improvisation and so will cause them to be able to create and improve on their own ideas, so, improvisation of instructional materials should be done as often as possible.

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LOCUS OF CONTROL AS DETERMINANT OF MATHEMATICS LEARNING OUTCOME OF POLYTECHNIC STUDENTS IN SOUTHWEST, NIGERIA

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Abstract

In the past, students' success in Mathematics has been considered a major responsibility of teachers with little or no emphasis on students' personal interest and commitment to hard work in the pursuit of academic success particularly tertiary institutions. Thus, this paper focuses on the influence of locus of control on Mathematics learning outcome of Polytechnic Students in Southwest, Nigeria. This study adopted a descriptive design of the survey type with the study sample of 1500 students, consisting of National Diploma 1(ND1) Mathematics and Mathematics related students in the Faculty of Science selected from five Polytechnics in South-west, Nigeria. The participating students were tested using Mathematics Performance Test (MPT). Also the

Students' Locus of Control Questionnaire (SLCQ) and Students Attitudinal Questionnaire towards Mathematics (SAQTM) were administered thereafter on the students in the selected schools used for the study. Their responses were collated, marked and recorded. The data collected from the MPT, SQLV and SAQTM were used for analysis. Inferential statistics of ANOVA was used to test the hypotheses at 0.05 level of significance. The study found that locus of control is an inherent determinant of students' academic performance, proving to coordinate and direct students' attiude towards hardwork and better performance in Mathematics. It is therefore recommended that students should be encouraged to strive for better performance through personal effort and commitment to hard work in order to improve their knowledge in Mathematics and apply what they learn toward positive outcomes for the future. To achieve this, students must realize that hard work is key to success and one's attitude determines one's success since it is found positive and significantly related.

Introduction

Mathematics is one of the core subjects that one must creditably pass at secondary school level before gaining admission into tertiary institution for further study in any field of learning. Thus, Vitasaria, Herawanb, Wahab, Othmand and Sinnaduraie (2010) view Mathematics as an integral part of life and that anyone who is a participating member of society must know basic Mathematics. Students' learning outcome in terms of attitude and achievement in Mathematics however, appears to be determined by the determination they have to control all the activities involved in Mathematics education. Locus of control which is the extent to which students can control the activities in Mathematics goes a long way in determining their achievement and building of their self-confidence. By observation, it seems students' self determination to take responsibility for the outcome of their learning has a far reaching influence on both their performance in and attitude to school subject like Mathematics. In enssence, Grantz, (2006) opined that one factor that determines being successful in school and that contributes to students' learning outcome which has been overlooked is locus of control. A locus of control according to Sabiha and Indranee (2017) refers to the extent to which a person believes they can influence or control events in their lives and also describes what a person believes about the causes of events in their life. Also Igbeneghua and Popoola, (2011) view locus of control as a personality variable which refers to individual's perception of the main causes of events in life. The authors concluded that it is a personality trait measured in terms of an internal or external locus. Thus, locus of control can be viewed as the generalized expectation regarding where control over events resides in an individual. Locus of control according to Rotter cited in Sabiha and Indranee (2017) can manifest intrinsically (internal) or extrinsically (external).

Locus of control concept has been gaining importance in diverse disciplines in modern world starting from education, sports, organizations, religion etc. Some studies linking LOC with health have noted that internal health locus of control is linked with increased exercise, breast self-examination, weight control, non-alcoholism, smoking cessation and preventative health behaviors but they also cite several studies that have found only a weak or no relationship. For instance, Maltby, Day and Macaskill cited by

Lather, Jain, and Shukla (2014) cited studies which continue linking internal locus of control with improved physical health, mental health and quality of life in people undergoing conditions as diverse as HIV, migraines, diabetes, kidney disease and epilepsy. Apart from this, locus of control has been cited to play an important role in religious orientation. Earlier Whyte correlated locus of control with academic success of students enrolled in higher education courses (Lather, Jain, and Shukla, 2014).

Learning outcome can be regarded as a platform where researcher differentiates between students academic achievement and attitude. Sabiha and Indranee (2017) viewed academic achievement as significant factor to gauge a student's performance in an educational setting. The authors further stressed that the prediction of academic achievement is germane to scientific and applicability aspect and that achievement of high grades in examinations constitutes one of the significant determinants of acceptability and popularity in the classroom. Locus of control which refers to the extent to which individuals believe that they can control events that affect them has been found to be a crucial factor in determining students' attitude towards and their performance in Mathematics. According to Opara, Magnus-Arewa and Nwaukwu (2017), attitude towards Mathematics plays a crucial role in the teaching and learning processes of Mathematics and affects students' achievement in Mathematics. Whereas, students' attitudes towards Mathematics which affect their performance seems be a function either internal or external locus of control.

Researches have shown link between locus of control and learning outcome in both science and social science related discipline such as Engineering and Economics. Akinsola (2008) for instance, found in his study, a correlation between locus of control and problem solving ability/performance of learners in Mathematics. Also, Lather, Jain and Shukla (2014) found in their studies that highly creative students are significantly higher on internal locus of control and the students who were low on creativity are significantly higher on external locus of control. With respect to attitude, Gulveren, (2008) states that the individuals, who have the internal locus of control think that they have a big role on affecting the events which influence their lives; they assess themselves as possessing the power for the attitude they want to display by having the positive ego concept and they believe they can direct their lives in whatever way they desire. Thus, Atibuni, Ssenyonga, Olema and Kemeza (2017) found that locus of control significantly predicted academic attitudes among secondary school science teacher trainees at a public university in Uganda. From the foregoing, it is expected that student with high locus of control would most likely develop positive attitude towards serious academic work and perform better in Mathematics activities. It is against this backdrop that this paper focuses on locus of control as determinant of Mathematics learning outcome of polytechnic students' in southwest, Nigeria.

Research Hypotheses

The following resaearch hypotheses were tested for the study.

1. Locus of control will not significantly influence students' attitude towards Mathematics.

2. Locus of control will not significantly influence students' performance in Mathematics.

Methodology

This study adopted a descriptive design of the survey type with the study sample of 1500 students, consisting of National Diploma 1(ND1) Mathematics and Mathematics related students in the Faculty of Science selected from five Polytechnics in South-west, Nigeria. These principal instruments were used for the study: Mathematics Performance Test (MPT), Students Locus of Control Questionnaire (SLCQ) and Students' Attitudinal Questionnaire Towards Mathematics (SAQTM). The research instruments were validated using face, content and construct validities which were ensured by two experts in the field of Mathematics education in the Faculty of Education, Ekiti State University, Ado-Ekiti (EKSU) and two other lecturers in the Polytechnic who are currently teaching Mathematics. The reliability of MPT, SLCQ and SAQTM, were determined by using test re-test method of testing reliability. Each was administered on 25 students outside the sampled coverage. The reliability coefficients were 0.91, 0.89 and 0.90 respectively and considered relatively high enough to be used for the study. The survey were conducted by personal visit to all polytechnics involved in the research seeking the permission of the Heads of Departments (HODs) to use their students. This was done on one day arrangement for each school selected. The participating students were tested using Mathematics Performance Test (MPT). Also the Students Locus of Control Questionnaire (SLCQ) and Students Attitudinal Questionnaire towards Mathematics (SAQTM) were administered thereafter on the students in the selected schools used for the study. Their responses were collated, marked and recorded. The data collected from the MPT, SQLV and SAQTM were used for analysis. Inferential statistics of ANOVA was used to test the hypothees at 0.05 level of significance.

Results

Hypothesis 1: Locus of control will not significantly influence students' attitude towards Mathematics.

Table 1: ANOVA of the Influence of Locus of Control on Students' Attitude towards Mathematics

	Sum of Squares	Df	Mean Square	F	p.
Between Groups	1002.531	11	91.139		
Within Groups	75753.957	1488	50.910	1.790	.051
Total	76756.487	1499			

*p=0.05

Table 1 reveals that locus of control had significant influence on students' attitude towards Mathematics (F=1.790, p=0.05). The null hypothesis is rejected. This implies that students with high locus of control will significantly have positive attitude towards Mathematics.

Hypothesis 2: Locus of control will not significantly influence students' performance in Mathematics.

Table 2: ANOVA Analysis of the Influence of Locus of Control on Students' Performance in Mathematics

	Sum of Squares	df	Mean Square	F	P.

Between Groups	5668.848	11	515.350	1.792	.050
Within Groups	427858.022	1488	287.539		
Total	433526.869	1499			

*p<0.05

Table 2 depicts that locus of control significantly influenced students' performance in Mathematics (F=1.792, p=0.05). The null hypothesis is rejected. This implies that students with high locus of control will significantly secure better performance in Mathematics.

Discusion

The findings from the study revealed that locus of control will significantly influence students' attitude towards Mathematics. This implies that locus of control contributes to positive attitude of students towards Mathematics. In agreement with this findings, Gulveren, (2008) states that the individuals, who have the internal locus of control think that they have a big role on affecting the events which influence their lives; they assess themselves as possessing the power for the attitude they want to display by having the positive ego concept and they believe they can direct their lives in whatever way they desire.

It was also discovered from the study that locus of control significantly has influence on students' performance in Mathematics. This implies that students self determination to take responsibility for the outcome of their learning has a far reaching influence on their performance in Mathematics. In consonance with the outcome of this study, Grantz, (2006) asserts that one factor that determines being successful in school and that contributes to academic achievement which has been overlooked is locus of control. Thus, confirming the study of Akinsola, (2008) who in a study found correlation between locus of control and problem solving ability/performance of learners in Mathematics.

Conclusion and Recommendations

Based on the findings from the study, it can be concluded that locus of control is one of the inherent determinant of students' academic performance, proving to coordinate and direct students' attiude towards hardwork and better performance in Mathematics. It is therefore recommended that:

1. Students should be encouraged to strive for better performance through personal effort and commitment to hard work in order to improve their knowledge in Mathematics and apply what they learn toward positive outcomes for the future. To achieve this, students must realize that hard work is key to success and one's attitude determines one's success since it is found positive and significantly related.
2. Since locus of control is found postive and significantly connected with students' performance and attitude towards Mathematics, teachers and counsellors should assist the students in developing their locus of control in order to improve their academic performance and to minimize the level of failure in both terminal and public examination.

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