Ogidi. The selection was based on

    a.   schools with only one stream of basic one classes;

    b.   schools close to each other to make the supervision of the experiment easier and;

    c.   schools that are comparable in terms of facilities.

Materials

The instrument for data collection was a researcher-made keyboard setting performance Test (KPT) designed to assess pupils' performance in keyboard setting. Face validity was established for the instrument by two experts in Music education at the Nnamdi Azikiwe University and a primary two teacher from a school in Obosi, Anambra State, Nigeria. The experts scrutinized the instrument in terms of relevance, general format, suitability, structure and adequate timing. A clear concept of keyboard setting was covered. Questions on manipulations and sounds were included. The researcher modified the instructions along the line the experts recommended making them clearer to the pupils. Content validity was established through the agreement of experts on the table of specifications that guided the development of KPT. The 20-item KPT comprises explanation, description and playing of keyboard and use of tables questions. The time allowed for the test was 30 minutes. The researcher prepared a marking scheme used to score the test. The reliability of the KPT was .91determined using Kuder-Richardson formula 21 on test scores of 20 primary two pupils used for the pilot study.

Experimental Procedure

The researcher considered logistical ethical issues before starting the experiment. The researcher got consent from the head teachers of the schools used for the study. The researcher also required and got the permission of the parents of the pupils used in different features of the study. The researcher held a conference with research assistants who were class teachers of the pupils that the researcher used for the study. At the conference, the researcher informed the teachers on how to carry on with the experiment.

At the beginning of the experiment, the research assistants (teachers) gave the subjects for both the treatment and control groups the KPT as a pre-test. Thereafter the teachers began the experiment adhering strictly to the lesson procedure developed for the groups. The teachers guided the pupils on how to use manipulate the keyboard, which were collected back at the end of each lesson. The teachers ensured that the pupils manipulated the keyboard during the experiment. The teachers experimented during the normal lesson

periods as provided in the timetable. By the end of the experiment, which lasted for two weeks and four days, the class teachers shuffled the items from the pre-test and administered them to the pupils as a post-test. The researcher analysed the data the research assistants collected and used it to answer the research questions and test the hypotheses.

In line with the five fundamental steps stated by Skinner (1953) the teacher-researcher prepared herself as follows:

1. Set behaviour goals

The teacher-researcher predetermined that after the lesson, students should develop an affinity for the keyboard with its key colours and sound. This will make them find it easier to learn the name of the keys.

2. Determine the appropriate reinforcers

The teacher-researcher employed a reward system such as applause, use of 'thumbs-up', use of mantras and awarding of marks on the board.

3. Select procedures for changing behaviours

The teacher-researcher chooses the following procedures for effecting changes in behaviour

(a) A child who successfully describes a piano receives a handshake from the teacher. (positive reinforcement).

(b) A child who differentiates appropriately the white keys from the black keys is given thumbs up (positive reinforcement).

(c) A child who successfully determines the position of 'C' on the row of white keys is offered a praise song as shown below:

(positive reinforcement).

(d) The learner who successfully identified the naming for any black key is offered a praise song as shown below:

(positive reinforcement).

(e) For children that couldn't make favourable responses, the class is asked to clap for them but this time around, a clap will produce no sound.

4. Implement procedures and record results

The teacher writes out the names of the children on one side of the board and awards 2 marks each for a question well answered and 1 mark for a fair answer.

5. Evaluate progress and revise as needed.

After the entire lesson, the teacher provides a set of questions to judge the extent of comprehension, participation and assimilation of the lesson taught.

Below is the lesson plan showing fully how operant conditioning will be applied to the teaching of the topic, keyboard setting.

Lesson Plan

Name of School:

_____

Week Five Lesson

Subject: Cultural and Creative Arts

Topic: Keyboard Setting

Time Fit: Having been introduced to musical alphabets in the previous lesson, knowing the keyboard and the names of the keys is a good sequel.

CLASS	NUMBER	AVERAGE AGE	DATE	TIME/DURATION	SCHEDULE
JSS2A	33/42	6+	11th Dec. 2021	35 minutes	3rd& 4th period

Main Aim: At the end of this lesson, the students should be able to:
1. Identify and name appropriately the white and black keys of a keyboard.

*Subsidiary Aims***:** By the end of this lesson, the students should be able to:
1. Describe a keyboard
2. Explain the arrangement and naming of white keys.
3. Name the black keys on a keyboard appropriately.

*Assumption***:** The children have come across a keyboard in the past and have been introduced to musical alphabets.

Anticipated Challenge: The students may be confused as to why the keys have different colours.

Possible Solution: The teacher should ensure that he/she explains to the children the differences between the sound of the keys by playing out the sound audibly with a detailed explanation. Hence the keyboard needs to be in good working condition.

Instructional Materials: Musical keyboard and a table of black and white keys.

Instructional Techniques: Explanation,Description and playing of keyboard and use of tables.

Instructional Pattern: Individual Work.

Instructional Procedures

Introduction
The teacher presents a (working) keyboard in front of the class. (The keyboard presented must have C as its lowest note). (*The teacher presents to the class the various positive and negative reinforcement plans she had arranged).* She asks the students to mention all the musical alphabets as previously learned.

Application of Operant Conditioning: For each child that answers a question, the teacher requests that the whole class offer a sounding handclap (Positive reinforcement). For each child that provides a faulty answer, the teacher requests that the class offers a non-sound handclap (Negative reinforcement).

STEP 2: The teacher guides the students to describe the keyboard by asking each of them to describe the keyboard. The teacher summarises their replies by describing the keyboard

Application of Operant Conditioning: For each child that answers a question, the teacher offers a warm handshake (Positive reinforcement)

A keyboard is a musical instrument that produces sound through a set of keys. The keys of a keyboard are arranged horizontally according to their pitches. Various types of keyboard instruments are the Grand piano, upright piano, organ, etc. A standard keyboard has 88 keys. There are two types of keys found on a keyboard namely white and black keys.

STEP 3: The teacher presents the arrangement and naming of white and black keys based on students' responses. The teacher asks the learners to name the white keys starting from the letter C (using the musical alphabet as learned in the previous lesson)

Application of Operant Conditioning

1. A child who differentiates appropriately the white keys from the black keys is offered thumbs-up (positive reinforcement).
2. The child who identifies that the black keys are arranged in twos and threes is offered thumbs up. (positive reinforcement).
3. A child who successfully determines the position of 'C' on the row of white keys is offered a praise song as shown below:

(positive reinforcement).

The keys are named using the first seven letters of the English alphabet called the musical alphabet: **A B C DE F** and **G.** The black keys are arranged in twos and threes. The white key before any two sets of black keys is named **C** while the white key before any three sets of black keys is named F. Hence from one white key (before any two sets of the black key) and another one, we have **C D E F G A B** and **C.**

STEP 4: The teacher guides the learners to discover the names of the black keys. The learners are asked to identify the black keys and the two white keys surrounding each of them.

Application of Operant Conditioning: For any child that gives an appropriate response a sounding handclap is given (Positive reinforcement), for a child that gives a faulty response, a handclap without a sound is offered. (Negative reinforcement)

As stated earlier, the black keys are arranged in twos and threes. The black keys are named from the names of the white keys using either the addition of a sharp or a flat. The way it is; a black key adds a sharp to the name of the white key on its left and a flat to the name of the white key on its right. For example, the black key between C and D will bear C# or Db. So you see that every black key has two names. This is known as enharmonic equivalence. Thus, C# and Db are enharmonically equivalent. Study the table below for the naming of other black keys:

| White keys	Black keys between them
C and D	C# or Db
D and E	D# or Eb
F and G	F# or Gb
G and A	G# or Ab
A and B	A# or Bb
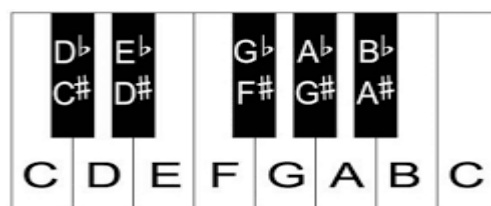
Students' Evaluation

The teacher ascertains the extent of comprehension of the lesson by the students by asking the students the following questions:

1. Draw a dummy Keyboard with not more than eight white keys.

    (The teacher goes around to see each student's keyboard. For a well-drawn keyboard, the teacher shows it to the whole class and requests for a sounding handclap (positive reinforcement). For any faulty diagram, the teacher requests a non-sounding handclap (negative reinforcement).

2. Write the alphabetical names of the white keys that you have drawn.

    (The teacher goes around to see what each student has done. For any appropriate answer, the teacher shows it to the whole class and requests a sounding handclap (positive reinforcement). For any faulty diagram, the teacher requests a non-sounding handclap (negative reinforcement).

3. Write the two names for each black key.

    (The teacher goes around to see what each student has done. For any appropriate answer, the teacher shows it to the whole class and requests a sounding handclap (positive reinforcement). For any faulty diagram, the teacher requests a non-sounding handclap (negative reinforcement).

The correct answer to the question is given as
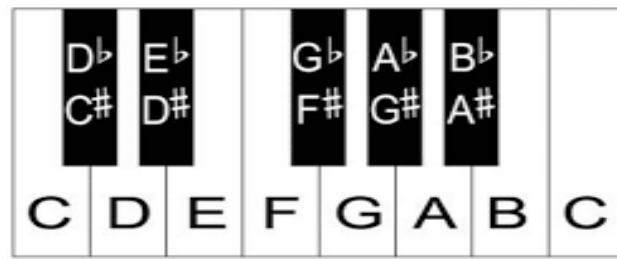
TEACHER'S EVALUATION

Based on the feedback from the students after the reinforcement processes, the teacher evaluates himself and thereafter summarises the topic.

Summary

The teacher reiterates the major points in the lesson and thus summarizes the topic:

Musical alphabets are seven in number, A, B, C, D, E, F and G. The musical keyboard has white and black keys. The white keys are named after C. Hence we have C, D, E, F, G, A, B, and C. A black key derives its name from the two white keys beside it, the left side and

the right side. # is added to the former and flat is added to the latter. So, the black key between F and G for instance will be called F# or Gb. The concept of a key bearing two names is called enharmonic equivalence

Homework

1. Find out other keyboard instruments apart from piano and organ.
   (a) Determine the suitability of Reinforcement in music teaching and learning process.
   (b) Determine the suitability of Punishment in music teaching and learning process.
   (c) Determine the extent to which child participation in the class lesson is necessary for music learning.

Method of data analysis

The researcher used mean, standard deviation, and Analysis of Covariance (ANCOVA) to analyse the data using the IBM Statistical Package for the Social Sciences (SPSS) Version 25. The researcher answered research questions using mean and standard deviation, while the researcher tested the hypotheses using the Analysis of Covariance (ANCOVA) at an alpha level of 0.05.

Results

The researcher presented the results in Tables 1, 2, 3, and 4

Research Question 1: What is the effect of Operant Conditioning theory and conventional theory on the mean achievement scores of pupils' in keyboard setti

Table 1: Mean ($\overline{X}$) and Standard Deviation (SD) achievement scores of pupils taught using Operant conditioning and Conventional theory

GROUP	N	PRETEST		POSTTEST		GAIN SCORE
		$\overline{X}_1$SD$_1$		$\overline{X}_2$SD$_2$		$\overline{X}$
Operant Conditioning	33	40.12	10.56	66.97	16.15	26.85
Conventional	42	41.60	10.28	52.12	8.74	10.52

The data on Operant Conditioning and Conventional Theory in Table 1 revealed that the posttest mean score for pupils taught using Operant Conditioning was 66.97 while that of pupils taught with Conventional Theory was 52.12. Pupils taught keyboard setting using Operant Conditioning, therefore, performed better than pupils taught with Conventional Theory.

Research Question 2: What is the influence of gender on the mean achievement scores of pupils' in keyboard setting?

Table 2: Mean ($\overline{X}$) and Standard Deviation (SD) achievement scores of pupils according to gender

GENDER	N	PRETEST		POSTTEST		GAIN SCORE
		$\overline{X}_1$SD$_1$		$\overline{X}_2$SD$_2$		$\overline{X}$
Male	27	38.56	11.42	59.48	13.07	20.92
Female	48	42.29	9.58	60.44	15.08	18.15

Table 2 revealed an poettest mean score of 59.48 for male pupils, while the female pupils had an posttest mean score of 60.44. female pupils, therefore, performed better than their male counterparts in keyboard setting.

Table 3: Analysis of covariance of pupils' keyboard setting performance scores by Operant Conditioning and gender

Source	Type III Sum of Squares	df	Mean Square	F	Sig
Corrected Model	10081.917	4	2520.479	32.237	.000
Intercept	3416.602	1	3416.602	43.698	.000
Pretest	4535.658	1	4535.658	58.011	.000
Theory	3552.320	1	3552.320	45.434	.000
Gender	335.643	1	335.643	4.293	.042
Theory x Gender	988.026	1	988.026	12.637	.001

Error	5473.070	70	78.187		
Total	273571.000	75			
Corrected Total	15554.987	74			

Hypotheses

Ho$_1$ There is no significant difference in the mean achievement scores of pupils taught keyboard setting using Operant Conditioning and conventional theory.

Data in Table 3 showed a statistically significant main effect for theory $F(1,70) = 45.434$, $p =.000$. The null hypothesis, therefore, was rejected, indicating that there was a significant difference in the mean scores of pupils taught using Operant Conditioning and those taught using Conventional Theory. The posttest mean score for Operant Conditioning was 66.97, while that for Conventional Theory was 52.12. The difference was in favour of Operant Conditioning Theory. Operant Conditioning Theory, therefore, were superior to Conventional Theory in keyboard setting instruction.

Ho$_2$ There is no significant difference in the mean achievement scores of male and female pupils in keyboard setting.

Table 4 revealed significant main effect of gender $F(1,70) = 4.293$, $p =.000$. The null hypothesis was not rejected, indicating that there was no significant difference in the mean achievement scores of male and female pupils in keyboard setting.

Discussion

Effects of Operant Conditioning on pupils mean achievement scores in keyboard setting
The Operant Conditioning theory was superior to the Conventional theory in facilitating the performance of the learners in keyboard setting. The differences in performance might have been a result of the type of theory used presenting instruction to them. The operant conditioning theory was used to reinforce the pupils positively. The teacher widely applied Operant conditioning in teaching the pupils (i.e., behavior modification) as well as teaching (i.e., classroom management) and instructional development (e.g., programmed instruction). The teacher made sure that the instructional procedure took the form of question (stimulus) – answer (response) frames which expose the pupil to the content in gradual steps. The teacher also made sure that the pupils made a response for every frame and receive immediate feedback. The teacher arranged the difficulty of the questions so the response was always correct and hence a positive reinforcement. In addition, the teacher ensured that good performance in the lesson was paired with secondary reinforces such as

verbal praise, prizes and good grades. The findings of this study validated the Operant Conditioning Theory of learning by Skinner.

Influence of gender on the mean achievement scores of pupils in phonics

Results showed that female pupils performed better than their male counterparts in keyboard setting. The different socialization processes of male and female persons in which the male persons are expected to explore their environment while the female ones are to conform or maintain their existing environment notwithstanding, male pupils did not perform better than female pupils. The finding supported that of Offorma (2007) and others that girls achieved more than boys in foreign language acquisition, and that female learners show some superiority over male learners in language achievement. Another reason may be that male pupils in the area of study are no longer interested in education because of the commercial activities going on in the area. Some of the male pupils may feel that music is subject for female folk.

Conclusion

It was found that Operant Conditioning Theory was superior to conventional theory in the learning of keyboard setting. Pupils taught keyboard setting using Operant Conditioning performed better than their counterparts that were taught using Conventional theory. However, gender significantly influence pupils' performance in keyboard setting, the post test mean scores of female pupils were higher than those of their male counterparts.

Implications

The findings of the study have implications for teachers particularly in teaching keyboard setting in primary schools. The implications of this study border on the acquiring Operant Conditioning theory by the teachers of music for teaching keyboard setting effectively and efficiently. The study revealed that Operant Conditioning theory was superior to Conventional theory. In addition, the findings of this study have implications for curriculum review. With these findings on the efficacy of Operant Conditioning theory in facilitating keyboard setting instruction among primary pupils, it has become obvious that the current theories recommended by the Ministry of Education are inadequate to meet the needs of the pupils and consequently need to be reviewed. This will, without doubt, enhance pupils' achievement in keyboard setting. The findings also have implications for instructing pupils who differ in gender.

Recommendations

Based on the result, Skinner's operant conditioning is recommended as a guide for teachers especially those teaching Cultural and Creative Arts at the Basic education level. It aids to improve favourable interaction between the students and the teacher which in turn makes the students comprehend, assimilate and reproduce the knowledge shared. The traditional mode of teaching whereby a teacher stands in front of the students to read her note or a textbook or deliver lengthy speeches should be completely abandoned in favour of Skinner's operant conditioning theory.

Based on the findings of this study, and their implications, the following recommendations are made.

a. Because the application of Operant Conditioning theory was more effective in teaching and enhancing pupils' performance in keyboard setting, the Ministries of Education should ensure that curriculum planners incorporate application of Operant Conditioning theory in the curriculum for pupils in primary schools.

b. Music teachers should be trained on how best to apply Operant Conditioning theory in teaching and learning of primary school pupils to facilitate keyboard setting instruction. This could be achieved through seminars and workshops for teachers in primary schools.

c. Operant conditioning theory has differential effects on male and female pupils' achievement in keyboard instruction. As such the present system of teaching both males and females in the same class should be improved so as to pay more attention to male pupils since females performed better than them..

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