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Influence of Extrinsic and Intrinsic Motivation on Pupils Academic Performance in Mathematics

Onyekwere Nonye Adamma
Department of Educational Psychology, Alvan Ikoku University of Education,
Owerri Imo State, Nigeria, *nonyeonyekere2013@gmail.com*

Okoro Pauline Ekwutosim
Department of Educational Psychology, Federal College of Education Eha-Amufu, Enugu State, Nigeria,
okoropauline1@gmail.com

Eugene Chukwuemeka Unamba *
Department of Primary Education Studies, Alvan Ikoku University of Education, Owerri Imo State, Nigeria,
*corresponding author, *unambaec@yahoo.com*

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ABSTRACT

The study investigated influence of extrinsic and intrinsic motivation on pupils' academic performance in mathematics. Based on the purpose of the study two hypotheses guided the study. Descriptive research design was adopted for the study. The population of the study consisted of all 3056 primary six pupils in Owerri Education zone of Imo State. A Sample size of 200 primary six pupils was selected for the study. Simple random sampling technique was used in selecting four schools out of the nine schools. The instruments used for data collection was Academic Motivation Scale and Mathematics achievement Test. The validity was determined by two experts in measurement and evaluation and one expert in mathematics education. The instruments have reliability co-efficient of 0.89 and 0.92 determined using tests-retest method. Data generated was analyzed with the aid SPSS version. Inferential statistics of T-test and Pearson product momement correlation were used to test the hypotheses at 0.05 level of significance. The study concludes that motivation improves academic performance of the pupils and there is gender difference in motivation type and academic performance.

INTRODUCTION

Globally, there has been an increasing concern in the education sector on how to ensure that students learn optimally at school and achieve academic excellence in their academic pursuit. In Nigeria, there has been a nationwide cry on the fallen standards of education and poor performance of pupils in mathematics. Various factors have been identified for poor academic achievement among students and these include poor study habit, laziness, ineffective classroom instructions, and inadequate provision of instructional material and lack of motivation (Akpan, 2000).

Motivating students to learn in school is a topic of great concern for educationist today and motivating students so that they can succeed in school is one of the greatest challenges of this century (Awan, Noureen & Nas, 2011). Getting students to learn and sustaining their interest in what they are learning therefore should be the sole objective of teachers in the classroom. Motivation is a significantly important factor for academic learning and achievement (Elliot & Dweck, 2005). Moula (2010) observes that motivation is one of the factors that contribute to academic success; that parents and educators should strive to understand the importance of promoting and encouraging academic motivation early in life. Feldman (2005) refers to motivation as factors that direct and energize the behaviour of humans and other organisms, while Wood (2002) sees motivation as a process that initiates, directs, and sustains behaviours to satisfy physiological or psychological needs. Motivation is also seen as what gets one going, keeps one going, and determines where one is going (Slarin, 2006). According to Self-determination theory (Ryan & Deci, 2000) there are two types of motivation i.e. extrinsic motivation and intrinsic motivation.

Intrinsic motivation is an inner force that motivates students to engage in academic activities, because they are interested in learning and they enjoy the learning process as well (Schiefele, 1991). Harter (1978) explained that intrinsic motivation is the true drive in human nature, which drives individuals to search for and to face new challenges. Their abilities are put to the test and they are eager to learn even when there are no external rewards to be won. Students with learning goals of seeking understanding for mastery of science content and skills are said to be intrinsically motivated (Cavallo, Rozman, Blinkenstaff, & Walker, 2003).

Csiksezentmihalyi and Nakamura (1989) stated that intrinsically motivated individuals possess the following characteristics: They engage in both mental and physical activities holistically, they remain highly focused throughout these activities with clearly defined goals, they are self-critical, they self-reflect on their own actions realistically, and they are usually relaxed and not afraid to fail during learning. A research study done by Stipek (1988) concluded that intrinsically motivated students learn independently and always choose to do challenging tasks. They persevere to complete the tasks they have undertaken. They integrate the knowledge acquired in school with their experiences gained from outside school. They often ask questions to broaden their knowledge and learn regardless of any external push factors or help from teachers, and they take pride in their work and express positive emotions during the learning process. Highly intrinsically motivated students are able to learn new concepts successfully and show better understanding of the subject matter (Stipek, 1988).Unlike intrinsic motivation; extrinsic motivation drives students to engage in academic tasks for external reasons.

Extrinsic motivators include parental expectations, expectations of other trusted role models, earning potential to enroll in a course later and good grades. According to Benabou and Tirole (2003), extrinsic motivation promotes effort and performance with rewards serving as positive reinforces for the desired behavior. Extrinsic motivation typically produces immediate results and requires less effort in comparison to intrinsic motivation (Ryan & Deci, 2000). The down side of it is that extrinsic motivators can often distract students from true independent learning. Another problem with extrinsic motivators is that they typically do not work over the long term. Once, the rewards are removed, students lose their motivation (DeLong & Winter, 2002). As extrinsically motivated, students tend to focus on earning higher grades and obtaining rewards, Biehler and Snowman (1990) believed that extrinsic motivational factors can diminish students' intrinsic motivation. Such observation has also been reported by Bain (2004) who

concluded that extrinsic rewards have negative impacts on intrinsic motivation. Gender differences in the motivation to learn science has attracted much attention during the last decade (Eccles & Blumenfield, 1985; Greene & DeBacker, 2004; Greenfield, 1998; Morrell & Lederman, 1998).

Evidence accumulated thus far on gender differences in motivation is inconclusive. While many studies (Anderman & Anderman, 1999; Ayub, 2010; Lai, Chan, & Wong, 2006; Meece & Holt, 1993) reported that there are gender differences in extrinsic and intrinsic motivation between male and female students, studies by Rusillo and Arias (2004) and Glynn et al. (2009) reported otherwise. Whereas on academic performance Schiefele, Krapp, and Winteler (1992) strongly suggests that, "male students' performance accords their interest level more than is the case for female students". In particular, "female students' academic performance is less associated with their interests than male students' academic performance" (Schiefele, Krapp, & Winteler, 1992).

Numerous studies suggested that from childhood through adolescence, across varied populations, those with higher academic intrinsic motivation have been found to be more competent in school, generally evidencing significantly greater academic achievement, more positive perceptions of their academic competency, lower academic anxiety, and less extrinsic motivation (Gottfried, A.W., Gottfried, Cook, & Morris, 2005). Johnson (1996), Broussard and Garrison (2004), Skaalvik and Skaalvik (2006), and Sandra (2002) found significant relationship between academic performance and motivation. Similarly, Johnson (1996) found that academic achievement is highly correlated with student's motivation. However, Bank and Finlapson (1980) found that successful students were found to have significantly higher motivation for achievement than unsuccessful students did.

In the light of above studies, the main objective of the present study was to examine the relationship between extrinsic and intrinsic motivation on academic performance of pupils in mathematics. Furthermore, this study explores gender difference on the variable of extrinsic motivations, and intrinsic motivation.

Purpose of the Study

The main purpose of the study was to determine the relationship between extrinsic and intrinsic motivation on academic performance of pupils in mathematics. Specifically it seeks to examine, (1) Relationship between extrinsic motivation on academic performance of pupils in mathematics; (2) Relationship between intrinsic motivation on academic performance of pupils in mathematics; and (3) Whether gender difference will exist on extrinsic and intrinsic motivation.

Hypotheses

Ho_1; What is the relationship between extrinsic and intrinsic motivation on academic performance of pupils in mathematics.
Ho_2; What is the relationship between extrinsic and intrinsic motivation on academic performance of pupils in mathematics
Ho_3; There is no significant difference between male and female pupils scores on extrinsic and intrinsic motivation.

METHOD

The study adopted a descriptive survey design in carrying out the study on influence of extrinsic and intrinsic motivation on pupils' academic achievement in mathematics. The population comprised of all 3,056 primary six pupils in Owerri Municipal Council Area of Imo-State. A sample size of 200 primary six pupils was selected for the study using simple random sampling technique in selecting two schools. In the selected schools purposive sampling technique was used to select classes that have more than three streams. The age range is between 18-21 years. The instruments used for data collection were *Academic Motivation Scale (AMS).* The AMS consists of 28 items and the second was Achievement Test on Mathematics (MAT). It consists of 20 multiple choice test items with four options (A- D). The face and content validity of the instrument was done by experts in mathematics education and one expert in measurement and evaluation. The reliability of the instrument was established using test re test method which yields reliability co-efficient of 0.89 and 0.92 respectively.

The questionnaire was administered to respondents and they completed the questionnaire .After collection of data of the questionnaire. Academic Motivation Scale (Vallerand, 1992) was scored according to the instructions given in the manual. Pearson Product Moment Correlation Coefficient and t-test were applied through Statistical Package for Social Sciences, 13 versions was used to determine the relationship.

RESULTS AND DISCUSSION

H_{O1}; What is the relationship between extrinsic and intrinsic motivation on academic performance of pupils in mathematics.
H_{O2}; There is no significant difference between male and female pupils scores on extrinsic and intrinsic motivation.

Table 1. Correlation between Motivation and Academic Performance

	Grade Point	Significance
Academic Motivation	.563**	.000

Note. Shows correlation between academic motivation and academic performance significant atp=.000**

Table 2 **t- test Gender Difference on Academic Motivation and Academic Performance**

Variable	Gender	N	Mean	Std Dev	t	df	Sig
Academic Motivation	**Female**	200	131.13	6.386	126.91 7.379	4.324	198 .000
	Male	200					

Note. Verifies Significant difference was found between male and female (t= 4.324, df =198, p<.05) on the variable of academic motivation and academic performance.

The result of testing the first hypothesis, which evaluates the correlation between motivation and academic performance, is found to be significant (r =.563; n=200). These

findings are consistent with previous literature. For example, Johnson (1996), Broussard and Garrison (2004), Skaalvik and Skaalvik (2006), and Sandra (2002) found significant relationship between academic performance and motivation. Similarly, Johnson (1996) found that academic achievement is highly correlated with student's motivation. However, Bank and Finlapson (1980) found that successful students were found to have significantly higher motivation for achievement than unsuccessful students did.

Motivation types also effects on the performance of the students. Intrinsic and extrinsic motivation affects on the achievements and goals of the students performance. According to Husman and Lens (1999), highly intrinsically motivated students can simultaneously be extrinsic in terms of future goal orientations. Furthermore, students who are intrinsically motivated persist longer, conquer more challenges, and demonstrate accomplishments in their academic endeavors than those who are extrinsically motivated (Pintrich & Garcia, 1991). Extrinsically motivated students tend to focus on earning higher grades, obtaining rewards and acceptance from peers. Researchers, for example, Biehler & Snowman, (1990) believe that extrinsic motivational factors diminish students' intrinsic motivation. Students' extrinsic motivational factors combined with positive future goals can actually facilitate their present value and intrinsic motivation (Van Calster, Lens, & Nuttin, 1987).

According to the results, there is gender difference on the variable of extrinsic and intrinsic motivation on academic performance *($t=4.324$, $p < .05$)*. These findings which are consistent with Chee, Pino and Smith (2005) indicated that female college students are more likely to have higher academic ethics than male students, which are characterized by higher academic attainment. Furthermore, findings of the study suggests that females were intrinsically motivated than males. In contrast, males were more extrinsically motivated than females. The possible explanations of these findings are that males are expected to be the main breadwinner of the family in our society. For females, academic performance and motivation is based on self-exploration and internal satisfaction. This is the main reason that males are extrinsically motivated as compare to females.

CONCLUSION

To conclude, findings of the study illustrates that motivation improves academic performance of the students. These findings suggests that when teachers are caring and supportive and emphasize the teaching learning process over the performance outcomes, and when they give feedback, children tend to be motivated to achieve and to expect success (Daniels, Kalkman, & McCombs, 2001). In addition, there is gender difference in motivation type and academic performance.

The findings suggest that teachers should explore and use this strategy to make students more determined and efficacious to learn mathematics. Teachers should also attempt to link mathematics concepts to pupils' experiences, so that they can realize the relevance of what they learn to their everyday lives, thus making learning more meaningful and relevant.

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Pengaruh Motivasi Ekstrinsik dan Intrinsik Terhadap Performa Akademik Matematika Siswa

Onyekwere Nonye Adamma
Program Studi Psikologi Pendidikan, Universitas Pendidikan Alvan Ikoku,
Owerri Imo State, Nigeria, *nonyeonyekere2013@gmail.com*

Okoro Pauline Ekwutosim
Program Studi Psikologi Pendidikan, Sekolah Tinggi Federal Eha-Amufu, Enugu State, Nigeria,
okoropauline1@gmail.com

Eugene Chukwuemeka Unamba*
Program Studi Pendidikan Dasar, Universitas Pendidikan Alvan Ikoku, Owerri Imo State, Nigeria,
*penulis korespondensi, *unambaec@yahoo.com*

ABSTRAK

Penelitian ini mengkaji pengaruh motivasi ekstrinsik dan intrinsik pada performa akademik matematika siswa. Penelitian ini berdasarkan dua hipotesis penelitian. Penelitian ini menggunakan desain penelitian deskriptif. Populasi penelitian terdiri dari 3056 siswa sekolah dasar di wilayah Owerri, Imo State. Ukuran Sampel dari 200 siswa utama enam siswa dipilih untuk penelitian. Teknik sampling acak sederhana digunakan dalam memilih empat sekolah dari sembilan sekolah. Instrumen yang digunakan untuk pengumpulan data adalah Skala Motivasi Akademik dan Tes Prestasi Matematika. Validitas ditentukan oleh dua ahli dalam pengukuran dan evaluasi dan satu ahli dalam pendidikan matematika. Instrumen memiliki koefisien reabilitas 0,89 dan 0,92 ditentukan menggunakan metode test-retest. Data yang dihasilkan dianalisis dengan bantuan versi SPSS. Statistik inferensial dari t-test dan korelasi product Moment Person Pearson digunakan untuk menguji hipotesis pada tingkat signifikansi 0,05. Studi ini menyimpulkan bahwa motivasi meningkatkan kinerja akademik siswa dan ada perbedaan jenis kelamin dalam jenis motivasi dan kinerja akademik.

Kata kunci: Motivasi ekstrinsik dan intrinsik, performa akademik, matematika

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