



EFFECT OF TOKEN ECONOMY ON LOW ACADEMIC SELF-CONCEPT OF SECONDARY SCHOOL STUDENTS IN ENUGU NORTH, ENUGU STATE, NIGERIA

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Abstract:

The researchers investigated the effect of the token economy on low academic self-concept of secondary school students in Enugu North, Enugu state, Nigeria. The pre test, post test, control group quasi-experimental design was adopted for this study. Two research questions and two null hypothesis tested at a 0.05 level of significance guided the study. The population of this study comprised 10,032 senior secondary school students II in Enugu North, Nigeria. The researchers sampled 60 students using purposive and cluster sampling techniques. Two instruments developed by the researchers were used for data collections, namely Students Low Academic Self- concept Identification Scale (SLASCS) and Low Academic Self-Concept Dictating Scale (LASCDS). The instruments were validated by experts in departments of measurement and valuation as well as Guidance and Counselling. The reliability of the instruments was ascertained through test-retest method using Cronbach Alpha Statistics which yielded reliability coefficients of 0.83 and 0.85 for SLASCS and LASCDS respectively. Data collected were analyzed using mean score and standard deviation to answer the research questions. The hypothesis was tested using the analysis of covariance (ANCOVA) at 5% level of significance. The findings revealed among others that TERS (Token Economy Reinforcement) is significantly effective in the reduction of low academic self- concept among students at post-test and follow-up tests. From the above findings, it was recommended among others, that Teachers, educators and instructors should make use of token economy reinforcement system in the reduction of low academic self- concept among students to enhance their academic performance for greater productivity.

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1. Introduction

Recently, there has been a great decline in the rate of educational achievement and this could be as a result of low academic self- concept among secondary school students. The findings of Omolade and Adeleye (2021) reveal that the level of self-concept of undergraduates in South-west Nigeria determines their academic performance. The above findings indicate that low self academic concept demines the strength of educational achievement which is incubated by the school environment. The school environment which boosts the academic concept of students is in great damage. The teachers, counsellors, school administrators and the entire school setting are not friendly. This is as a result of poor motivation on the part of the government, poor infrastructural facilities and laxity on the part of students. There are setbacks in the Nigerian educational system resulted from many factors such as poor funding, inadequate facilities, dearth of qualified teachers, uncultured students, poor parenting and guidance, indiscipline, examination malpractice, outdated syllabus, ineffective governmental policies, amongst many others on the endless list (Belle, 2022). Some parents, on the other hand, do not have time for their children; their family structure is disintegrating, and as a result, they are inattentive to their children's performance. All these reduce the self- concept of secondary school students. Self- concept is the collection of individual perceptions of oneself.

To Garcia-Martinez, Augusto-Landa, Qquijiano and Leon (2022) self- concept is the combination of ideas, feelings and attitudes that people have about them. Eccles, (2005) defined self- concept as the general assessment and awareness of qualities and characteristics made through involvements in one's situation. Self- concept can also be viewed as self esteem. Self esteem according to Chigbu, Ngwaka and Grace (2020) enhances self reliance, boosts individuals morale to achieve success in academic endeavour.

Every individual differs in ability of conception and awareness. This diverse ability creates individual differences both in growth and maturity. The ability to understand one may come in different dimensions namely social, emotional, family, physical and academic self- concept (Marsh & O'mara in Garcia, Martinez, Balluerka, Cruise, Garcia and Serra, 2018).

Academic self- concept is an individual perception of his/her academic ability and capacity. Trautovein, Ludtke, Koller & Baumert in Aljmal & Rafeig (2018) put academic self- concept as the students' self assessment regarding their educational abilities and potentiality. Apparently, the academic self- concept is a psychological concept mostly used to explain students' certainty and belief in their abilities regarding specific subject areas such as biology, mathematics among others (Gareia et al., 2018). Garcia et al. (2022) confirm that students with a higher academic self- concept show better academic performance. Huang (2011) equally asserts that a high academic self- concept is related

to high academic achievement. Thus, teachers are instrumental to the development of academic self- concept as they boost the students' self confidence and encourage good behavioural pattern (Chigbu, Peter & Patience, 2022). Above assertions simply imply that low academic self- concept is synonymous with low academic achievement. Nonetheless, the researchers are yet to ascertain if some motivational tools (praise and reinforcement) can have an impact on low academic self- concept of secondary school students in Enugu North. Jacob, Lanza, Osgood, Eccles & Wigfield (2002) revealed certain influencing variables which can modify the student academic self-concept as academic routine, practices of students and innovations in teaching methods. Innovative teaching methods are proactive teaching strategies and methods that cut across inclusive learning with modern technologies and adequate instructional materials for active participation and progressive intellectual development among learners, improvement of academic outcomes and promotion of equitable learning. Academic self- concept can be high or low. Low academic self- concept may be defined as poor self perception and assessment regarding academic ability and capability. It can also be viewed as poor mental states and attitudes towards one's assessment of competency towards academic achievement and performance.

In this study, innovations in teaching method in the form of motivation boosting the academic self- concept of a secondary school student are still at large. Motivational tool such as token economy may have an inverse or adverse effect on the academic self- concept of secondary school students. Token are neutral stimuli in the form of motivational tools (points or tangible items) which are awarded to learning participants for targeted behaviour. The token economy is a behaviour modification technique that is based on the principles of operant conditioning. Based on the principle of operant conditioning, the token economy reinforces specified target behaviour through a system of exchange (Matson, Estabillo & Matheis, 2016). Buttressing further, operant conditioning (also called instrumental conditioning) is a form of learning in which the consequences of behaviour produce changes in the probability that the behaviour will occur.

The token economy is a method of increasing the frequency of a positive behaviour by providing systematic reinforcement to the target behaviour. Token economy is also a method that rewards desirable behaviour with token which can be exchanged for desired privileges or other tangible items (Wood Boyd, 2018). Token economy may be effective at increasing target behaviour and decreasing problem behaviour. Copper, Heron and Heward (2007) suggest steps involved in practicing token economy as follows identifying target behaviour and rules, selecting tokens, selecting a variety of reinforcers, creating procedures for earning tokens and exchanging for reinforcers and establishing a ratio of exchange.

However, these steps may result to increasing target behaviour and decreasing undesirable behaviour. Token economy has been found to be effective at reducing depressive symptoms through behavioural activation (Matson, et al. 2007). It is very pertinent for teachers to create an enabling environment for learning. Therefore, it is

imperative and fundamental for teachers to explore sources and avenue that will reduce a toxic environment in order to promote learning. Oliver, Wehby and Daniel (2011) believe that a child's behaviour is shaped and nurtured by the social context of the environment during the development process. Oliver et al. (2011) further maintained that much behaviour emanates or can be worsened through an instructional strategy such as modeling, reinforcement, extinction and punishment. Teachers are, therefore, meant to provide positive changes in the learning environment in order to decrease undesirable and disruptive behaviour among learners. However, if these changes are effective. It may result in an increase in academic performance and enhance a healthy and productive environment for the overall growth and development of students. To Shakespeare et al. (2018), token economy systems have a profound impact on schools, classrooms, and community-based settings. According to Hodge and Nelson in Gomeze, Gautam, Rothermel and Olsen (2020), token economy is a motivational method used across many fields by teachers to establish an enabling and positive classroom environment for grade improvement. Similarly, Alqahtani (2020) asserts that token economy has grown to become a yardstick for measuring learning productivity through obeying the classroom rules. In a study conducted by Doll, Mcaughlin, Barretto (2013), it was found that token economy can be used to minimize disruptions in a classroom as well as increase student's academic achievement. Though modification of undesirable behaviour in the classroom is equally dependent on the services of a well-motivated and committed counsellor (Chigbu, Nwobi, Ngwaka & Mokwelu, 2021). There was active classroom participation when the token economy was introduced (Boniecki & Moore, 2003). This simply means that disruptive behaviour showed a negative impact on academic performance among secondary students (Grace, Uzoekwe, Ofojebe & Chigbu, 2022). Studies have also shown that the token economy system has been effective in decreasing non-desired behaviour and increasing pro-academic behaviour in students (Robacker, Rivera & Warren in Williamson & Mcfadzen, 2020).

In contrast, the token economy may not be effective due to several variables such factors include the relationship between the individuals earning and delivering tokens, their social interactions and their expectations (Coper et al., 2007).

Several studies have been reported by scholars regarding the token economy and academic self- concept of secondary school students. According to Williamson and Mcfadzen (2020), the impact of token economy methods on student on-task behaviour within an inclusive Canadian classroom was evaluated. The study used the multi-element design. Individual impacts and group effects were analyzed using an analysis of variance with planned contrasts as well as visually utilizing single case methods to assess efficacy regarding each implementation method. Results indicated that only one significant difference for one individual subject was found between baseline (no token economy) and both token economy systems. No other significant differences were found between individuals or groups on task behaviour nor between the baseline, physical and virtual methodologies overall.

In another study, Shakespeare, Peterkin and Bourne (2018) examined and determined the impact that the token economy system as a behaviour modifier has on disruptive behaviour in classrooms among a group of primary-level students in the parish of Manchester, Jamaica. This study employed mixed methodologies (objectivism (survey research) and subjectivism (phenomenology)). The sample size is 40 students, 21 girls and 19 boys and the classroom teacher. The instrument used to collect data was an eight weeks' intervention plan including an observational checklist, a teacher's questionnaire and a teacher's journal. The results revealed that students' behavioural levels after intervention showed evidence that the use of tokens in minimizing disruptive behaviour was very effective. The use of the tokens also had a positive impact on the student's academic performance and helped in creating a more positive relationship between students and teacher and student and students. The study also recommended that the use of token economy should be a strategy that is employed in the teaching-learning process as a medium of increasing academic performance and decreasing disruptive behaviour.

In a similar way, Gomez et al. (2020) examined students' perceptions of a token economy in an undergraduate science flipped classroom. Mixed method case study was employed (survey and focus group). The target population included 48 undergraduate students who attended a science course with a token economy to determine the students' perceptions of the token economy and satisfaction of the novel rewards offered. The data collection instrument was researchers developed survey questions, open-ended written questions, and group discussions with 5 point Likert scale. Both qualitative and quantitative data were collected. The researchers used SPSS18 to analyze the quantitative data with descriptive statistics and the qualitative data were analyzed with NVivo18 and researcher triangulation. The findings indicated that over 90% of the students participated in the token economy and 74% of students indicated that the reward system reinforced the student's behaviour necessary for an effective flipped classroom.

In another study, Alqahtani, (2020) investigated the effects of a token economy system to improve social, academic, and behaviour skills of children in KSA. The study used a qualitative analysis method by using teacher's guide, questionnaire, and observational checklist. The sample of the study consisted of 40 males and female students in the age group (1-10) years. The results of the study revealed that a disruptive behaviour hinders the achievement of a favourable teaching and learning environment and it can be minimized through a token economy system. In the same angle, Ihiegbulem et al. (2011) centered on determining the effect of token economy on academic achievement of secondary school students. The study is a quasi-experimental research. Four research questions and two hypotheses guided the study. The population comprised of one hundred and ninety-eight (198) junior secondary 3 integrated sciences and senior secondary 1 biology students of the school. A study sample of 160 was obtained using random sampling techniques. Procedures of the experiments were ground under A and B. The A arms belong to the experimental groups while the B arms were used as control groups. Experimental groups were motivated during teaching with

the token economy while the control group was not motivated. Data for the study were collected from raw scores collected with two tests administered to the integrated and biology students used for the study. Data analysis involved the use of mean scores, t-test of significant difference between two independent groups mean scores and t-test of homogeneity of group variance. The result found was that the experimental groups put up higher academic achievement than the control groups. It was also found that the token economy had a significant effect on the academic achievement of the experimental groups. It is observed that none of these studies has actually tried to determine the effect of the token economy on the low academic self- concept of secondary school students in Enugu North. However, regardless of the functions of the token economy as stipulated by various studies, low academic self- concept is a poor self perception of oneself which can result in poor academic performance and may affect the overall productivity, growth and development of the victim. Therefore, the researchers are still asking whether the token economy can boost self academic concept of secondary school students. Hence, it is worthwhile to examine the effect of the token economy on the low academic self- concept of secondary school students in Enugu North.

2. Purpose of the study

The main purpose of this study is to examine the effect of the token economy on the low academic self- concept of secondary school students in Enugu North, Enugu state, Nigeria.

Specifically, the study determined:

- 1) The effect of the token economy on low academic self- concept of secondary school students when compared with those in the control group using their pre-test and post-test periods.
- 2) The retention of the effect of the token economy on low academic self- concept of secondary school students when compared with those in the control group using follow-up test scores.

2.1 Research Questions

The following research questions were posed to guide this study:

- 1) What is the effect of the token economy on low academic self- concept of secondary school students when compared with those in the control group using their pre-test and post-test periods?
- 2) What is the retention of the effect of the token economy on low academic self- concept of secondary school students when compared with those in the control group using follow-up test scores?

2.2 Hypotheses

The following null hypotheses were formulated and tested at a 0.05 level of significance:

Ho₁: There is no significant difference between the mean scores of the students treated with the token economy reinforcement system (TERS) and the control group at pre-test and post-test periods.

Ho₂: There is no significant difference between the mean score of the students treated with the token economy reinforcement system (TERS) and the control group at follow-up assessment.

3. Methodology

This study adopted the pretest-posttest control group quasi-experimental design. Quasi experiment is a study where a random assignment of participants to experimental and control groups is not possible (Nworgu, 2015). The population of this study comprised 10,032 senior secondary school students II in Enugu North, Nigeria. The researchers sampled 60 students using purposive and cluster sampling techniques. Instruments used for this study were Students Low Academic Self- concept Identification Scale (SLASCS) and Low Academic Self- concept Dictating Scale (LASCDS) which were adequately validated and found to be reliable at 0.83 and 0.85 coefficients respectively using Cronbach alpha statistics. The students' Academic Self- concept Scale (SLASCS) was used to identify students with low academic self- concept during the pre-test. The experimental treatment lasted for six weeks using 90 minutes pre-session. The experimental group was treated with token economy reinforcement system, while the control group received a conventional method of reinforcement from the researchers, but not on academic building. At the end of the treatment, the SLASCS was reshuffled and re-administered to both the experimental and control groups. The researchers administered Low Academic Self- concept Dictating Scale (LASCDS) as a post test follow-up test after four weeks of the last treatment. This (LASCDS) assessment was to ascertain the retention of the effect of the token economy reinforcement system at an interval of four weeks. This was done to ensure good testing conditions and the instruments were also retrieved on the spot to avoid possible losses. Data collected were analysed using mean scores and standard deviation to answer the research questions. The hypotheses were tested using analysis of Covariance (ANCOVA) at a 5% level of significance.

4. Results

Table 1 shows the mean scores of the students treated with TERS and control group pre-test and post-test periods. The table indicated that on pre-test, students under TERS and control groups had mean scores of 66.60 and 66.99 respectively but at post-test their mean scores were 28.59 and 69.09 respectively. With this, it shows that token economy reinforcement system is effective in boosting the academic self- concept of students.

Table 1: Means cause of the students treated with token economy reinforcementsystem (TERS) and control group at pre-test and post-test periods

Test		Pre-test		Post-test	
Group	N	X	S	X	S
ECM	30	66.60	3.78	28.59	2.04
Control	30	66.99	3.34	69.09	3.65

Table 2: Mean scores of students treated with TERS and control group at follow-up-assessment period

Test		Pre-Test		Follow-up-test	
Group	N	X	S	X	S
ECM	30	66.60	3.78	30.15	2.87
Control	30	66.99	3.34	70.09	3.91

Table 2 shows the mean scores of students treated with TERS and the control group during the follow-up-assessment period. The table indicated that on pre-test, students under TERS and the control group had mean scores of 66.60 and 66.99 respectively but at the follow-up test their mean scores were 30.15 and 70.09, respectively. With this, the conclusion is that the token economy reinforcement system was still effective in the reduction of the low academic self- concept of students after four weeks of the treatment (follow-up-assessment period).

Table 3: Analysis of Covariance (ANCOVA) test for Hypothesis 1

Test of Between-Subjects Effects					
Dependent Variable: Post-Test					
Source	Types III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	24821.898 ^a	2	12410.949	1435.171	.000
Intercept	280.297	1	280.297	32.177	.000
Pre-Test	7.498	1	7.498	.871	.357
Treatments	24648.850	1	24648.850	2845.605	.000
Error	493.726	58	8.631		
Total	176815.000	60			
Corrected Total	24113.622	59			

a. R Squared = .983(Adjusted R Squared = .982).

Table 3 shows that the f-calculated is 2845.605. The table also indicated that sig. value of the f-calculated is .000 which is less than the significance level of 0.05. The conclusion from here is to reject the null hypothesis and deduce that there is a significant difference between the mean scores of the students treated with TERS and the control group test and post-test periods.

Table 4: Analysis of Covariance (ANCOVA) test for Hypothesis 3

Test of Between-Subjects Effects					
Dependent Variable: Follow-up-Test					
Source	Types III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	23848.022 ^a	2	11924.011	1142.538	.000
Intercept	120.421	1	120.421	10.457	.002
Pre-Test	80.761	1	80.761	7.538	.008
Treatments	23651.355	1	23651.355	2244.010	.000
Error	594.451	58	10.450		
Total	174044.000	60			
Corrected Total	24443.472	59			

a. R Squared = .978 (Adjusted R Squared = .977).

Table 4 shows that the f-calculated is 2244.010. The table also indicated that sig. value of the f-calculated is .000 which is less than the significance level of 0.05. Thus, the second null hypothesis is rejected. Therefore, there is a significant difference between the mean scores of the students treated with TERS and the control group during the follow-up-assessment period.

5. Discussion of the Findings

The findings of this study revealed that the token economy is effective in the reduction of the low self academic concept of students. When tested, the finding proved significant. This implies that when comparing the control group and token economy group, it shows that the token economy reinforcement system was effective in boosting the academic self-concept of students and reducing the low self academic concept of students. This finding is in line with Shakespeare, et al. (2018) who revealed that the use of the tokens had a positive impact on the student's academic performance, and helped in creating a more positive relationship between students and teacher and student and students. In consonance, Wood Boyd (2018) states token economy is also a method that rewards desirable behaviour with token which can be exchanged for desired privileges or other tangible items. Incorporating token economy into teaching methods is a good way of motivating students to learn fast and adjusts positively to society.

Another finding of this study revealed that the token economy was still effective in the reduction of low academic self- concept among students after four weeks of the treatment (follow-up assessment period). When tested, the findings proved significant. The findings are in line with Ac Gomez, et al. (2020) who revealed that the token economy is a motivational method used across many fields by teachers to establish an enabling and positive classroom environment for grade improvement. Alqahtani (2020) asserts that the token economy has grown to become a yardstick for measuring learning productivity through obeying classroom rules. However, Robacker, et al. (2020) consider the token economy system as much more effective in decreasing non-desired behaviour and increasing pro-academic behaviour in students.

6. Conclusion

The study concluded that the token economy is an effective system which helps in the reduction of the low academic self- concept among students even four weeks after the experimental treatment.

6.1 Recommendations

Based on the findings of this study, the following recommendations were made:

- 1) Teachers, educators and instructors should make use of the token economy reinforcement system in the reduction of low academic self- concept among students.
- 2) The school administrators should organize and sponsor teachers, educators and instructors on workshops, exhibitions, seminars and conferences on a regular basis in order to sensitize them on the different types of token economy, methods of administering them and the need for such practice.
- 3) The school authorities and government should ensure that they provide enabling environment both for teachers and students in order to boost their academic self- concept.
- 4) There is also a need for the government to provide financial backup to the school environment in order to maintain the culture of token reinforcement for achieving high academic performance which will in turn have a positive effect on the society at large.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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Chigbu, Eberechukwu Francisca occupied a position of Lecturer II with PhD in Guidance and Counselling with research interests in counselling psychology and behavioural problems.

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