Peer Influence As A Predictor Of Upper Basic Education Students' Academic Achievement In Basic Science In Enugu State

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Abstract: The study investigated peer influence as a predictor of upper basic education students' academic achievement in basic science in Enugu state. Two research questions guided the study and two null hypotheses were tested at 0.05 level of significance. The predictive correlation design was adopted for the study. The population of the study was 6,673 JS2 students in Enugu state out of which 500 students were drawn using multistage sampling procedure involving purposive and random sampling techniques. The instrument for data collection was Perceived Peer Influence Scale (PPIS) adopted from Palani and Mani (2016). The students' achievement scores in Basic science were obtained from the teachers' score folder. Analysis of data from the study was done using simple and multiple linear regressions. The findings of the study revealed among others that 2.6% of the variance in achievement in Basic science was predicted by peer influence. Also, achievement scores in Basic science was significantly predicted by peer influence. Only the dimension of yielding to peer/influence significantly contributed to academic achievement in basic science. It was recommended that secondary school teachers should monitor peer group activities in schools to ensure that peer interactions and goals are the sort that fosters greater academic pursuits and to ensure that peers indulge in less negative peer activities.

Keyword: Peer, predictor, achievement, academic, basic-science

I. INTRODUCTION

The importance of Basic science has been seen in different aspects of society. Adegoke (2015) noted that by introducing Basic science curriculum to students in secondary schools, society and the students could benefit in several ways namely: reducing poverty in the society; developing creative skills for the students; improving the health status of the students and those around them; improving the living conditions of their parents in the long run; and empowering students to convert natural physical objects in their environment for wealth creation. On another note, Agbidye (2015) stated that Basic science functions as the basis upon which some required training in scientific skills is provided in order to meet the growing needs of the society and attain good academic achievement in science.

The term academic achievement according to Nwankwo and Okoli (2019), refers to the performance outcomes in intellectual domains taught at school, college, and university. In the views of Ezugwu, Nwani, Agbo and Mbonu-Adigwe, (2019), academic achievement typifies the knowledge attained and skills developed in a school subject, usually designated by test scores. It can be measured in two different ways: grades and educational degrees and then by standardized achievement tests. While grades and educational degrees are measured by grade point average (GPA), which is the arithmetic mean of all grades that have been received during a certain time, standardized achievement tests are administered under controlled (or "standardized") conditions, specifying where, when, how, and for how long test-takers may respond to questions. The present study is however limited to the latter definition, which focuses on academic achievement as a

measure of students' test scores representing their performance in one core subject (Basic Science). The outcome of such test scores provide a way to gather, describe, and quantify information that assesses performance in Basic science tasks in order to demonstrate knowledge of specific topics or processes. Thus, academic achievement in the present study is understood as students' scores attained in standardized tests administered during the 2023 academic year in upper basic school in Enugu state, which describes their learning of the subject matter content of Basic science.

The students' achievement in Basic science at the upper basic level of education especially in Enugu education zone has not been satisfactory despite the importance of the subject. Analysis of students' achievement in the subject in Basic Education Certificate Examination (BECE) in the three local government areas in Enugu education zone shows that students' achievement has been fluctuating between the borderlines of unsatisfactory and satisfactory achievement from schools in one local government area to the other. In 2018/2019, despite the fact that more than 88.9% of almost all the school students in Enugu East made credit level pass and above, a disturbing achievement was seen in Enugu North and Isiuzo with most schools having less than 50% of their students at credit level pass. In 2019/2020, the percentage number of students who passed at credit level dropped to 73.3 percent. In 2021/2022, similar trend was also noted as students achievement (in terms of those who passed at credit level) dropped from 88.90 percent in 2021 to 80.20 in 2022 (Appendix A, p. 91). Despite the lack of reliable statistics in 2023, the education board has noted with dismay, the unsatisfactory fluctuations in maintaining excellent achievement in Basic science in Enugu state and Enugu education zone in particular.

Many studies have attributed the students' poor academic achievement outcomes in Basic science to several factors teachers' characteristics and family influences and other structural elements that have been associated with students' achievements in Basic science such as the teacher's method of teacher (Adegbola, 2019; Effiong and Igiri, 2015). These identified variables have defined research into improving students' achievement in Basic science with most studies focusing on innovative teaching methods that can be used to induce active participation, enhance interest and motivation and improve academic achievement. Although, students' at the upper basic level of education may suffer lack of interest in Basic science with a view that they will not choose the sciences in senior secondary owing to peer influence, not many studies that have identified or explored such grey area as to how peer influence predicts academic achievement in Basic science in Enugu Education zone.

Influence according Ajibade (2016) has to do with the power to make other people agree with one's or group's opinions and to do what is needed. Peer group on the other hand is a small collection of individuals who are of similar age, fairly close friends, sharing the same activities Peer influence therefore, is the ability to influence individual behaviour among members of a group based on group norms, a group sense of what is the right thing or right way to do things, and the need to be valued and accepted by the group (Adimora, Onyishi and Ucheaga, 2019). Peer influence is

when individuals choose to do something they would not otherwise do, because they want to feel accepted and valued by their friends or peers. A stronger form of influence from peers according to Adeyemi, Adejoke, Uwaoma, Anwanane and Nwangburuka (2019) is often referred to as peer pressure which is also used interchangeable with peer influence.

Peer pressure as described by Cummings and Sheeran (2019) refers to a strong influence and demands for conformity to group norms and a demonstration of commitment and loyalty to group members. Cummings and Sheeran (2019) further noted that peer influence at its minimal level is persuasive but at the higher level is compelling. Thus, peer pressure occurs when people feel compelled to do things that they normally would not do because of the direct or indirect influence of their social circle. Although, the concept of peer influence and peer pressure are intertwined, yet with notable and vague differences, most measures incorporate elements of the two in order to have a better measure of the influence of social circles among peers. In the light of aforementioned, the present study choses to recognize the two as one in terms of its determination or measurement.

Peer influence is among the most influential social factors impacting adolescent behaviour ranging from ordinary decisions about clothing, hairstyle, music, and entertainment to more important decisions about long and short term education plans (Fortuin, Geel and Vedder, 2015). During the formative adolescent years, peers are arguably even more important than parents, teachers and counselors, and the peer-influenced decisions of young people could have lasting impacts. Filade, Bello, Uwaoma, Anwanane and Nwagburuka (2019) defined the phenomenon as a healthy coming-of age intermediary, which consists of young people developing negotiating skills and learning to cope with problems as well as finding solutions within a social context. As an example, peer group can impact positively on an individual who belong to a group of hardworking and ambitious people who aim to attain high academic goals and achievement. Filade et al. (2019) asserted that the peer group and their influence is important for the productivity of educational processes and the organizational design of school systems in order to improve students' academic performance.

Empirical evidence lending credence to the influence of peer group on students' academic performance abound in literature (Ajibade, 2016; Filade et al., 2019; Temitope and Christy, 2015). For example, Filade's et al. (2019), study established that peer group had significant influence on academic performance as well as a significant relationship between peer group and academic performance of students. A longitudinal study by Fortuin, Geel, and Vedder (2015) examining the relationship between peer influence and students' academic achievement among secondary school students, revealed that adolescents' academic achievement was influenced by their friends' academic achievement. Fortuin et al.'s finding is an indication that peers are an important factor in academic achievement in schools. The results suggested that peers could positively or negatively affect academic achievement and that over time friends appear to become more similar with regards to grades. Overall, the evidence on the influence of peers on students' academic

achievement could either be positive or negative and more particularly, mixed.

PURPOSE OF THE STUDY

The purpose of the study was to investigate peer influence as a predictor of upper basic education students' academic achievement in basic science in Enugu state. Specifically, the study determined the:
- extent to which peer influence predict upper basic two students' academic achievement in Basic science.
- relative contribution of the dimensions of peer influence (yielding to peer influence, resistance to peer influence and peer encouragement) to upper basic two students' academic achievement in Basic science.

RESEARCH QUESTIONS

The following research questions guided the study:
- To what extent does peer influence predict upper basic two students' academic achievement in Basic science?
- What is the relative contribution of the dimensions of peer influence (yielding to peer influence, resistance to peer influence and peer encouragement) to upper basic two students' academic achievement in Basic science?

HYPOTHESES

The following null hypotheses were tested at 0.05 level of significance:
- Peer influence is not a significant predictor of upper basic two students' academic achievement in Basic science.
- The relative contributions of the dimensions of peer influence (yielding to peer pressure, resistance to peer pressure and peer encouragement) to upper basic two students' academic achievement in Basic science is not significant.

II. METHOD

The design of the study is correlation. The was carried out in Enugu Education Zone of Enugu state. Enugu State is in South East Geo political zone of Nigeria. The state shares borders with Abia state and Imo State to the south, Ebonyi state to the East, Benue state to the Northeast, Kogi state to the Northwest and Anambra state to the West. The population of the study comprises all the junior secondary school two (JSS2) students in the three local government areas that make up Enugu education zone of Enugu State. Based on the 2022/2023 available annual school census report, the population is 6,673 JSS2 students. The sample for this study consisted of 500 JSS2 students. The sampling was done using a multi-stage sampling procedure. In the first stage, two local government areas were selected from the three local government areas using random sampling technique (balloting with replacement). Secondly, 10 secondary schools each were selected from the two local government area purposively, making it a total of 20 schools. The reason for their selection of the schools is because they have a good number of physics

students. In each of the 20 schools, a minimum of students were selected purposively. The reason is because some school had higher population of students than others. Again, the students' termly results on the subject of physics were comprehensively recorded for each student chosen for the study.

The instrument for data collection was Perceived Peer Influence Scale (PPIS), a 30-items scale adopted from Palani and Mani (2016). PPIS has three components/dimensions namely: yielding to peer influence, resistance to peer influence and peer encouragement. To record the responses of the students for each item of the Perceived Peer Influence Scale, five alternative options were given as 'Strongly Agree', 'Agree', 'Undecided', 'Disagree' and 'Strongly Disagree'. As all the 30 items were being positive, the weightages assigned for each option were: five scores for 'Strongly Agree', four scores for 'Agree', three scores for 'Undecided', two scores for 'Disagree', and one score for 'Strongly Disagree'. Accordingly, the high score reflects higher level of peer pressure and low score reflects lower level of peer pressure as perceived by the secondary students. The teachers' folder is a score book where the Basic science teachers record the students' achievement in Basic science. The students' Basic science results of the students in JSS 1 annual result and JS2 first and second terms were obtained and average was determined and used as the students' academic achievement in Basic science.

The intrinsic validity coefficient of PPIS was also established by the authors, Palani and Mani (2016) by taking the square root of reliability coefficient, which was found to be 0.971. The reliability of PPIS as was established by Palani and Mani (2016) using the Cronbach's Alpha Co-efficient was found to be 0.94. The researcher with the help of 10 research assistants who are subject teachers in the sampled schools administered the instrument directly to the respondents. The researcher briefly oriented the research assistants on the objectives of the study and how to administer the instrument and collect the data, having obtained the necessary permission from the school authority. The instruments were administer and collected on the spot to reduce sample mortality. The data generated from the instrument were collated by the research assistants and was inspected by the researcher and taken for analysis. A total of 510 questionnaires was administered but a total of 500 completely filled instrument was returned and used in the study.

The data for the study were analysed using simple linear and multiple regressions. The r-value was used to determine the magnitude and direction of relationship while the r-square value indicated the variance in basic science achievement that is caused by the predictor variables. The unstandardized beta coefficients were used to indicate the prediction powers and relative contribution of the dimensions. The significance of the prediction powers of the variables were tested using ANOVA whereas the significance of the predictive powers of the dimensions of each predictor variables were tested using the t-values and P-values. The interpretation of the correlation coefficient was done according to Nworgu's (2015) three-way guide for interpreting correlation coefficient values when a large number of pairs of scores have been correlated. They are as follows: $r = \pm.30\ and\ below$, low relationship; $r = \pm.30\ to\ below\ \pm 0.80$, moderate relationship and

$r = \mp.80$ and above, high relationship. The criteria for rejecting or not rejecting any null hypothesis which were tested at 0.05 level of significance was that whenever Pvalue is less than or equal to 0.05 (P≤0.05) the null hypothesis was rejected and whenever Pvalue is greater than 0.05 (P>0.05) was not rejected.

III. RESULTS

Research Question 1: To what extent does peer influence predict upper basic two students' academic achievement in Basic science?

Model	R	R^2	Adjusted R^2	Unstandardized coefficients (b)	Std. Error
Constant Peer Influence	.160ᵃ	.026	.024	59.246 .136	11.823

a. Predictors: (Constant), Peer Influence

Table 1: Prediction of Upper Students' Achievement score in Basic Science by Peer Influence

Table 1 shows that a positive correlation (R = 0.160) exists between upper basic students' peer influence and their achievement score in Basic science. The R-Square value of 0.026 indicates that 2.6 percent of the variance in Basic science scores is predicted by peer influence. The unstandardized coefficient β of 0.136 shows that a unit rise in peer influence increases academic achievement score in Basic science by 0.136.

Research Question 2: What is the relative contribution of the dimensions of peer influence (yielding to peer influence, resistance to peer influence and peer encouragement) to upper basic two students' academic achievement in Basic science?

Model		Unstandardized Coefficients		Standardized Coefficients	t	Pvalue
		β	Std. Error	β		
1	(Constant)	62.748	3.789		16.561	.000
	YPPI	.318	.056	.247	5.642	.000
	RPPI	.037	.059	.028	.624	.533
	PE	.008	.096	.004	.080	.936

a. Dependent Variable: Basic Science Achievement score

Table 2: Contributions of the Dimensions of Peer Influence in the Prediction of Upper Basic Students' Achievement scores in Basic Science

Table 2 shows the standardized beta coefficient which indicates predictive correlation between variables. The unstandardized beta coefficient shows the predictive value of each dimension of peer influence which indicates their relative contribution to achievement score in Basic Science. The table shows that yielding to peer/influence (YPPI) has a positive predictive correlation (R = 0.247) with students' achievement score in Basic Science, resistance to peer pressure/influence has a positive predictive correlation (R = 0.028) with achievement score in Basic science, while peer encouragement has a positive predictive correlation (R = 0.004) with achievement score in Basic science. Table 2 also shows that yielding to peer/influence contributed 0.318 to achievement score in Basic science whenever students' yield to peer pressure/influence increased by one unit. With a unit increase resistance to peer pressure/influence, achievement score in

Basic science by 0.037, and where writing peer encouragement by a unit achievement score in Basic science increased by 0.008. The order of relative contribution to achievement score in Basic Science from the highest to lowest by each dimension of peer influence therefore is; yielding to peer influence/pressure (0.318), followed by resistance to peer pressure/influence (0.037), and then peer encouragement (0.008).

Hypothesis 1: Peer influence is not a significant predictor of upper basic two students' academic achievement in Basic science.

Model		Sum of Squares	df	Mean Square	F	Pvalue
1	Regression	1838.447	1	1838.447	13.153	.000ᵇ
	Residual	69606.353	498	139.772		
	Total	71444.800	499			

a. Dependent Variable: Basic Science Achievement score
b. Predictors: (Constant), Peer Influence

Table 3: Significance of Prediction of Achievement score in Basic Science by Students' Peer Influence

Table 3 shows that peer influence is a significant predictor of achievement scores in Basic Science, F (1, 498) = 13.153, p < .05. The null hypothesis was therefore rejected meaning that influence is a significant predictor of upper basic two students' academic achievement in Basic science. Since peer influence is a significant predictor of achievement scores in Basic Science, the regression model (Y= a + bX) for the prediction of achievement score in Basic Science as derived from Table 1, where constant = 59.246 and b value = 0.136 is:

AABS = 59.246 + 0.136(PI)

Where, AABS = Academic achievement in Basic Science and PI = Peer influence score.

Hypothesis 2: The relative contributions of the dimensions of peer influence (yielding to peer pressure, resistance to peer pressure and peer encouragement) to upper basic two students' academic achievement in Basic science is not significant?

Model		Sum of Squares	df	Mean Square	F	Pvalue
1	Regression	4309.524	3	1436.508	10.613	.000ᵇ
	Residual	67135.276	496	135.353		
	Total	71444.800	499			

a. Dependent Variable: Basic Science Achievement score
b. Predictors: (Constant),), Peer Encouragement, Yielding To Peer Pressure/Influence, Resistance To Peer Pressure/Influence

Table 4: Significance of Prediction of Achievement score in Basic Science by the Individual Dimensions of Peer Influence

Table 4 shows that all the individual dimension of peer influence together predicted the students' achievement scores in Basic Science significantly, F (1, 496) = 10.613, p < .05. However, data contained in Table 2 shows the significance of the contributions of the individual dimensions to the prediction of achievement scores in Basic Science.

Table 2 shows that yielding to peer pressure/influence is a significant predictor of achievement scores in Basic Science, t(3, 496) = 5.642, p < 0.05; resistance to peer pressure/influence is not a significant predictor of achievement scores in Basic Science, t(1, 496) = 0.624, p > 0.05, and peer encouragement is a significant predictor of achievement scores in Basic Science, t(1, 496) = 0.080, p < 0.05. Thus, the only significant contributors to the achievement score of students in

Basic Science in order of significance are yielding to peer pressure/influence and peer encouragement. However, since the joint prediction of all the dimensions of peer influence in the prediction of achievement score in Basic Science is significant, the regression model ($Y = a + bX_1 + cX_2 + dX_3$) for the prediction of achievement score in Basic Science. The equation is derived from Table 2 as follows:

AABS = 62.748 + 0.318(YPPI) + 0.37(RPPI) + 0.008(PE)

Where, AABS = Academic Achievement in Basic Science and YPPI = yielding to peer pressure/influence, RPPI = Resistance to Peer Pressure/Influence, PE = Peer encouragement.

IV. DISCUSSION

The findings of the study showed that peer influence is a significant predictor of achievement in basic science. Students peer interaction has both beneficial and negative effects on students' academic progress including their academic achievement. The positive effect of peer influence on academic achievement in basic science can be hinged on the fact that when students are under positive peer influence, their academic achievement improves. Such positive influence may include participating in academic activities, doing homework together, group reading, and group work. Thus, when peer influence is associated with academic activities, students are burdened by the demands of time and energy to achieve specific academic goals and this results in positive academic achievement impacts. Many peer groups can be a positive influence on their friends as well. It is thought that intelligent students help their peers bring up their grades.

One way of looking at influence is to consider that students will most likely be friends with students who are interested in the same activities. Most upper basic school activities require a certain grades to pass and consequently, students who are involved in school sports, drama and other pure academic activities tend to do better in school because of peer study. The desire to fit in and gain acceptance from their peers may push students to prioritize academic activities over their social engagement if the peer group is a good one. Engaging in excessive socializing, partying, or other non-academic pursuits can lead to a improvement of focus, quality time management, and an enhancement in academic achievement. Moreover, students may feel compelled to engage in academic honesty, such as avoiding cheating or plagiarizing, in an attempt to meet realistic expectations or attain desired grades set by peer groups.

On the positive side, peer pressure can motivate students to strive for academic excellence. Observing their peers' accomplishments and receiving recognition from their social group can create a healthy competitive environment that encourages students to work harder, set higher goals, and achieve better results. Positive peer pressure can foster a sense of accountability and inspire students to engage in constructive study habits, such as participating in group study sessions or seeking help from classmates. Building a supportive network of friends who share similar educational aspirations can also be beneficial. Surrounding oneself with peers who value education and prioritize academic pursuits can foster a positive environment where students motivate and uplift one another. Engaging in collaborative learning activities, such as group projects or study groups, can create opportunities for academic growth while minimizing the negative effects of peer pressure. By fostering an environment where students feel comfortable and express their concerns, seek guidance, and share their academic challenges, peer groups can provide the necessary support that could help students to overcome academic pressures.

Peer encouragement improves academic achievement because when peers receive essential peer support, they are more likely to achieve and exceed their capabilities, focus more on their studies, and perform well in academic tasks at school. While positive peer encouragement can inspire students to excel academically, it can also help students to avoid distractions, poor choices, and results in increase in academic outcomes. Peers set plenty of good examples for each other and encourage each other to attain good goals. Having peers who are committed to doing well in school or to doing their best in a sport can influence students within such group to be more goal-oriented. Peers who are kind and loyal influence their friend to build these academic qualities in themselves.

The findings of the study are in line with the findings of Uzezi and Deya (2017) that there is a positive and significant relationship between peer group influence and academic achievement of students in chemistry. The findings of the study also collaborates with the findings of Filade, Bello, Uwaoma, Anwanane and Nwagburuka (2019) that there is a significant relationship between peer group and academic performance. The findings of the study support the findings of Inyang (2020) that peer group significantly influences the academic performance of secondary school students in English Language.

V. CONCLUSION

The conclusion drawn from the findings of the study is that peer influence is a necessary factor in students' academic achievement in Basic science. Peer influences that have positive academic impacts can create conducive learning and social atmosphere where students set academic goals that enhances academic achievement.

VI. RECOMMENDATIONS

The following recommendations are made based on the findings of the study:
- ✓ Secondary school teachers should monitor peer group activities in schools to ensure that peer interactions and goals are the sort that fosters greater academic pursuits and to ensure that peers indulge in less negative peer activities.
- ✓ School counselors should organize orientations to acquaint students with the strategies and motivation to overcome negative peer influence while encouraging them to interact more with peers with positive academic influence.

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