SELF-ESTEEM AND PEER INFLUENCE AS PREDICTORS OF LEARNING OUTCOMES IN MATHEMATICS AMONG HIGH ABILITY STUDENTS IN IBADAN, OYO STATE, NIGERIA

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Abstract

Academic underachievement has become a syndrome especially among high ability learners in Mathematics. This is due to some identified factors which include self-esteem and peer influence of the high ability learners. This study therefore investigated how self-esteem and peer influence can predict the learning outcomes in Mathematics of high ability learners in Ibadan, Oyo State. The survey design of the ex-post facto type was employed in this study. Purposive sampling technique was used to select twenty (20) secondary school out of which 200 high ability learners were randomly selected. Instruments used: Slosson intelligence test (r=0.81); Peer influence inventory (r=0.72); Self-esteem scale (r=0.72) and Mathematics achievement test (r=0.85). The study lasted for eight weeks. Data were analysed using Pearson's Product Moment Correlation and Multiple Regression Analysis at 0.05 level of significance. There were positive relationship between learning outcomes in Mathematics with self-esteem (r=2.3); peer influence (r=2.2). There was a significant joint contribution of the independent variables to the dependent variable of learning outcomes in Mathematics. [$F_{(2,197)}=7.64$; $R^2=0.072$] accounting for 6.3% of its variance. Self-esteem (β=2.6; t=2.176) and peer influence (β=1.6; t=2.114) had a relative contribution on the learning outcomes in Mathematics of highly ability learners. Thus, self-esteem and peer influence were found to be effective predictors of learning outcomes in mathematics of high ability learners. It is therefore recommended that self-esteem of the high ability learners needs to be enhanced through various programmes especially by the school counsellors. Also, parents and wards should support their children by advising them on the type of friends they keep. With this in place, the high ability learners will perform better in Mathematics.

Keywords: Self-esteem, Peer influence, Learning outcome in mathematics, High ability learners

Introduction

In any country that aspires to be great technologically, learning outcomes in Mathematics is vital. All sciences are anchored on the proficiency and performance in Mathematics, Indeed, Mathematics is the pivot of all sciences be it pure science, applied science, medicine, engineering and social sciences There is no doubt that most nations regards Mathematics as a core subject to be learnt at the primary and secondary school levels. In Nigeria, Mathematics is among the five core subjects at the Junior secondary school level a part from English language, Civic Education, Social Studies and Introductory Technology.

Over the past couple of decades, society has placed infinitely more emphasis on the academic achievement of its citizenship. Academic achievement is important because it promotes success later in life (Areepattamannil & Freeman, 2008) and in current life. In all the public examinations in Nigeria, emphasis is placed on Mathematics and English language. However, for admission into any science course, a credit pass in Mathematics is required into any Nigerian university (Dambudzo, 2009).

Mathematics is globally considered the basis of Science and Technology and it is one of the core and compulsory subjects at primary, junior and senior secondary school curriculum. The position and the recognition of Mathematics as a subject in the school

curriculum depict the significance of the crucial role it plays in the modern age and it is also a fact that most career depends on Mathematics skill. Despite the enormous importance of Mathematics as a school subject, a requirement for daily transaction, and skill for self-accountability, a veritable tool for future career and fundamental machinery for national progress, it has been realized that Mathematics is a subject many students fear, fail and dislike (Esan, 1994).

The analysis of the 2009 May/June WASSCE shows that 356,981 (25.9%) out of a total of 1,373,009 candidates that sat for the examination passed English language or Mathematics at credit level. The data shows that only 176,729 (8.5%) are science students who passed Mathematics and three other science subjects at credit level. The report of the year (2013) also showed that 109,201 (8.0%) are involved in various form of examination malpractices in mathematics. The performance of 2010 May/June WASSCE was not better as only 337.071(24.9%) passed Mathematics and English language with three other subjects at credit level. The percentage however increased in 2015 to 30.9% in WASSCE but the percentage of science students reduced drastically, only 6.9% of the science students have credit in Mathematics and three Science subjects (WASSCE, 2015). The implication of the data provided above is that students are struggling to pass Mathematics as a subject, which then allow for the fears.

Optimum achievement in Mathematics has been viewed to be inhibited among students including high ability students. The following have been reported to have accounted for poor achievement in Mathematics:

the low self-esteem of the students, including the high ability learners, particularly the girls towards Mathematics
the discouragement in class and poor attitude of peers towards mathematics achievement.
the teachers and parents' view of Mathematics is that Mathematics is a segmentation calculation rules that can only be memorised
some Mathematics teachers do not understand Mathematics so well, that of course made teaching it mainly a matter of following some textbooks and relying on it.

Self-esteem and Learning Outcomes in Mathematics

Most researches that have been done on factors that influence academic achievement, concentrate more on cognitive factors, while the affective factors are ignored (Sikhwari, 2004). The affective aspect of the students should receive as much attention as the cognitive aspect in academic investigation and endeavours (Sikhwari, 2004). Variance in academic achievement can be related to affective variables of which self-esteem is one (Vander. 1991). Academic self-esteem refers to the overall self-perception of the individual in an academic context. Academic self-esteem is thus comprised of a set of attitudes, beliefs and perceptions held by the students about their academic skills and performance (Lent, Brown & Gore, 1997). Academic self-esteem and academic achievement are often linked together. A higher academic self-esteem has been associated with better academic achievement (Marsh, 1990; Burns & Sikhwari, 2004).

Ratelle's (2004) study support the idea that self-esteem not only help academic achievement but also helps students to be resilient through difficult times. Cokley (2004) defines academic self-esteem as "attitudes, feelings and perceptions relative to one's intellectual or academic skills". He also viewed academic self-esteem to be how a student views his/her academic ability when compared with other students. He opined that students attach a lot of importance to academic ability, so that self-acceptance is based largely on cognitive abilities. A student with a negative self-esteem for example, might just avoid studying hard because he would regard the subject content as too difficult. MeCoach and Siegle (2003) observed that self-esteem involves a description and an evaluation of one's perceived academic and encompasses beliefs of self-worth associated with one's perceived academic competence.

Self-esteem thus refers to an individual overall emotional evaluation of one's own worth. It is a judgement of oneself as well as an attitude toward self, which encompasses beliefs. According to Wiggins, Shatz and West (1994), self-esteem and learning outcomes were positively correlated. Hamachek (1995) also found that there is a relationship between self-esteem and learning outcomes especially among learners with high ability. He argued that this relationship is very interactive with each variable affecting the other. He concluded that it is vital for educators to be sensitive to student's self-esteem and high ability student's perceived learning outcomes. He indicated that there could be a positive effect on one variable with a positive effect on the other variable (the opposite negative effect would also hold true). In other words, if self-esteem were lowered, one would see a drop in learning outcomes and if learning outcomes were lowered, one would see a drop in self-esteem. Again, numerous researchers have demonstrated that the best way to improve student achievement is to increase their self-esteem (Rubie, 2004). Research has also documented that high self-esteem plays an important role in academic achievement, social and personal responsibility (Redenbach, 1991).Those who have higher academic achievement in contrast to those who lack confidence in themselves achieve less.

Palinscar, Stevens and Gavelek (1989) from their studies found that students' interaction with peers affect the acquisition of subject matter, knowledge and academic skills. A substantial amount of evidence has suggested that the nature of an institution's social or relational environment as well as students" interaction with peers will affect students' acquisition of subject matter, knowledge and academic skills. Peers play a central role in how much students learn in formal classroom settings.

Peer Influence and Learning Outcomes in Mathematics

Palinscar, Stevens and Gavelek (1989) from their studies found that students' interaction with peers affect the acquisition of subject matter knowledge and academic skills. A substantial amount of evidence on students' interaction with peers affects their acquisition or learning outcomes in Mathematics. Peers play a central role in how much students learn in formal classroom settings. Learning can be enhanced when students work with and teach peers. Kuli, Pace and Vesper (1997) found that friendly, approachable and helpful relationships with peers would have positive effects on students' self-reports of gains in general education skills, and understanding the arts, literature and humanities. Several studies of collaborative

learning revealed that participating collaborative learning is positive on self-reported gains in problem-solving and design skills, understanding science, arts and humanities, and acquiring general education knowledge (Astin, 1993, Light, 2001). Springer, Stanine and Donovan (1999) found that the course achievement of students working in small groups is greater than that of students who did not work cooperatively. Therefore, we can say that peers play a central role in how much students learn in formal classroom settings. Learning can be enhanced when students can work with and teach peers. In addition to interacting with peers in classroom, an amount of evidence also showed that extracurricular involvement influenced learning; certain kinds of non-classroom interactions with peers have a net positive impact on learning. Whit, Edison, Pascarella, Nora and Tercnzini(1999) found that non-classroom interaction including discussing issues related policies, religious, arts and so on, had significantly positive effects on knowledge acquisition and academic skill development. According to Astin (l993) and Kuli (1995) students' extracurricular involvement in less related academic programme might have a negative effect on the students learning outcomes, especially in mathematics.

Students' peers play a substantial role in general cognitive growth and intellectual development in college. A body of evidence suggested that a student's quality of involvement is inclass activities related to interaction with peers will have influence on student development of cognitive skills and intellectual growth. Karabeniek and Collins English (1996) suggested that collaborative or cooperative learning might facilitate the development of general cognitive skills and intellectual development during college because students would like to use higher-order learning strategies of elaboration, comprehension monitoring, and critical thinking. A meta-analysis conducted by Quin, Johnson and Johnson (1995) revealed that cooperative learning or peer influence gave a greater advantage over individualistic or competitive learning on problem-solving skills requiring cognitive representation. In addition to in-class activities, students' peers sometimes have greater influences than in-class experiences on cognitive skills mathematics and intellectual growth (Terenzini, Springer, Pascarella and Nora, 1995). Analysing data from National Study of student, learning and controlling potential confounding factors, several researchers found that out-of-class interaction with peers, including out-of-class discussion with peers and involvement in college clubs, organizations and diversity activities, had a significant, positive influence on standardised measures of critical thinking skills during college. Students' self-reports of their cognitive skills or intellectual growth was also significantly, positively influenced by interaction with peers outside of class. A body of evidence indicated that the frequency and nature of students' interpersonal experience with peers were the more likely sources of influence on psychosocial changes including identity development, self-concept and self-esteem, autonomy, independence, locus of control and self-efficacy, interpersonal relations and leadership skills, and general personal development. Johnson, Johnson and Smith(1998) revealed that cooperative and group learning boosted self-esteem by increasing student interest in learning and the quality of their social adjustment and support. Smith and Griffin (1993) found that peer relations and participation in extracurricular activities had a positive influence on students' sense of autonomy and learning outcome in Mathematics. Also Astin (1993) found that the frequency of interaction with peers showed positive effects on students' development of academic Mathematics, learning outcome and social self-concept. Leadership skill formation was associated with students with peers, which included fraternity membership,

intramural sports participation, and active involvement in the classroom. Grayson (1999), Kuli (1995) and Martin (2000) indicated that the frequency of students' interaction with peers is associated with reported gains in interpersonal skills. In addition to frequency of interaction, interaction with peers of different races and discussion of racial issues with others had influences on psychosocial change (Chang, 1999). A body of research suggested that students' interpersonal associations with peers are the dominant factors in attitude and value changes across topical areas (PascareIla & Terenzini, 2005). Berger (2000) found that the values held by students' peers had important influences on community attitudes and humanistic values. Gurin, Dey, Hurtado and Gurin (2000) indicated that students' interactions with peers had significant effects on changes in various dimensions of their social-political orientations and also in their learning outcome in Mathematics.

Thus, the alarming rate at which students in general and high ability students perform poorly in Mathematics in senior secondary school is a source of concern to the researcher. Mathematics is central to economic and technological advancement of any nation. How can Nigeria fulfill her policy of developing potentials of her youths in the interest of economic and advancement if the high ability students cannot perform satisfactorily well in Mathematics which is a pivot of science and technological development? There is no doubt that there are several factors that could be responsible for poor performance in Mathematics but the researcher is only interested in self-esteem and peer influence as possible predictors of learning outcome in Mathematics among high ability students.

Research Questions

What is the relationship of self-esteem and peer influence on learning outcome in Mathematics?
What is the composite contribution of the independent variables to the prediction of the learning outcomes in Mathematics?
What is the relative contribution of each of the independent variables (self-esteem and peer influence) on the learning outcomes in Mathematics?

Methodology

This study adopted a descriptive research design of the *ex-post facto* type. The design is such that the researcher could not control the independent variables because they have already occurred and they cannot be manipulated. This study investigated how peer influence and self-esteem predicts the learning outcomes in Mathematics among high ability students in Ibadan, Oyo State, Nigeria. The population of this study comprised all Senior Secondary School II students from secondary schools in Ibadan North, Oyo State, Nigeria. The total number of secondary schools in Ibadan North with senior secondary II is thirty-six (36) while, 20 senior secondary schools were involved in the study. Two hundred senior secondary II students participated in the study.

A sampling technique was used in selecting participants for this study. The first stage of sampling involved a simple random sampling technique, with the use of the 'hat' method in selecting 20 senior secondary schools out of 36 senior secondary schools in Ibadan North.

The second stage was selection of only 10 students from each school through a multidimensional approach (using of multiple criteria). This multifaceted approach includes use of Slossom Intelligence Test (SIT). School Academic Records and Mathematics Achievement Test to ensure the participants are high ability students.

Research Instrument

Five research instruments were used to collect data for the study, they are:

Slosson Intelligence Test (SIT) (To screen for high ability students).
Students' Academic Record (To screen for High ability students).
Peer Influence Inventory (PII)
Self-esteem Scale.
Mathematics Achievement Test

Description of the Instruments

Slosson's Intelligence Test

Slosson's Intelligence Test is used to screen for high ability in students and was constructed and validated by Slosson (1961) and reformed in 1981. The Revised Third Edition was in 2006. It was designed and organized as a test of general intelligence. Slosson's Intelligence Test is a foreign test but it, has been adapted to suit African children. For example, certain words and items were changed to suit the culture of the testee without altering the content validity of the test (Oduolowu, 1998). The test was adapted and was used in the study to assess the intelligence quotient of the samples. The 1960 revision of the Stanford Binet (BS) Intelligence Test was used by Slosson as the criterion in building his test and in establishing its validity. His sample included 701 persons ranging in age from 4 to 18+ years. Concurrent validity coefficients were calculated separately for each age level and ranged from 0.90 to 0.98. Slosson concluded that the SIT correlated with its criterion, just as the Stanford Binet correlates with itself. A pilot testing was conducted using twenty students from different schools from the chosen schools for the study. A Cronbach alpha of 0.81 was obtained in order to confirm the suitability.

Students' Academic Record

The students' academic was collected. The scores of the participants on a number of subjects in their Senior Secondary School (SSS) 1-2 examinations were also collected. The scores of the participants were calculated. Those that have mean scores of 60 and above were selected to participate in the study. They are the high ability students.

Peer Influence Inventory

The inventory was prepared by Clasen and Brown in 1985. It was structured and consists of 15-items describing how peers influence one another. It has coefficient reliability of 0.72. It was modified in likert scale.

Self-Esteem Scale

It is adapted from Rosenberg scale that was developed by Dr. Rosenberg. It is a 10 item, modified and structured in four point I.ikert Scale, it has a coefficient reliability of 0.88. A pilot testing was conducted using twenty students from different schools chosen for the study. A Cronbach alpha of 0.72 was obtained in order to confirm the suitability.

Mathematics Achievement Test

It is a 25 question drawn from Standard Mathematics achievement lest from SS2 curriculum. It was given to experts in Mathematics and found appropriate for SS2 Students. A pilot test was also done on 10 students from different schools selected for the study and a Cronbach alpha of 0.85 was obtained which confirmed the suitability.

Procedure for Test Administration

This study was conducted in 20 Senior Secondary Two Schools in Ibadan, Oyo State. Permission was sought from the principal of the schools to conduct the investigation. The class teacher and the School Guidance Counsellor were also contacted on the purpose of the study in order to obtain their cooperation. The cooperation of the School Counsellor was especially needed as the school academic records of the students were needed to identify high ability students.

Method of Data Analysis

Data collected in this study was subjected to statistical analysis to determine the influence of the independent variables of peer influence and self-esteem on learning outcomes in Mathematics high ability students in the study. Pearson's product correlation, multiple regression analysis and t-test were used for analysis of the data at 0.05 level of significance.

Results

Research Questions

1.   Will there be relationship between self-esteem and peer influence on learning outcome in Mathematics of the high ability learners?

Table 1:   Summary Correlations among Independent variables (peer influence and self-esteem) and learning outcome in Mathematics

Variables	$\bar{x}$	S.D.	1	2	3	p	REMARK
Learning Outcome	26.46	4.530	1.000			-	
Peer influence	45.34	6.961	.217**	1.000		0.002	Sig.
Self-esteem	28.87	4.702	.245**	.398**	1.000	0.000	Sig.

The result shows that there is a significant relationship among the independent variables (peer influence and self-esteem) and learning outcomes in Mathematics. Learning outcome had positive significant correlation with self-esteem (r= 0.24-5,

$p<0.05$). Also with peer influence ($r=0.217$, $p<0.05$). It means there was a significant relationship among the independent variables (peer influence and self-esteem) and learning outcome. This implies that both peer influence and self-esteem play vital role in learning of Mathematics among high ability students. Also, self-esteem has positive impact on the learning of Mathematics among high ability students.

Research Question Two

What is the composite contribution of the independent variables (peer influence and self-esteem) to the prediction of the learning outcomes in Mathematics?

Summary of Regression Analysis of the combined prediction of (peer influence and self-esteem) and learning outcome

Table 2: Summary of Regression Analysis of the combined Prediction of Independent Variables (Peer Influence and Self-Esteem) and Learning Outcome

R	R square	Adjusted R Square	Std. Error of the Estimate			
0.268	0.072	0.063	4.362			
Summary Regression ANOVA						
	Sum of Squares	Df	Mean Square	F	P	Remark
Regression	290.995	2	145.498			
Residual	3748.360	197	19.027	7.647	0.001	Sig.
Total	**4039.355**	**199**				

The table shows the prediction of the two independent variables (peer influence and self-esteem) on the learning outcome in Mathematics. That is, learning outcome correlated positively with the two independent variables (peer influence and self-esteem). The table also shows a coefficient of multiple correlations (R) of 0.268 and a multiple R square of 0.072. This means that 6.3% (R =0.063) of the variance in the learning outcome in Mathematics is accounted for by the two independent variables, when taken together. The significance of the composite contribution was tested at $p<0.05$ using the F- ratio at the degree of freedom (df = 2. The table also shows that the analysis of variance for the regression yielded a F-ratio of 7.647 (significant at 0.05 level). This implies that there was a significant joint effect of the independent variables (peer influence and self-esteem) to the dependent variable (learning outcome in Mathematics) was significant and that other variables not included in this model may have accounted for the remaining variance.

Research Question Three

What is the relative contribution of each of the independent variables (peer influence and self esteem) to the learning outcomes in Mathematics'?

Table 3: **Relative contribution of the independent variables to the dependent variables (Test of significance of the regression coefficients)**

Variable	Unstandardised Coefficient (B)		Standardised Coefficients	t	Sig.	Remark
Model	(B)	Std. Error	Beta			
Constant (learning outcome)	17.240	2.362	-	7.298	.000	-
Peer Influence	.102	.048	.158	2.114	.036	Sig.
Self-esteem	.156	.072	.163	2.176	.031	Sig.

Table 3 reveals the relative contribution of the two independent variables to the dependent variable, expressed as beta weights. The correlation coefficients, peer influence and self-esteem have relationship with the learning outcomes in Mathematics. The value of the effects of peer influence and self esteem implies that the learning outcomes in Mathematics are actually determined by reinforcement of these two variables. Using the standardized regression coefficient to determine the relative contributions of the independent variables to the explanation of the dependent variables, self-esteem (β=.163, t=2.176, p< 0.05) is the most potent contributor to the prediction followed by the peer influence (β=0.158, t=2.114, p<0.05); it implies that there is the relative contribution of independent variables peer influence and self-esteem on learning outcomes in Mathematics.

Discussion of findings

The study examined peer influence and self -esteem as predictors of learning outcomes in Mathematics among high ability students in senior secondary school II in Ibadan North, Oyo state. The table shows that there is a significant relationship among the independent variables (peer influence and self-esteem) and learning outcomes in Mathematics. Learning outcome in Mathematics had positive significant correlation with sell-esteem and also with peer influence. This finding is in support of Burke and Sass (2008) that confirmed peer influence as promoting effective teaching and learning of Mathematics among students. Sullivan (2006) also established that the best way that students learn Mathematics is through peer interactions. Sullivan (2006) equally reported that self-esteem play important role in performance of students in Mathematics. However, Rall (1990) reported in his finding that poor self-esteem towards Mathematics make some students to be afraid of it. Brown and Borko (1992) supported self-esteem as a motivation in the learning of Mathematics among students. Learning outcome correlated positively with the two independent variables. There was a significant joint effect of the independent variables to the dependent variable (learning outcome in Mathematics). Boaler (2009) reported that students' interactions with one another promote effective learning in Mathematics. The finding in this study is corroborated with that of Waiter (2009) that reported that self-esteem is strongly related to academic achievement of students. Hagger *et al.* (1998) supported that self-esteem is an influential predictor of relevant outcomes that include academic achievement in Mathematics.

Delacourt (1997) supported that self-esteem is one of the essential catalysts of education that enable learners to reach the highest potential of development in all

spheres of life. Rubbie *et al*. (2004) confirmed in their studies that self-esteem plays important role in academic achievement. Owayed (2005) supported correlations between academic achievement and self-esteem in a study done on 400 students in Kuwait College. Table 3 reveals that peer influence and self-esteem have relationship with the learning outcomes in Mathematics. Bryne (1984) supported that there is relative contributions of peer influence and self-esteem in the learning, of Mathematics among students. Vigdor and Nechyba (2004) supported this finding as they established that peers affect students' academic achievement. Burke and Sass (2008) corroborated the finding in this study as they established that positive and highly significant peer effects exist within every level of schooling and for both reading and mathematics. Sullivan *et al*. (2006) also supported this finding as they found that students' positive and negative response and attitude toward school Mathematics and engagement are to a large extent influenced by peer influence. Kuli, Pace and Vespa (1997) supported that peer influence have positive effects on students" academic achievement in general. Martin (2000) corroborated the finding in this study as he found that the frequency of students' interactions with peers is associated with academic achievement of students. Ratelle *et al.* (2004) supported this study as revealed that self-esteem not only helps academic achievement but also helps students to be resilient through difficult times.

Conclusion

Academic Underachievement among high ability students is a reality in which attempts should be made to unearth the predictors in order to find lasting remedy to the occurrence. It is incredible that high ability students underachieve but that is the truth. This study therefore investigated factors that have relationship with this oxymoron.

Recommendations

It is recommended that self-esteem of the students should be promoted through various programmes that can enhance the self-esteem of the students by the school counsellors. Talks on how to improve one's self-esteem could also be given by knowledgeable individuals and psychologists.

The students also need to be counseled on avoiding bad influence from friends. Students should be encouraged to keep companies of good students who could influence the behavior of others. Parents should also be closer to their wards and children and counsel them on types of peers to relate with. They should also be closer to their children and their peers in order to assess the relationship between their children and their peers.

Teachers should always encourage students and let them know that anybody can know mathematics and that it is not meant for special people. All students need is a positive mindset and they must always debunk fears. Teaching of self-esteem should be taught in the classroom through allotment of say 15minutes in the class time-table. Conferences and seminars could be organized for students in which the nitty-gritty of self-esteem are exposed and students' self-esteem are thus boosted.

Parents should support their children and wards by talking to them on types of friends they need to keep. School administrators should employ the services of specialists to visit the school once in a while in order 10 organize workshop, symposium and seminar on having positive peer influence, self-awareness and enhanced self-esteem which will allow for better learning outcomes in Mathematics among the high ability learners.

References

Astin, A. (1991). *Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education*. New York: Macmillan.

Ball, D. L. (1990). The mathematics, understanding that prospective teachers bring to teacher education. *The Elementary School Journal,* **9**(4): 449-466.

Berger, J. (2000). Organisational behavior at colleges and student outcomes: A new perspective on college impact. *Review of Higher Education*, **23**: 177-198.

Boaler, J. (2009). *The Elephant in the classroom: Helping children learn and love Mathematics* London: Souvenir Press Ltd.

Brown, C. and Borko, H. (1992). Becoming a mathematics teacher. In D. A. Grouws (Ed.), *Handbook of research on mathematics leaching and learning* (pp.209-239). New York: Macmillan.

Bryne, B. M. (1984). The general/academic self-concept nomological network: A review of construct validation research. *Review of Educational Research,* **54**: 427-456.

Burke, M. A. and Sass, T. A. (2008). Classroom peer effects and student achievement national centre for analysis of longitudinal data in educational research, working paper 8, University of Texas, USA.

Chang, M. (1999). Does racial diversity matter? The educational impact of a racially diverse undergraduate population. *Journal of College Students Development.* **40**: 377-395.

Cokley, K. (2004). An investigation of academic self-concept and its relationship to academic achievement in African-American college students. *Journal of Black Psychology*, **26** (2): 148-164.

Dambudzo, I. I. (2009). The Relationship between learner self-concept and achievement in secondary schools in Zimbabwe. Unpublished D.Ed, Pretoria: Unisa. Available from: http://hdl.handle.net/10500/2393.

Delacourt, M. A. B. (1997). Self-perceptions of low-and high-ability adolescents in a Caribbean context. *Journal for the Education of the Gifted*, **20** (3): 134-144.

Diamond, R. M. (1998). Designing and assessing courses and curricula: A practical guide. San.

Esan, A. O. (1999). Effect of cooperative and Individualistic Problem-solving strategies on students' learning outcome in secondary school mathematics. A Ph.D. thesis, University of lbadan.

Grayson, J. 1999. The impact of university experiences on self-assessed skills. *Journal of College Student Development*, **40**: 687-699.

Gurin, P.; Dey, F.; Hurtado, S. and Gurin, G. (2002). Diversity and higher education: Theory and impact on student outcomes. *Harvard Educational Review,* **72**: 330-360.

Hamachek, D. (1995). Self-concept and School Achievement: Interaction dynamics and a tool for assessing the self-concept component. *Journal of Counselling and Development,* **73** (4): 419-25.

Johnson, D.; Johnson, R. and Smith, K. (1998). Cooperative learning returns to college: What evidence is there that it works? *Change.* **30**: 26-35.

Karabenieh, S. and Collins-Eaglin, J. (1996). Relation of perceived instructional goals and incentives to college students use of learning strategies. Paper presented at the meeting o the American Educational Research Association, New York.

Kuli, G.; Pace, C. and Vespa, N. (1997). The development of process indicators to estimate student gains associated with good practices in undergraduate education. *Research in Higher Education.* Pittsburgh. P.A.

Lent, R. W.; Brown, S. D. and Gore, P. A. (1997). Discriminant and predictive validity of academic self-concept, academic self-efficacy and mathematics specific self-efficacy. *Journal of Counseling Psychology,* **44**: 307-315.

Marsh, H. W. (1990). Causal ordering of academic self-concept and academic achievement: A multiwave, longitudinal path analysis. *Journal of Educational Psychology*, **82** (4): 646-656.

Marsh. H. W. and O'Mara, A. (2008). Reciprocal effects between academic self-concept, self-esteem, achievement, and attainment over seven adolescent years: Unidimensional and multidimensional perspectives of self-concept. *Personality and Social Psychology Bulletin,* **5** (34): 32-45.

Martin, I. (2000). The relationship of college experiences to psychosocial outcomes in students. *Journal of College Student Development*, **41**: 292-301.

McCoach, D. B. and Siegle, D. (2003). The structure and function of academic self-concept in gifted and general education students. *Roeper Review*, **25** (2): 61-66.

Palinscar, A.; Stevens, D. and Gavelek, J. (1989). Collaborating with teachers in the interest of student collaboration. *International Journal of Educational Research*, **13**: 41-53.

Pascarella, E.; Edison, M.; Whitt, E.; Nora, A.; Hagedom, L. and Terenzini, P. (1996). Cognitive effects of Greek affiliation, during the first year of college, *NASPA Journal,* **33**: 242-259.

Quin, Z.; Johnson, D. and Johnson, R. (1995). Cooperative versus competitive efforts and problem solving. *Review of Educational Research*, **65**: 129-143.

Redenbach, S. (1991). Self-esteem, the necessary ingredient for success. Esteem Seminar Programs and Publications, USA.

Rubbi, C. M.; Townsend, M. A. R. and Moore, D. W. (2004). Motivational and academic effects of cultural experiences for indigenous minority students in New Zealand. *Educational Psychological*, **24**: 143-160.

Sikhwari, T. D. (2004). The relationship between affective factors and the academic achievement of students at   the University of Venda, Unpublished M.Ed. dissertation. Pretoria: Unisa. Available from http//hdl.handle.net/l0500/1290. [Accessed: 3 May 2010]

Springer, L.; Stanne, M. and Donovan, S. (1999). Effects of small-group learning on undergraduates in science, mathematics, engineering and technology. A meta-analysis *Review of Educational Research*, 69: 21-51.

Sullivan, P.; Tobias and McDonough, A. (2006). Perhaps the decision of some students not to engage in learning mathematics in schools is deliberate. *Educational Studies in Mathematics*, **62** (1): 81-99.

Terenzini, P.; Springer, L.; Pascarella, E. & Nora, A. (1995). Academic and out-of-class influences affecting the development of students intellectual orientations. *Review of Higher Education,* **19**: 23-44.

Van der, L. J. M. (1991). Die inloed van kognitiewa en affekliewe toetredingseienskappe van leerlinge op hulle prestasies in die skool milieu. *Education Bulletin*, **35**: 74-81.

Vigdor, J. and Nechyba, T. (2004). Peer effects in elementary school learning from apparent random assignment. Unpublished manuscript.

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Wiggins, J. D.; Schatz, E. L. and West, R. W. (1994). The relationship of self-esteem to grades, achievement scores, and other factors critical to school success. *The School Counsellor,* **4**: 130-149.