Research Paper Education

Effect of Cognitive Restructuring Intervention Programme on Academic Self-Efficacy of Low-Achieving Students In Bayelsa State, Nigeria

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ABSTRACT

This study investigated the effect of cognitive restructuring intervention programme on academic self-efficacy of low-achieving students. Two research questions and two null hypotheses guided the study. The design of the study was quasi-experimental, non-equivalent control group, pretest posttest, involving one treatment group and control group. The sample was 135 low-achieving senior secondary class two students purposively drawn from four public senior secondary schools, two from each educational zone of Yenagoa and Okolobiri in Yenagoa Local Government Area of Bayelsa State, Nigeria. These schools were randomly assigned to experimental and control groups. One instrument, Academic Self-Efficacy Scale and an intervention programme, Cognitive Restructuring Intervention Package were developed, validated and used for the study. The treatment group received placebo programme on examination malpractice and prevention. The research objectives were addressed using means and standard deviation while the hypotheses were tested at 0.05 level of probability using Analysis of Covariance statistic. Results showed that cognitive restructuring significantly improved academic self-efficacy of low-achieving students. There was no significant interaction effect between cognitive restructuring and gender on academic self-efficacy of low-achieving students. Based on the findings, it was recommended that workshops and seminars be organized in schools to train teachers on how to use cognitive restructuring techniques in the classroom to improve the academic self-efficacy of low-achieving students.

Keywords : Cognitive restructuring, academic self-efficacy, low achievement, gender

Introduction

The low school achievement of students in external examinations in Nigeria has become a source of great concern to all stake holders in education. This calls for concerted efforts for remediation. In everyday language, achievement is something which someone has succeeded in doing. In education, the term academic achievement refers to the performance or accomplishment of students in academic or learning task. It is used to indicate the degree of success attained in some general or specific area of academic task (Enyi, 2009).

Conceptual review

Achievement could also be defined as an end product of learning whole level and performance are affected by various conditions existing at the time of learning as well as the conditions intervening between learning and use (Herrock cited in Enyi, 2009).

Academic achievement could be described as low or high depending on the level of performance of the learner in an academic task. It is said to be low when a student's performance is below an expected level of accomplishment or high when a student's performance is above an expected level of performance. Those students whose performance in a learning task is below an expected level of accomplishment are referred to as low-achieving students.

Low-achieving students tend to hold false assumption that they cannot succeed in school examination without some form of help from outside. Generally speaking, they do not take school work serious. The percentage of low-achieving students in Nigeria is quite alarming in recent times. According to West African Examination Council (WAEC) report (2010) and National Examination Council (NECO) report (2010) in Nigeria, only about 20 – 25% of students who entered into the May/June Senior Secondary Certificate Examination (SSCE) and June/July NECO examinations had credit passes in five subjects including mathematics and English. This means that about 75 – 80% of students who entered into these public examinations did not have up to five credit passes including mathematics and English that constitute the benchmark for award of the certificate. In this study, 'low-achieving students' refers to those students who consistently score below average or pass mark of 40% in school examinations. Certain factors are responsible for the low achievement of students in schools. This may include low academic self-efficacy experienced by the students, low motivation, poor learning environments and others.

2.1 Academic self-efficacy

Academic self-efficacy is considered an important factor that contributes to the level of achievement of students in school. A student's academic self-efficacy may be low or high. Low academic self-efficacy is shown to be a factor responsible for poor performance of students in schools (Eshiwani, 1986). Self-efficacy could be defined as confidence in one's ability to succeed in accomplishing a task (Bandura, 1977). On the other hand, academic self-efficacy refers to students' belief that they can successfully engage in and complete courses – specific academic tasks; such as accomplishing course outcomes, demonstrating competency skills used in the course, satisfactorily completing assignments, passing the course, and meeting the requirements to continue in their majors (Jimenez – Soffa, 2006).

Academic self-efficacy beliefs are students' beliefs in their ability to perform the necessary behavior to produce a certain outcome (for example, one has enough motivation to study hard for a test), (Wigfield&Eccles, 2000). Academic self-efficacy concerns one's judgment of one's capability based on mastery criteria. It is a sense of one's own competence within a specific frame. It focuses on one's own assessment of one's abilities in relation to goals and standard rather than comparison with others' capabilities.

Academic self-efficacy is shown to be a very strong predictor of academic achievement. Increased academic self-efficacy is accompanied by enhanced intrinsic motivation, the ability to sustain levels of motivation and achievement – oriented behavior, persistence on the face of difficulties, and better problem solving. As Bandura (1997) puts it, students whose sense of efficacy was raised set higher aspirations for themselves, showed greater strategic flexibility in the search for solution, achieved higher intellectual performances, and were accurate in evaluating the quality of their performance than were students of equal cognitive ability who were led to believe they lacked such capabilities. Conversely, students with low academic self-efficacy shy away from difficult tasks, which they perceive as possible threats. They have low aspiration and weak commitment to the goals they choose to pursue. Low academic self-efficacy negatively affects academic performance (Wood & Locke, 1987; Chemers, Hu & Garcia, 2001), motivation and learning (Bandura, 1993; Zimmerman, 2000).

Academic self-efficacy is indeed reported to be strongly related both directly and indirectly to academic performance. Highly efficacious students entered secondary school with confidence in their ability to perform well academically. This in turn influences their performance. Students who lacked academic self-efficacy did not perform academically as well as those students who had higher academic self-efficacy (Chemers, Hu & Garcia, 2001). As these authors explained, academic self-efficacy affects students' perception of their ability to cope with the pressures and demands of academic work. Highly efficacious students tended to perceive the demands of school work as a challenge rather than a threat. Challenged students are shown to have higher expectations and experience less stress, better health, better adjustment in school and greater satisfaction with school life. In addition, these students exhibited high optimism, which also influenced academic performance.

There is consistent evidence to support the notion that academic self-efficacy affects academic achievement and perseverance both directly and indirectly. Bandura (1993, p. 15) noted that "once formed, efficacy beliefs contribute significantly to the level and quality of human functioning". Researchers have stressed the necessity for programme techniques, and intervention to facilitate and encourage the development of academic self-efficacy (Hellman &Harbeck, 1997; Solberg &Villareal, 1997). In this study, academic self-efficacy refers to students' belief or conviction that they can successfully achieve at a required level on learning an academic task or that they can achieve a specific academic goal. To change the false beliefs and assumptions that students have which impede academic performance, there is need to restructure their cognition and academic self-efficacy.

2.2 Cognitive restructuring

Cognitive restructuring is based on rational emotive therapy propounded by Albert Ellis who focused more on thoughts. Ellis (1962) stated that human beings made themselves victims of irrational thinking and could virtually destroy themselves though irrational and muddled thinking. Beck (1976) stated that cognitive restructuring involved a process of re-orienting one's thought process to reality, or requiring one's mind to think truthfully, factually and logically. Cognitive restructuring also known as cognitive reframing is a technique that can help people identify, challenge and alter anxiety provoking thought patterns and beliefs (Baxter, 2010). For example, students who develop false assumption that they cannot study and pass examination on their own without help or assistance from others or cheating may not be properly motivated to study hard for examination. Once a false assumption has been made, it will then often be used as a basis for prompting behaviours that end up acting in response to the false assumption as if it were true. According to Baxter (2010), irrational thought like this and their accompanying behaviour play a big part in the onset of anxiety. In this study, cognitive restructuring means the process of learning to dispel faulty thinking patterns and replacing them with more profitable ones.

Cognitive restructuring was used by Ellis (1976) to effectively treat emotionally depressed patients. Utilizing cognitive restructuring intervention with youths has experienced an increasingly diverse research base, supporting the effectiveness of varied approaches with adolescents or children clients (Braswell & Kendall, 2001; Grahan, 2005). However, these researches have traditionally taken place in the out of school settings. Research specifically connecting cognitive restructuring with an improvement in academic self-efficacy of low-achieving students in schools in Nigeria is sparse.

The significance of cognitive restructuring for low-achieving students derives from its potential in releasing the creative potentials, independence, self-awareness, initiative taking, achievement motivation, analytical ability, interpersonal skills and personal competencies of a great number of students who would have ended up as indolent and dependent adults. There is need to tap into the natural resources of this class of students and turn them into goal-oriented and resourceful adults.

2.3 Gender and academic achievement

The extent to which gender affects academic achievement of students appears not to have been resolved. Research studies reported gender differences in academic achievement in mathematics and science subjects with boys performing better than girls in these subjects (Jahun&Momoh, 2001; Ezeugo&Agwagah, 2000). Again, Aiyedum and Popoola (2004) reported no significant differences in the performance of boys and girls in mathematics. Bong (1999) made several important discoveries when investigating personal factors affecting academic self-efficacy judgments. Girls' self-efficacy perceptions were more subject specific than boys, and girls in particular showed greater differentiation between verbal and mathematics subjects.

Gender differences are related to developmental level. There is little evidence for differences in self-efficacy among elementary – aged children. Differences begin to emerge following children's transition to middle or junior high school (Wigfield, Eccles&Printrich, 1996), with girls typically showing a decline in self-efficacy beliefs. The various studies appear to be inconclusive. There is therefore need to explore more the interaction of cognitive restructuring and gender on low-achieving students' academic self-efficacy. The problem of the study is therefore posed as a question: what would the effect of cognitive restructuring intervention programme on low-achieving students' academic self-efficacy?

Research questions

The following research questions guided the study:

1 What is the effect of cognitive restructuring intervention programme on the posttest mean scores of low-achieving students on the Academic Self-efficacy Scale (ASS)?
2 What is the interaction effect of cognitive restructuring intervention programme and gender on the posttest mean scores of low-achieving students on the ASS?

Hypotheses

The following null hypotheses were tested at 0.05 probability level:

HO_1: There is no significant difference in the mean posttest

academic self-efficacy scores of low-achieving students exposed to cognitive restructuring intervention programme and those not exposed to cognitive restructuring intervention programme.

HO_2: There is no significant interaction effect of cognitive restructuring and gender on the mean academic self-efficacy posttest scores of low-achieving students.

Methodology

The research design for the study was quasi-experimental, non-equivalent control group pretest posttest design. The population of the study was 565 low-achieving senior secondary two (SS II) students in the 24 public senior secondary schools in Yenagoa and Okolobiri education zones in Yenagoa local government area of Bayelsa State, Nigeria. The sample consisted of 135 low-achieving students, 62 males and 73 females from four schools with the highest number of low-achieving students purposively sampled from the two education zones. Two schools sampled in each zone were randomly assigned to treatment and control groups. The instrument used for the study was Academic Self-efficacy Scale (ASS) which was developed by the researchers. The Academic Self-efficacy Scale (ASS) was rated on a 4 – point scale of Always (4), Sometimes (3), Rarely (2), and Never (1) for positively skewed items. The negatively skewed items had the scores reversed. The subjects with scores of between 1.00 – 2.49 were regarded as having low academic self-efficacy while those with scores between 2.50 – 4.00 were regarded as having high academic self-efficacy. The intervention programme was a cognitive restructuring intervention package (CRIP). The instrument was face validated by three experts, two in educational psychology and one in measurement and evaluation in the University of Nigeria, Nsukka. For the ASS, an internal consistency reliability coefficient of 0.96 was ascertained through Cronbach alpha method. The stability coefficient of ASS estimated through test-retest method using Pearson product movement correlation was 0.66. Data were presented using means and standard deviation. Analysis of covariance was used to test the hypotheses at 0.05 probability level.

3.1 Experimental procedure

Subjects participated in eight sessions that lasted for 45 minutes each, which were held once a week for eight consecutive weeks. The intervention programme was a training using Cognitive Restructuring Intervention Package (CRIP). The programme was a group directed talk therapy and procedure. Subjects in both the experimental and control groups were pretested before the administration of the intervention programme. The researchers exposed the experimental group to the CRIP. The control group received a placebo programme (PP). The package consists of eight basic components:

During the first week and session, participants introduced themselves to one another. A definition of academic self-efficacy was given. The importance of academic self-efficacy was discussed.

In the second week, the researchers and the subjects discussed personal problem, negative and irrelevant thoughts which are known to affect the subjects' studies and make them not to prepare well for tests or examinations.

During the third week, the participants were presented with the identification of unrealistic beliefs, values, practices and negative self-statements relating to subjects' low-achievement in tests and examinations.

During the fourth week, basic irrational beliefs were reviewed and subjects discussed how these beliefs contribute to their low performance during examination.

In the fifth week, participants were presented with the role of self-statements in motivation, self-belief, and behaviour. They were also taught how to modify their negative self-statements by replacing them with positive self-statements.

The sixth week focused on developing and testing cognitive restructuring techniques to counter self-defeating statements. These include: desensitization, role playing (teaching others), cognitive rehearsals, considering alternative explanation (validity testing), thought stopping techniques, dispelling irrational beliefs and forceful self-statements.

The seventh and eighth weeks focused on rehearsal and application of treatment conditions. Participants were made to identify their thoughts, feelings and behaviour to help them cope with the situations more constructively.

The control group received instructions for the eight weeks on examination malpractices: causes and prevention.

3.1a Results

The results of the study are presented in line with the research questions and hypotheses that guided the study.

Table 1

The Pretest Posttest Mean Academic Self-Efficacy Scores of Cognitive Restructuring Intervention Programme and Gender of Experimental and Control Groups of Low-Achieving Students

Treatment groups	Gender Respondents	Pretest Mean	SD	n	Posttest Mean	SD	Mean gain score
Experimental group	Males	62.89	4.91	36	78.92	7.97	16.03
	Female	57.68	6.95	40	81.80	4.50	24.13
	Total	60.15	6.57	76	80.43	6.50	
Control	Males	58.12	8.97	26	63.92	8.64	5.81
	Females	59.46	5.39	33	63.06	6.87	3.61
	Total	58.86	7.15	59	63.44	7.64	
Total	Males	60.89	7.24	62	72.63	11.08	
	Females	58.48	6.31	73	73.33	10.96	
	Total	**59.59**	**6.54**	**135**	**73.01**	**10.98**	

Data presented in Table 1 shows the pretest and posttest academic self-efficacy mean scores of low-achieving students in experimental and control groups. The low-achieving students who were exposed to cognitive restructuring intervention programme had a pretest academic self-efficacy mean score of 60.15 with a standard deviation of 6.57 and a posttest mean score of 20.29 and a standard deviation of 6.50. This gives the pretest/posttest mean gain score as 20.29. The low-achieving students in the control group had a pretest academic self-efficacy mean score of 58.86 with a standard deviation of 7.15 and a posttest mean score of 63.44 with a standard deviation of 7.64. This gives a pretest/posttest mean gain score as 4.58. This suggests that low-achieving students who were exposed to cognitive restructuring intervention programme improved in their academic self-efficacy belief more than those who did not.

Data in table 1 also show that the low-achieving male students in the experimental group had a pretest academic self-efficacy mean score of 62.89 with a standard deviation of 4.91 and a posttest mean score of 78.92 and a standard deviation of 7.97, and a mean gain score of 16.03. While the low-achieving female students in the experimental group had a pretest academic self-efficacy mean score of 57.68 with a standard deviation of 6.95 and a posttest mean score of 81.80 and a standard deviation of 4.50. This gives the pretest/posttest mean gain score as 24.13. The low-achieving male students in the control group had a pretest academic self-efficacy mean score of 58.12 with a standard deviation of 8.97 and a posttest mean score of 63.92 with standard deviation of 8.64. This gives a pretest/posttest mean gain score of 5.81. While the low-achieving female students in the control group had a pretest mean score of 59.46 with a standard deviation of 5.39 and a posttest mean score of 63.06 and standard deviation of 6.87. This gives a pretest/posttest mean gain score of 3.61. Data presented indicated that gender moderated the effect cognitive restructuring intervention programme had on low-achieving students' self-efficacy.

Table 2
Summary of Analysis of Covariance (ANCOVA) on the Effect of Cognitive Restructuring Intervention Programme on Academic Self-Efficacy Scale (ASS)

Source	Type III Sum Of Squares	df	Mean Square	F	Sig.
Corrected model	9761.287	4	2440.332	49.633	.000
Intercept	7976.625	1	7976.625	162.235	.000
Pre-self-efficacy	1.169	1	1.169	.024	.878
Treatment	9218.418	1	9128.418	187.492	.000
Gender	34.720	1	34.720	.706	.402
Treatment* Gender	114.196	1	114.196	2.323	.130
Error	6931.706	130	49.167		
Total	735714.000	135			
Corrected Total	16152.993	134			

Results presented in Table 2 revealed that treatment as main effect had significant effect on the academic self-efficacy of low-achieving students. The calculated F value of 187.492 in respect of the treatment as main effect is shown to be significant at .00. This suggests that exposing low-achieving students to cognitive restructuring intervention programme enhanced their academic self-efficacy belief. The null hypothesis of no significant difference in the mean self-efficacy scores of the treatment and control groups was rejected.

From Table 2, the calculated F-value of 2.323 in respect of interaction between cognitive restructuring intervention programme and gender is not significant at 0.05. The null hypothesis of no significant interaction between cognitive restructuring intervention programme and gender on low-achieving students in not rejected.

3.1b Discussion
The result of this study revealed that cognitive restructuring enhanced academic self-efficacy of low-achieving students. The result shows significant difference on the low-achieving students. The results shows significant difference on the low-achieving students posttest mean score as a result of the treatment given and this difference favaoured the experimental group. This shows that cognitive restructuring significantly enhanced low-achieving students' academic self-efficacy beliefs.

Cognitive restructuring intervention programme is a systematized psychological intervention which is usually employed in modifying human behaviour and beliefs. According to Omegum (2003), cognitive restructuring can be used by counselors to effect changes in client behaviours from illogical or irrational thoughts to logical or rational and positive thinking. The result is consistent with that of Bouchard, Gauthier, Nouwen, Ivers, Ballieres, Simard and Fournier (2007) who reported that cognitive changes preceded self-efficacy improvement in subjects. This finding is also consistent with that of Kovalski and Horan (1999) who reported that internet-based cognitive restructuring changed irrational career beliefs in adolescent girls.

This result is also consistent with the findings of Kumar and Lai (2006) who reported that there was no significant interaction effect of self-efficacy and gender on intelligence.

3.1c Conclusions
The findings of the study showed that training in cognitive restructuring changes the primordial belief system of trainees. Therefore, training in cognitive restructuring has the potential of dislodging the basis of irrational beliefs and mindsets and prevent young persons from tapping into their natural potentials. It means that cognitive restructuring is a potential educative strategy for releasing the creative potentials, self-awareness, achievement motivation, personal competencies and interpersonal skills of at risk students who perform consistently below their natural potentials. It is possible therefore to train students to be able to harness their creative energy and become self-regulatory, self-learning and independent.

It is recommended that cognitive restructuring interventions should form part of the school curriculum to enable teachers use the techniques to enhance academic self-efficacy of low-achieving students. Also, cognitive restructuring interventions should form part of parenting education to enable parents use the techniques in improving the academic self-efficacy of their children.

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