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GOALORIENTATION AS APREDICTOR OF ACADEMIC ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS IN MATHEMATICS IN ANAMBRA STATE

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ABSTRACT

The study investigated goal orientation as a predictor of academic achievement of secondary school students in Mathematics in Anambra state. Three research questions and one null hypothesis guided the study. The study adopted a correlational research design. The population of the study consisted of 19,576 SS2 students in the 265 public secondary schools in the six Education Zones in the State as recorded by the Post Primary Schools Service Commission (PPSSC), Awka. The sample of this study comprised 1,958 students randomly selected from the population. This study adopted stratified and simple random sampling techniques for the study. The instruments for data collection were the adopted Goal Orientation Questionnaire (GOQ), and students' scores in Mathematics which was used to determine academic achievement. The GOQ was analyzed using Cronbach Alpha statistics to verify the reliability of the instrument and the average reliability coefficient showed a value of 0.89 which is considered adequate for the study. Regression analysis was used in the answering the research questions and testing the hypothesis. The findings of the study revealed among other that secondary school students' goal orientation towards Mathematics is a significant predictor of their academic achievement in the subject. Based on the findings, it was recommended among others, that Stakeholders in education should not label students as poor students but should work towards a balance and wholeness of knowledge acquisition by shaping attitudes and orientation of the students towards the subject.

Keywords: Education, Goal Orientation, Academic achievement, Mathematics

Introduction

Education has been adopted as a means of bringing about growth and advancement in human beings and the society. Omemu (2018) re-affirmed this position that education is an instrument for individual and societal development. For effective and efficient provision of education, the Nigerian educational system was categorized into pre-primary schools, primary schools, secondary schools and tertiary education. Secondary school

education is a form of education students attain after primary education and before tertiary education. The goal of secondary school education is to prepare students for useful living within the society and for higher education (Federal Republic of Nigeria, 2013). In secondary schools in Nigeria, students are exposed to a number of subjects in science and arts through which they acquire the requisite knowledge and skills for the realization of the goals of education. However, irrespective of students' desired course of study in the tertiary institutions, it is expected that they must offer and pass Mathematics (Abidde, 2015). It becomes necessary that students should perform in this subject.

In all educational institutions, including secondary schools, the whole teaching and learning process is mainly directed towards academic achievement. This was highlighted by Akudo (2020) who opined that the major goal of the school is to work towards attainment of academic excellence by students. According to Akudo, the school may have other peripheral objective however emphasis is always placed on the achievement of sound scholarship. This is often determined by the academic achievement of students in the subjects they offer.

Academic achievement has been conceptualized differently by scholars. Anene (2023) defined it as the ability to study and remember facts and be able to communicate knowledge verbally or otherwise. Oparaji and Ugwu (2019) extended this understanding of academic achievement to include how it can be measured. According to them, academic achievement is a knowledge attaining ability or degree of competence in school tasks usually measured by standardized tests and expressed in a grade or units based on pupils' performance. For Okorocha and Okeke (2018), academic achievement can be seen as the number of subjects failed or passed at the end of the term. Students' gaining the requisite academic achievement especially in their core subjects impacts positively different aspects of their life and the life of the school. According to Anene (2023), students' academic achievement is considered as a key criterion to judge one's total potentialities and capacities which is used to pass judgment on quality of education offered by schools. It is used to determine excellence in teachers and teaching, and also strongly determines one's success as well as providing access to securing a stable job later in life (Akudo, 2020). So, in this context, academic achievement can be conceptualized as the measurement of students' success across the subjects taught, demonstrated by the score in the subject area examined. These potentials can be harnessed if students attain the required achievement in their core subjects such as Mathematics.

Despite the high status of Mathematics in secondary schools academic curriculum, the academic achievement of secondary school students in Mathematics in Senior Secondary School Certificate of Education (SSCE) examination in Nigeria in recent years has not been encouraging. Information from West African Examination Council Chief Examiner's Report (2023)

showed that students' achievements especially in the this core subject in Nigeria are low. Statistics on the percentage of students that obtained credit in five subjects including Mathematics validates this assertion. According to the statistics, in the past six years (2015-2020), the percentages of students that obtained credit in five subject areas including Mathematics in public secondary schools in Nigeria were inconsistent (Osuo-Siseken and Uboh, 2020). Although, the trend shows some improvement, there are fluctuations and students' achievement in this subject is still below expectation both at national and state levels. Anambra State, for example, is not at par with her counterpart states such as Abia and Imo. With 70.0% and 73.0% of students in Anambra State obtaining 5 credits including Mathematics in 2019 and 2020 fell below 87.2 and 82.6% obtained in Abia and Imo states respectively in Mathematics respectively. However, it recorded improvement in 2021 WAEC examination with 91.2% of her students obtaining 5 credits in five subjects including Mathematics compared to Abia's 79.5% and Imo's 81.7%, and states in the south-east (National Bureau of Statistics, 2022). For sustained improvement in students' academic achievement in Mathematics in Anambra State, there is need to ascertain the factors that contribute to students' academic achievement in order to provide required interventions.

There are multiple factors associated with students' academic achievement such as school social and physical environment, teacher, management, family and student-related factors (Asaoah, Sundeme, Quainoo, Adom-Fynn Yalley and Afrane, 2020; Ozcan, 2021). Of these factors, the student-related factors appears to have greatest impact generally and specifically on achievement in Mathematics (Tomul, Onder and Taslidere, 2021). One of the student-related factors that have been linked to students' academic achievement was goal orientation.

Goal orientation is an individual disposition towards developing or validating one's ability in achievement settings (Neroni, Gijselaers, Kirschner and de Groot, 2018). It was simply conceptualized as the reason or purpose why a person is involved in tasks. Neroni et al (2018) have described two major goal orientations namely, mastery goal orientation and performance goal orientation. Students who have mastery goal orientation engage in academic tasks because they desire to learn and develop competence by using repetitive learning process while those that have performance goal orientation get involved in academic task because they want to exhibit and compare their ability to their classmates (Neroni, Gijselaers, Kirschner and de Groot, 2018).

However, there are different models of goal orientations. Scholars have revealed three different models of goal orientation (Neroni, Meijs, Leontjevas, Kirschner and Groot, 2018). The first is the two-factor goal orientations comprising learning goal and performance goal orientations; the three-factor goal orientation made up of learning goals, performance approach and performance avoidance; and the four-factor

goal orientation derived from the two major orientations, namely, mastery approach and mastery avoidance, and performance approach and performance avoidance. Each goal a student adopts has consequences for learning approach and success in academic engagements in school, and ultimately the students' academic achievement is affected by the goals orientations. Mastery orientation has been linked to positive academic outcomes, while performance goal was negatively associated with academic outcomes (Neroni, Meijs, Leontjevas, Kirschner and Groot, 2018). Furthermore, learning (Mastery) goal orientation positively correlated with academic achievement (Sancheze-Cardona, Ortega-Maldonado and Salanova, 2020). On the other hand, there were contradictory findings that performance goal orientation had positive relationship with academic achievement (Mocklingghoff, Rapoport, Heckel, Messerschmidt-Grandi and Ringeisen, 2023). They suggested that goal orientations play important role in predicting secondary school students' academic achievement, however, the direction of the prediction is not yet resolved. In this context, goal orientation is the reason or purpose that drives one into engaging in a task. Media reports abound that the achievement of students in this core subject is not encouraging. In the same vein, the chief examiners' reports on the subject in the external examinations like the Basic Education Certificate Examination (BECE) and the Senior School Certificate Examinations (SSCE) has also continually raised a great hue and cry about the abysmal under performance of students in Mathematics (BECE, 2020-2022), (WAEC, 2019, 2021 and 2022). On a more worrisome note, the researcher from experience as a counsellor has continually observed the pitiable under achievement of students in the subjects. In view of the need to improve and sustain students' academic achievement in this core subject area (Mathematics) in Anambra state, and the potential contribution of students' goal orientation to students' academic achievement, there is the need to examine the relationship between goal orientation and academic achievement among secondary school students in Mathematics in Anambra State.

Statement of the Problem

In the secondary school system, students are expected to acquire knowledge and skills. Students are expected to have credit in Mathematics to enable them to enroll in university education. The importance of Mathematics in a student's academic pursuits cannot be over emphasized. Formal education in Nigeria today is hinged on Mathematics to the extent that without this core subject, there is the possibility that there may not be anything more than the elementary formal education in Nigeria. Despite the importance of Mathematics, the achievement of students in the subject over the years has been on a downward trend. However, despite teachers' efforts in improving the academic achievement of students in this core subject, the trend has persisted. The achievement rate in this subject as consistently recorded

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in major examinations like West African Examination Council (WAEC) and National Examination Council (NECO) is still worrisome.

In an attempt to remedy this ugly trend, researchers have suggested some variables that could improve students' academic achievement in Mathematics. These variables among others could be linked to students' goal orientation. Furthermore, in Anambra State, it seems that enough empirical studies have not been carried out to investigate this worrisome situation in Mathematics in relation to students' goal orientation. Studies have been carried out on the relationships between different psychological and social variables and the academic achievement of secondary school students such as parental engagement, study skills and achievement motivation among others. Yet there exists a gap in the area of goal orientation as a predictor of academic achievement in secondary schools in Mathematics in Anambra State. Hence, the researcher deemed it necessary to investigate goal orientation as a predictor of academic achievement among secondary school (SSII) students in Mathematics in Anambra State. The problem of the study is thus; is goal orientation a predictor of academic achievement among secondary school (SSII) students in Mathematics in Anambra State?

Research Questions

The study was guided by the following research questions.

1. What are goal orientations scores of secondary school students towards Mathematics in Anambra State?
2. What are academic achievement scores of secondary school students in Mathematics in Anambra State?
3. What are predictive powers of secondary school students' goal orientation towards Mathematics on their achievements in Mathematics in Anambra State?

Hypothesis

H_{01}: The secondary school students' goal orientation towards Mathematics is not a significant predictor of their achievement in Mathematics in Anambra state.

Research Method

The study adopted a correlational research design. The population of the study consisted of 19,576 SS2 students in the 265 public secondary schools in the six Education Zones in the State as recorded by the Post Primary Schools Service Commission (PPSSC), Awka. The sample of this study comprised 1,958 students randomly selected from the population. This study adopted stratified and simple random sampling techniques for the study. The instruments for data collection were the adopted Goal Orientation Questionnaire (GOQ), and students' scores in Mathematics which was used to determine academic achievement. The GOQ was analyzed using Cronbach Alpha statistics to verify the reliability of the instrument and the average reliability coefficient showed a value of 0.89 which is considered adequate for the study.

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Regression analysis was used in the answering the research questions and testing the hypothesis.

Research Question 1: What are the goal orientation scores of secondary school students towards Mathematics in Anambra state?

Presentation of Results

Table 1: Goal orientation scores of secondary school students towards Mathematics in Anambra state

Range of scores	N	%	Remarks
25 – 74	115	5.9	Poor Goal Orientation
75 – 125	1832	94.1	Good Goal Orientation

Table 1 shows that 1832(94.1%) of the secondary school students with the scores ranging from 75 and 125 have good mathematics goal orientation in Anambra State, while 115(5.9%) others who scored between 25 and 74 have poor Mathematics goal orientation. The findings of this study also revealed that a greater number of secondary students in Anambra State have good goal orientation in Mathematics. It also implies that majority of the students in Anambra State have good belief patterns which lead their approaches to study of Mathematics. This could also imply that the secondary school students in the State have good purposes or cognitive-dynamics focus of competent relevant behaviour that mostly emphasize on optimal achievement in Mathematics. The findings also implied among others that the secondary school students in Anambra State feel satisfied learning as much as possible, not felt annoyed when required to make an effort, have goal to get high evaluation, prefer learning by interacting with their peers, feel guilty when they do not learn everything perfectly in Mathematics. The reason for this finding could also be explained by Vergara (2020) who investigated if goal orientation has relationship with achievement in statistics and found that achievement in statistics is positively correlated to mastery goals while negatively correlated to performance avoidance goals. The reason for the good orientation in Mathematics by secondary school students in Anambra State could also be explained by the study conducted by Anyanwu, Ezenwosu and Emesi (2022) and revealed that students should consider good goal orientation as useful academic facilitators that could enable them achieve their core values in the learning exploration.

Research Question 2: What are the academic achievement scores of secondary school students in mathematics in Anambra State?

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Table 2: Academic achievement scores of secondary school students in mathematics

Mathematics scores	N	%	Remarks
70 – 100	97	5.0	Excellent achievement
60 – 69	362	18.6	Very good achievement
50 – 59	378	19.4	Good achievement
40 – 49	691	35.5	Fair achievement
0 – 39	419	21.5	Poor achievement

Table 2 shows that 97(5.0%) of the secondary school students with the scores ranging from 70 and 100 have excellent academic achievement in mathematics, 362(1836%) of the students who scored between 60 and 69 have very good achievement in mathematics; while 378(19.4%) of the students scored between 50 and 59 have good achievement in mathematics. Also, 691(35.5%) of the students who scored between 40 and 49 have fair achievement in mathematics and 419 (21.5%) of the students who scored between 0 and 39 have poor achievement in mathematics. Most of the students achieved poorly in Mathematics.

It is revealed from these findings of the study that a very good number of students at secondary education level in Anambra State have at least good academic achievements in the Mathematics. The reason for this finding could be explained by Abisola and Kudirat (2017) who examined study habits and academic performance of secondary school students in Mathematics in Uyo Local Education Council and revealed that there is significance relationship between note taking, students' use of library, time allocation for study and students' academic performance in mathematics. This good academic achievement observed among these students in Mathematics could be attributed to the observed good goal orientation among the students in the subject. This finding is also in line with Ebele and Olofu (2017) who among others consented that good academic achievement is an outcome of proper study habit. So, it could be said that the students' good academic achievements in Mathematics should be much expected since these students have been found to have good usage of study habits in Mathematics.

Research Question 3: What is the predictive power of secondary school students' goal orientation towards Mathematics on their achievement in Mathematics in Anambra state?

Null Hypothesis 1: The secondary school students' goal orientation towards Mathematics is not a significant predictor of their achievement in Mathematics in Anambra state.

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Table 3: Regression analysis on secondary school students' goal orientation towards mathematics and their achievement in mathematics in Anambra State

R	R^2	R^2 adjusted	Beta	Cal. T	Df	p-value	Remark
0.047	0.002	0.002	0.047	2.075	1945	0.038	S

Table 3 shows that secondary school students' goal orientation towards Mathematics had Beta of 0.047. This indicates that secondary school students' goal orientation towards Mathematics had contributed to 4.7 percent for academic achievements in Mathematics of the students.

Again, at 1945 df and 0.05 level of significant, the calculated t 2.075 with P-value 0.038 which is less than the 0.05, the second null hypothesis is not accepted. Therefore, secondary school students' goal orientation towards Mathematics is a significant predictor of their academic achievements in Mathematics.

The study showed that secondary school students' goal orientation in Anambra State towards mathematics had contributed to 4.7 percent for academic achievements in mathematics of the students. It also revealed that secondary school students' goal orientation towards mathematics is a significant predictor of their academic achievements in mathematics. This is in contrary to Anyanwu, Ezenwosu and Emesi (2022) which recorded a very low positive and significant relationship between students' mastery approach and their academic achievement in English Language. The researcher is of the belief that good goal orientation towards mathematics led to an increase in academic achievement in the subject.

Conclusion

Based on the findings of the study, it is concluded that in Anambra State, secondary school students' goal orientation towards Mathematics is a significant predictor of their academic achievements in Mathematics.

Recommendations

Based on the findings and conclusions of the study, the following recommendations were made.

1. Teachers should be taught strategies through workshops organized by the guidance counsellors, these trainings and development will help teachers understand the role their relationship has in their students' academic endeavors and the need to benefit from goal orientation.
2. Curriculum makers should find the result relevant for inclusion in the counselling unit programmes or scheme for post-primary schools in the country.
3. Teachers of Mathematics and Mathematics should not label students in any dimension as poor students but should work towards a balance and wholeness of knowledge acquisition by shaping attitudes and

orientation of the students towards all round learning by training of students on study habit

4. Teachers' should make sure all the children in the class are learning and developing skills in goal orientation; focus should not be solely on children who are currently struggling.

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