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This special edition of the Journal of Sociology and Education in Africa (JOSEA), Vol. 8, No. 2 contains some selected papers presented at the International Conference on Education for Sustainable Development (ICESD) organized by the Faculty of Education, University of Ibadan between May 18 and 22, 2009, to commemorate the 60th anniversary of the University of Ibadan, Nigerian Premier University. The conference brought together different scholars, researchers and stakeholders from local and international arena to find a balance between education and sustainable development. Sundry scholarly papers were presented in line with the theme of the conference "EDUCATION FOR SUSTAINABLE DEVELOPMENT: CHALLENGES AND THE WAY FORWARD". Thus, we are pleased to present to you, in this special edition, some articles that have been carefully selected in accordance to JOSEA editorial policy. The authors have specifically aligned their papers to meet the theme and the sub-themes of the conference. Some of these papers encourage people to understand the complexities of, and synergies between, the issues threatening economic sustainability and assess their own values and those of the society in which they live within the context of sustainability.

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Effects of Cognitive Learning Styles on the Academic Achievement of Secondary School Adolescents: Implications for Counselling

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Abstract

The purpose of this study was to investigate the effects of cognitive learning styles on the academic achievement of adolescent in secondary schools in Ibadan. Descriptive survey research design was employed. A total of 500 (male 267; female 233) adolescent students randomly selected from ten secondary schools were involved in the study. Their age ranged between 12 and 15 with mean age of 13.5 years. The academic records of the students were obtained from their principals. Student t-test statistic and Pearson's product moment correlation was used to analyse the data collected. Results indicated that there was a significant influence of gender on the academic achievement of male and female students; also a significant relationship was found between the cognitive learning styles and academic achievement of the students. The implications of the findings from this study are that educational and counselling psychologists could use cognitive learning styles as variables to predict the academic achievement of the students. Teachers should also provide active learning opportunities rather than chalk and talk, provide immediate feedback and emphasize mastery over performance goals.

Keywords:

Academic achievement, cognitive learning styles and adolescents

Introduction

Adolescent marks the transition from childhood to adulthood. During this period an individual is seen neither as a child nor as an adult. The period of adolescence is very important to the development of an individual. Any laxity on the way of learning may result in academic backwardness and development of unwholesomeness behaviour, the foundation of what a

person becomes in the society is laid in the cognitive learning styles of an individual. Attaining a high level of academic performance is what every parent or guardian as well as teacher wishes for their children, wards and students. Schools and teachers are generally graded qualitatively by achievement based on the performance of their students.

In spite of the numerous efforts made by the educational administrators, researchers, teachers and government agencies in tackling the problem of low achievement, studies on the academic performance of students does not seem to have improved. Educators have always been aware of the simple and consistent fact that some students are academically successful while others are not. Psychologists, educators and researchers have long speculated on the root causes of this issue, identifying cognitive abilities, previous academic performance as possible factors in the mastering of academics.

Education, no doubt, remains the most outstanding development priority area in the world today. The core purpose of education, undoubtedly, is human development. Other things being equal, an educated person who is well or relevantly positioned in the socio-economic, cultural and political milieu is expected to be a valuable asset to the society than another individual who is illiterate and perhaps ignorant. This simple fact explains why researchers and scholars, the world over, continue to research into ways of improving human knowledge and development. Debates on education and human development generally can hardly be a boring exercise. The socio-political, economic and technological developments, which bring about frequency of innovations and reforms, have all combined to make discussion or debates on education and human development trendy, exciting and unending.

A comprehensive review of research in cognitive psychology has indicated that adolescents exhibit significant individual differences in the cognitive processing styles that they adopt in problem solving and other similar decision-making activities (Robertson, 1985). As for individual differences, different researchers have different definitions and conduct

research from different perspectives accordingly. However, but the concept of cognitive learning style is widely recognized in management education and development. An individual's cognitive styles can be thought of as a relatively fixed aspect of learning performance and influences an individual's general attainment or achievement in learning (Riding & Rayner, 1998).

Psychological factors or individual differences have been the subject of much research in the field of education and learning (Adevemo, 2004). The majority of these studies seek to establish the connection between cognitive style and beliefs about learning and actual achievement in a learning situation. Cognitive styles are more related to theoretical or academic research while learning styles are more related to practical applications.

The study of intellectual abilities is usually quantitative; that is to say, it is concerned with the general level of academic attainment, with which a complementary approval is to look at differences in the way in which individuals deal with information and how these are matched with different types of tasks. These differences are referred to as styles and research has started to integrate and apply theories in this area. Cognitive style has been defined by Tennant (1988) as an individual's characteristic and consistent approach to organising and processing information. It is therefore usually seen as a stable feature and to underlie an individual's functioning in a number of different areas. It can be contrasted with cognitive strategies, which can vary according to the demands of particular tasks.

Cognitive styles refer essentially to one's preferred and typical modes of perceiving, remembering, thinking and problem solving. They are regarded as broad stylistic behavioural characteristics that cut across abilities and personality and are manifested in many activities and media. An extensive research literature has accumulated on various cognitive styles and related concepts, such as learning and thinking styles (Kogan, 1976; Qutami, 2005).

Put more simply, cognitive styles are actually broad personal styles which show typical ways in which we process information. Some examples of cognitive styles that have been identified include: reflectiveness versus impulsiveness (the tendency to react to situations slowly, after examining several alternative responses, or rapidly with the first response that comes to mind); cognitive complexity versus simplicity (the tendency to view the world along many or few parameters; and tolerance for unrealistic experiences (the degree of comfort with experiences that are out of the ordinary). (Bertini, 1986).

Similarly, Marjoribanks (1996) and Rutter (1985) stress the importance of cognitive stimulation on academic performance. This they explained could be better formed and enhanced through positive child-parent interaction. Bakare (1994) identifies six basic cognitive skills: perception, conception, memory, language, reasoning and creativity and concluded that a child must sequentially acquire these skills in succession for him to do well. Thus, the sufficient presence of these skills to a child's basic academic foundation cannot be downplayed. It is pivot upon which other academic phenomena are built.

The study of cognitive styles emphasizes the processes involves in performance rather than the level of performance (Messick, 1994). Too often the measurement of cognitive styles becomes muddled, trying to separate out typical versus optimal performance (Lohman & Bosma, 2002; Snow, Corno & Jackson, 1996). Still up for debate is whether the choice of a strategy is a conscious or selected automatically based upon style preference (Messick, 1994; Nigg, 2000). The ability to consciously select strategies is reflected in self-regulated behaviour while Lohman and Bosma (2002) defined within the context of cognitive styles as a situationally sensitive and adaptable approach to the planning, initiation and maintenance of context appropriate (or disengagement from context appropriate) intentions, one is therefore motivated to ask the question "What are the effects of cognitive learning styles on the academic achievement of secondary school adolescents in Nigeria?"

Purpose of the study

The purpose of this study is to investigate the effects of cognitive learning styles on the academic achievement of secondary school adolescents. This study will especially find out the influence of gender on the academic achievement of adolescent students, find out the significant relationships between cognitive learning styles and academic achievement of adolescent students. This study hopes to contribute to knowledge by shedding light on the effect of cognitive learning styles on academic achievement of adolescent students, it will also serve as an expanding frontier of knowledge among educational psychologists guidance counsellors, teachers, researchers as well as curriculum planners when designing intervention programmes for improving the academic achievement of adolescent students who could be described as low achievers. Based on this premise, the following hypotheses were then proposed at the 0.05 level of significance.

1. There will be no significant influence of gender on the academic achievement of adolescent students.
2. There will be no significant relationship between cognitive learning styles and academic achievement of adolescent students.

Design

This study adopted a descriptive survey research design in order to explore the prediction of academic achievement from cognitive learning styles of adolescent students.

Participants

The target population for the study was all the adolescents in all the secondary schools in Iseyin Local Government Area of Oyo State. A stratified random sampling method was employed in selecting 500 participating SS 3 students from ten randomly selected secondary schools in the Local Government Area involved in the study. Ten schools were randomly selected from the list of 18 secondary schools in Iseyin Local

Government Area collected from the L.I.E.'s Office in Iseyin. A total of 500 (male 267; female 233) adolescent students randomly selected comprising of 50 students from the ten secondary schools involved in the study. Their age ranged between 12 and 15 with mean age of 13.5 years and standard deviation of 3.20.

Measures

Cognitive style measurement (CSM) is adapted from Duff (2000). The scale consist of 44-items to investigate the ways the students think about information they encounter. The test is placed on five points Likert scale of Strongly Disagree (1), Disagree (2), Not Sure (3), Agree (4), and Strongly Agree (5). The reported reliability and validity estimates found by the original author were consistent at .79. The test-retest reliability of the instrument was found to be .91.

Also, in order to obtain the academic achievement of the students, their academic records of the examinations in the various subjects were obtained from the Vice-Principal/Principal of the schools. The scores of each student in English Language and Mathematics for 2007/2008 session were collected. Since English and Mathematics were the only subjects common to all the students, the study was limited to those two core subjects.

Procedure

All the participants for the study were administered Cognitive Learning Style Measurement (CLSM) instrument. The scores of the selected students in the 2007/08 English and Mathematics Examinations were also collected from the respective school Vice-Principal/Principals. The scores of the students in English and Mathematics were converted to standard scores (Z-scores) since the scores were obtained from ten different schools and were graded by different teachers using different scales. The Z-scores were further converted to T-Scores to remove the negative values and decimal fractions that showed up. Students't-test was then employed on the T-scores obtained and Pearson's product moment

correlation was used to analyse the data at the 0.05 level of significance.

Results

The results obtained from the two hypotheses tested are presented on Tables 1 and 2 in this section.

Table 1: Significant Influence of Gender on the Academic Achievement of Adolescent Students

Variable	N	\bar{X}	S.D	t.obs	Df	t-crit.	P	Remark
Male	267	39.66	13.00	1.96	498	1.96	0.05	Significant
Female	233	40.96	13.27					

In Table 1, the results show that there was significant influence of gender on the academic achievement of adolescent students ($t_{obs} = 1.96$; $df = 498$; $P < 0.05$). The mean scores for male adolescent students ($x = 39.66$) and female adolescent students ($x = 40.96$). This observation supports a logical thinking that there was a significant influence of gender on the academic achievement of adolescent students. Therefore the hypothesis is rejected.

Table 2: Significant Relationship between Cognitive Learning Styles and Academic Achievement of Adolescent students

Variable	N	\bar{X}	S.D	r.cal.	t-crit.	P	Remark
Acad.	500	42.07	13.27	.699	.1964	0.05	Significant
Cognitive	500	36.16	7.45				

The results on Table 2 show that a significant positive correlation was found between the academic performance of students and the cognitive styles ($r = 0.699$; $P < 0.05$). Therefore the hypothesis was rejected.

Discussion

The result of the present study revealed that there is significant influence of gender on the academic achievement of adolescent students. This finding corroborate the findings of other researchers such as Suits and Lagowski (2004); Bonanno and Kommers (2005); Vermunt (2005); Aremu

(2005) that gender proved to be a stronger determinant of academic achievement. The explanation for the poor academic achievement of male adolescent students is that students' learning patterns may be indeed associated with personal and contextual factors such as academic discipline, prior education, age and gender but that the different learning patterns had different sources and this explains an important part of the variance in their academic achievement.

The findings of this study indicate that, a significant relationship was found between cognitive styles and academic achievement of adolescent students. This result supports Aremu (2005); Elliot (1991) and Kaulback (1984) who found that three modes of learning styles (sensory perception, reasoning type and learning environment) significantly predict academic achievement of the sample subjects. Jegede (1990), Okebukola (1992) and Temisan (2001) also showed that cognitive, affective, concept mapping, problem-solving, motivation, and recapitulation have been found either to significantly influence academic performance, or to positively correlate with academic achievement. This aptly shows that if the cognitive learning styles could be effectively utilized in impacting knowledge most especially on students, academic achievement of adolescent students could be improved upon.

This, therefore, points to the potency of cognitive learning styles as useful methods that could be adopted by students in school learning. The aggregation of the findings of Aremu (2005) showed that learning styles of in-school adolescents in police secondary schools is a pointer to the degree of their academic achievement. This is by no means at variance with the findings of Frederic (1991) and Qutami (2005) in which learning styles were found to contribute to academic achievement.

Implications for Counselling

- The implications of the findings from this study are that educational and counselling psychologists could use cognitive learning styles as variables to predict the academic achievement of the students.
- Teachers should also provide active learning opportunities rather than chalk and talk, provide immediate feedback and emphasize mastery over performance goals.
- It will provide students with tools to achieve long-term success, increase awareness of interdependence, personal responsibility for choice and consequential thinking.
- Learners should also know that the type of learning styles they adopt could affect their academic performance. This therefore, implied that efforts should be made by the teachers, school counsellor and authorities to help these students to adopt learning styles that could improve their academic performance.
- Teachers should also be organised and establish routines in their classroom, incorporate special interests of the students into the curriculum when possible by including creative, innovative approaches in the lesson presentation, allow for student decision-making by considering students' needs and motives for working with others before determining an individual or cooperative learning strategy.

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