Perceived Influence of Reinforcement on Students' Academic Performance in Motor-Vehicle Mechanic in Technical Colleges in Rivers State

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Abstract: The study examined the perceived influence of reinforcement on academic performance of Motor-Vehicle-Mechanic students in Technical Colleges in Rivers State. Two research questions were answered with two null hypotheses that were formulated. The population of the study was 124 Motor Vehicle Mechanic personnel comprising of 19 teachers and 105 students from four technical colleges in Rivers State. There was no sampling due to small population size. The instrument for the data collection was a self-structured questionnaire designed after the pattern of Likert-5 point rating scale. The instrument was face and content validated by two experts from the Department of Vocational and Technology Education and one in Measurement and Evaluation in Rivers State University, Port-Harcourt. A reliability coefficient of 0.82 was established for the instrument using Pearson Product Moment Correlation (PPMC) coefficient. Research questions were answered with Mean and Standard Deviation while hypotheses were tested using z-test at 0.05 significant level. The study found that verbal rewards such as praises, commendable appreciation, affirmation of students' performance, and teachers' words of encouragement among others are verbal reinforcers that affects students' academic performance in Motor Vehicle Mechanic in Government Technical Colleges in Rivers State. Based on the findings of the study, it was recommended among others that teachers of Motor Vehicle Mechanic in Government Technical College should adopt verbal rewards such as clapping of hands, praises as reinforcers since it has a positive effect in improving students' academic performance in Motor Vehicle Mechanic in Government Technical Colleges.
Keywords: Reinforcement, Students' Academic Performance, Motor Vehicle Mechanic and Technical Colleges

Introduction

The students are at the focus point of the educational planning of any nation in the world; and as such they deserve to acquire the rightful skills during their training to enable them have effective citizenship in their country or the society where they live. Teaching and learning are said to have been achieved when graduates from an institution are able to acquire basic skills and knowledge in their areas of specialization and can demonstrate the skills in solving problems for the benefit of the society. One of the ways to achieve this is through effective and adequate teaching strategies that promote learning among students. When the appropriate teaching strategies are employed into the teaching/learning process, then, it is expected that the desired students' behavior will be achieved.

Based on the aforementioned, it therefore follows that, in an attempt to actualize the students' behavioral goals, different types of reinforcement are required to motivate students' participation during the teaching/learning inter phase. The use of different reinforcements such as positive, negative and punishment types as motivation strategies have been demonstrated by many eminent scholars as a vehicle that drives students' behavior towards desirable goals in the educational sector of any nation.

According to Adaji as (cited in Amuma & Idoli, 2013), the poor performance of Nigerian students' especially in technical and science related courses has remained on the increase. Adaji further added that this downward trend in the performance of students is blamed on the teachers' in appropriate teaching methods and their inability to use reinforcement to encourage their students' performance. Reinforcement elicits change in behaviour. Reinforcement is a great source of motivation employed by teachers for gaining the required result through presentation of reward (Wise, 2004). A reinforcer is anything that is specific whose presentation to a student (learner) could make the student repeat its behavior or outcome and becomes strong after removal or minimization of any specific thing or unfavorable situation. It could be positive or negative depending on its application and settings.

Most teachers used positive reinforcement as one of the valuable tools that in management of students' behavior especially in the classroom. Positive reinforcement is a technique that motivates students' interest and help the teachers to enhance students' behavior. Positive reinforcement can be explained simply as "timely

encouragement" which is gentle and effective at the same time. The academic performance of a student can be improved or mar by teachers through the use of words, actions and inactions. This implies that students' academic performance can be improve through an effective and proper utilization of positive reinforcement during teaching and learning process.

Akinade (2012) defined positive reinforcement as the application of those incentives that are pleasant or desirable to induce, stimulate or spur up the treatment of behaviour. In other words, positive reinforcement is an act of reward or encouragement associated with good behavior and performance. Positive reinforcement is a hassle-free technique which has the tendency to make the students to be more discipline, organized, coordinated and responsible especially when applied in the classroom. With positive reinforcement, teachers do not compel or pressurize students to behave well; rather students are expected to voluntarily and willingly exhibit high level of well-organized behavior. Positive reinforcement can be in the form of verbal remarks like praises, commendations, compliments, approval, encouragement and affirmation. An example of such are good job, well done, nice work among others. Positive reinforcement could also be in the form of tangible rewards like cash gift, pen, cake, sweets, erasers and so on, while non-verbal rewards like being clapped, a pat on the back, being smiled at also encourage the repetition of such behaviour. In this study, positive reinforcement is viewed as any activity that motivates a learner to do more of his/her activities to achieve a better result. It is clear that the application of positive reinforcement in the classroom influence students' academic performance.

Iwundu (2009) defined academic performance as the degree or level of success attained at the end of an academic endeavor. Lin (cited in Buseri, 2017) posits academic performance to be the outcome of education, the extent to which a student, teacher or institution has achieved his or her educational goals. One strategy that can be used to enhance academic performance of learners is the application of reinforcement strategy in teaching/learner process. Such attempt will help address the problem of students' low performance many technical and science subjects at secondary education level including Motor-Vehicle-Mechanic (MVM) trade in external examinations. As a result of negligence on the side of teachers of Motor-Vehicle-Mechanic to apply reinforcement strategy in the teaching/learning inter-phase process, many students have lost interest in the motor vehicle mechanic trades in technical colleges (Doyin, 2014).

Motor-Vehicle-Mechanic is a vocational education programme which is aimed at preparation and cultivation of individual learner for the world of works (Doyin, 2014). It is a programme that trains people for skillful acquisition in Motor-Vehicle-Mechanic repairs, maintenance and servicing. Ugwaja (2010) stressed that, it is a programme that trains learners for job creation and effective citizenship. Motor-Vehicle-Mechanic at the technical college level comprises three main components namely: service station, mechanic work, engine maintenance and refurbishing and auto-electricity (Audu & Intia, 2014). The programme in Nigeria was designed to produce competent craftsmen in MVM for technical upliftment for economic growth. It therefore follows that, for the county to move forward technically, there is the need to train skillful personnel who can repair, maintain and service the various types of vehicles used in the country. These personnel should be capable to handle, repair, maintain and servicing of motor vehicles effectively and professionally. The only people that can discharge these services are well groomed and motivated graduates of Motor-Vehicle-Mechanic from technical colleges.

Statement of the Problem
It is a universally acknowledged fact that reinforcement can bring about positive changes in the behaviour of the learner, if applied appropriately. Both professional and trainee teachers ought to apply reinforcement in a teaching and learning process of technical and science subjects especially in Motor Vehicle Mechanic (MVM) where performance depends on interest to captivate and arouse students' curiosity. Depending on the situation and response from the learner, the teacher in the classroom should apply positive or negative reinforcement when necessary during the teaching-learning process. These tools are still very important teaching skills that are vital in the teaching-learning process. It is believed that teachers' application of reinforcement enables students to gain confidence in the teacher's explanation and their responses as learners when questions are asked by the teacher thereby enhancing the academic performance of the student in any subject.

However, it has been observed that wrong application of reinforcement produces a negative influence on students' academic performance. Hence, adopting reinforcement in the classroom by teachers should be done tactically and skillfully in order to have a strong positive influence of the students. The trend at the moment shows that some teachers are yet to understand the meaning of this concept, its application and benefits. Thus, the researchers assume that wrong application of reinforcement can lead to poor academic performance in motor vehicle mechanic among technical college students and may lead to high rate of failure. It is against these observed scenarios that the study seeks to examine the influence of reinforcement on students' academic performance in of students in Motor-Vehicle Mechanic in technical colleges in Rivers State.

Purpose of the Study
The purpose of this study was to examine the influence of reinforcement on students' academic performance in Motor-Vehicle Mechanic in technical colleges in Rivers State. Specifically, the study seeks to:
i.   Determine the influence of verbal rewards on students' academic performance in Motor-Vehicle-Mechanic in technical colleges in Rivers State.
ii.   Find out the influence of non-verbal rewards on students' academic performance in Motor-Vehicle-Mechanic in technical colleges in Rivers State.

Research Questions
The following research questions were answered to guide the study:
i.   What is the influence of verbal rewards on students' academic performance in motor-vehicle-mechanic in technical colleges in Rivers State?
ii.   What is the influence of non-verbal rewards on students' academic performance in motor-vehicle-mechanic in technical colleges in Rivers State?

Hypotheses
The following null hypotheses were formulated and tested at 0.05 level of significance in the study.
i.   There is no significant difference in the mean rating of teachers and students on the influence of verbal rewards on students' academic performance in motor-vehicle-mechanic in technical colleges in Rivers State.
ii.   There is no significant difference in the mean rating of teachers and students on the influence of non-verbal rewards on students' academic performance in motor-vehicle-mechanic in technical colleges in Rivers State.

Methodology
The study adopted a descriptive survey research design. The study was carried out in Rivers State. The population of the study comprised 124 respondents of Motor Vehicle Mechanic (19 Teachers; 105 Students) from the four technical college in Rivers State. The entire population was used for the study. No sampling was done due to the small size of the population which is considered manageable. The instrument for the data collection was a self-constructed questionnaire titled "Reinforcement Effect on Academic Performance in Motor Vehicle Mechanic Questionnaire" (REAPMVMQ) designed after Likert-5 point rating scale of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD) with numerical values of 5, 4, 3, 2 and 1 respectively.

The instrument was face and content validated by two experts from the Department of Vocational and Technology Education and one in Measurement and Evaluation in Rivers State University, Port-Harcourt. The reliability of the instrument was determined through test-retest method for measure of stability of the instrument. Copies of the instrument were administered to 5 teachers and 11 students in Motor Vehicle Mechanic selected from a technical colleges in Bayelsa State. The initial (test) and the re-test scores of the sample were correlated using Pearson Product Moment Correlation (PPMC) method. A reliability coefficient of 0.82 was established for the instrument which was considered high enough.

The researchers distributed 124 copies of the instrument and retrieved 116 (Teachers = 19; Students = 97) were retrieved which is 94% return rate. This number was used for the analysis of the study. Mean and Standard Deviation were used to analyze data in relation to research questions while the z-test was used to test the null hypotheses at 0.05 level of significance. For the research questions, real limits of numbers of 4.50- 5.00 (Strongly Agree [SA]), 3.50 – 4.49 (Agree [A]), 2.50 – 3.49 (Undecided [U]), 1.50 – 2.49 (Disagree [D]), 0.50-1.49 (Strongly Disagree [SD]) were used. Standard deviation value close or wide apart was used to determine the homogeneity in opinion among the respondents. In testing the hypotheses, the decision was to accept the null hypothesis if the calculated value of z (zcal) is less than the critical value of z (zcrit) but if the calculated value of z (zcal) is greater than the critical value of z (zcrit), the hypothesis is rejected.

Results
Results from the study were presented in line with the research questions and hypotheses as follows:

Research Question 1
What is the influence of verbal rewards on students' academic performance in motor-vehicle-mechanic in technical colleges in Rivers State?
To provide answer to the research question, data were collected in respect to item 1 - 8. The analyses are presented in Table 1.

Table 4.1: Mean Responses on Verbal Rewards on Students Academic Performance

S/N	Item Statement	Teachers			Students		
		$\overline{X}_1$	SD$_1$	RMK	$\overline{X}_2$	SD$_2$	RMK
1	Students' perform better when they are praised	3.88	0.80	Agree	4.19	0.60	Agree
2	Commendable appreciation increases students' performance.	4.03	0.61	Agree	3.72	0.95	Agree
3	Negative words discourage students.	3.80	1.11	Agree	4.08	1.01	Agree
4	Affirmation of students' performance increases its reoccurrence	3.72	0.83	Agree	4.16	0.80	Agree
5	Verbal abuse reduces performance.	4.11	0.76	Agree	3.55	0.62	Agree
6	Words of encouragement make students to strive high.	3.60	0.94	Agree	3.70	0.75	Agree
7	When teachers' uses words like good, correct, yes, that's right, neat work encourages students.	3.68	1.03	Agree	3.87	1.10	Agree
8	When teachers' uses words like no, bad, too ugly, poor discourages students.	4.32	0.81	Agree	4.03	0.72	Agree
	Average Mean/SD	**3.91**	**0.86**	**Agree**	**3.89**	**0.82**	**Agree**

Source: *Researcher's Field Result; 2019*

The result in Table 4.1 shows the response of teachers and students on the influence of verbal rewards on academic performance of students in Motor Vehicle Mechanic in Technical College in Rivers State as well as their level of decision on a particular item. The result as shown in Table 4.1 revealed that teachers and students' responses show that all the items 1 – 8 are verbal rewards that increase students' performance through teachers' reinforcement in Government Technical Colleges in Rivers State with a mean value of 3.50 and above. However, result further revealed that item 8 discourages students and hence affects student's performance negatively when use by teachers as reinforcers. Also, standard deviation values ranging from 0.00 to 0.99 indicates that the respondents were close in their response while standard deviation values of 1.00 and above implies that the respondents (teachers and students) were far apart in their responses.

Research Question 2

What is the influence of non-verbal rewards on students' academic performance in motor-vehicle-mechanic in technical colleges in Rivers State?

Data gathered to provide answer to this research question are analyzed and presented in Table 4.2.

Table 4.2: Mean Responses on Non-Verbal Rewards on Students Academic Performance

S/N	Item Statement	Teachers			Students		
		$\overline{X}_1$	SD$_1$	RMK	$\overline{X}_2$	SD$_2$	RMK
9	Students' are excited and tends to perform better when others clap for them.	3.71	0.80	Agree	3.90	1.03	Agree
10	Students do better when teacher appreciate them by patting the student's head, shoulder or back.	3.59	1.01	Agree	3.76	1.11	Agree
11	Students tend to do better when teacher appreciate them with handshake or by raising the student's hand in the class.	4.18	0.60	Agree	3.69	0.80	Agree

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12	An embrace by the teacher makes encourages students' performance.	3.91	0.77	Agree	4.21	1.04	Agree
13	A smile by the teacher for appreciation increases students' ego to do more in the class.	4.04	0.86	Agree	3.70	0.73	Agree
14	A nod of approval for a work well done pushes the students to do well other times.	4.11	0.74	Agree	3.87	0.53	Agree
15	A delightful laugh indicates appreciation and makes the child to work hard to earn it again.	3.70	1.03	Agree	4.02	0.72	Agree
16	Thumbs up indicate the teacher hailing the student for an excellent performance.	3.64	0.75	Agree	3.67	0.66	Agree
17	Arm raise or nodding of the head encourages the child to increase its performance.	4.20	1.13	Agree	3.54	0.81	Agree
18	Twitching of face or moody face by the teacher indicates negative reinforcement towards poor response of the child	3.83	0.92	Agree	4.10	1.22	Agree
19	Finger crossing the mouth as negative reinforcement makes the student to perform well next time.	3.57	0.67	Agree	3.70	0.79	Agree
	Average Mean/SD	**3.86**	**0.84**	**Agree**	**3.83**	**0.85**	**Agree**

Source: *Researcher's Field Result; 2019*

The result in Table 4.2 shows the response of teachers and students on the influence of non-verbal rewards on academic performance of students in motor vehicle mechanic in Technical College in Rivers State as well as their level of decision on a particular item. The result as shown in Table 4.2 revealed that teachers and students' responses show that all the items 9 – 19 are non-verbal rewards that increase students' performance through teachers' reinforcement in Government Technical Colleges in Rivers State with a mean value of 3.50 and above. Also, standard deviation values ranging from 0.00 to 0.99 indicates that the respondents were close in their response while standard deviation values of 1.00 and above implies that the respondents (teachers and students) were far apart in their responses.

Hypotheses 1
There is no significant difference in the mean rating of teachers and students on the influence of verbal rewards on students' academic performance in motor-vehicle-mechanic in technical colleges in Rivers State.

Table 4.3: z-Test Analysis on Influence of Verbal Rewards in Government Technical Colleges

S/N	$\overline{X}$	SD	N	Df	α	zcal	zcrit	Remark
Teachers	3.91	0.86	19					
				114	0.05	0.09	1.96	Accepted
Students	3.89	0.82	97					

Source: *Researcher's Field Result; 2019*   Accept Ho if zcal ≤ zcrit, Otherwise Reject Ho.

Since the calculated value of z (zcal = 0.09) is less than the critical value of z (zcrit = 1.960) at 0.05 level of significance, the null hypothesis was accepted. This implies that there is no significant difference in the

mean scores of teachers and students on the influence of verbal rewards on students' academic performance in motor-vehicle-mechanic in technical colleges in Rivers State.

Hypotheses 2
There is no significant difference in the mean scores of teachers and students on the influence of non-verbal rewards on students' academic performance in motor-vehicle-mechanic in technical colleges in Rivers State.

Table 4.4: z-Test Analysis on Influence of Non-Verbal Rewards in Government Technical Colleges

S/N	$\overline{X}$	SD	N	Df	α	zcal	zcrit	Remark
Teachers	3.86	0.84	19					
				114	0.05	0.03	1.96	Accepted
Students	3.83	0.85	97					

Source: *Researcher's Field Result; 2019*Accept Ho if zcal ≤ zcrit, Otherwise Reject Ho.

Since the calculated value of z (zcal = 0.03) is less than the critical value of z (zcrit = 1.960) at 0.05 level of significance, the null hypothesis was accepted. This implies that there is no significant difference in the mean scores of teachers and students on the influence of non-verbal rewards on students' academic performance in motor-vehicle-mechanic in technical colleges in Rivers State.

Discussion of Findings

Results from Table 4.1 revealed that verbal rewards as reinforcers that affects students' academic performance in Motor Vehicle Mechanic in Government Technical Colleges in Rivers State include commendable appreciation, words of appreciation, affirmation of students' performance, and teachers' words of encouragement among others. These findings are in line with Ukoha (2002) who effectively used positive reinforcement such as words of praises to improve students' performance in mathematics. The finding of the study also agree with Onunkwo and Unachukwu (2003) who that application of positive reinforcement such as verbal rewards and presentation of gift makes students to be committed in doing take home assignment and also enhancea adolescents' cognitive achievement in biology (MVM) respectively. Results revealed that verbal rewards (positive reinforcement) improved students' commitment to take home assignment and improved cognitive achievement in Biology (Motor Vehicle Mechanic).

The results from Table 4.2 revealed that non-verbal rewards as reinforcers that affects students' academic performance in in Motor Vehicle Mechanic in Government Technical Colleges in Rivers State include patting of back, head, teachers' hand shake, teachers' encouragement, hailing of students, raising of hands, nodding of the head among others. These findings are in line with Henderlong and Lepper (2012) who found that reinforcement components that improve students' performance in secondary school are non-verbal rewards like teachers' handshake with students, clapping among others. Similarly, Nnodum, Agbaenyi and Ugwuebulam (2014) found that the used positive reinforcement in relation to non-verbal rewards and verbal rewards are used to control late coming behaviour among secondary school students. Results showed that non-verbal reinforcement was very effective in the control of late coming behaviour among students.

Conclusion

Conclusively, reinforcement in Government Technical Colleges in Rivers State affects students' academic performance in Motor Vehicle Mechanic. Verbal rewards and non-verbal rewards are reinforcers that affects students' academic performance in Motor Vehicle Mechanic based on the findings of this study.

Recommendations
Based on the findings of this study, the following recommendations were made:
i.   That teachers of Motor Vehicle Mechanic in Government Technical College should adopt verbal rewards such as clapping of hands, praises as reinforcers in order to improve the performance of students.
ii.   That teacher of Motor Vehicle Mechanic in Government Technical College should adopt non-verbal rewards reinforcers in order to improve the performance of students.

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