

Influence of Peer Group on the Academic Achievement of Tertiary Institution Students in Elementary Mathematics in Ogun State, Nigeria

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ABSTRACT

Citation

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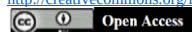
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The study examined the influence of peer group on tertiary institution students' achievement in elementary mathematics in Ogun State, Nigeria. Descriptive Survey design was employed for this study. The population consists of students of Tai Solarin University of Education and Olabisi Onabanjo University, Nigeria. The sample size was 400 students randomly selected by the researcher using simple and proportionate stratified random sampling techniques in the two tertiary institutions in Ogun State. Three hypotheses were tested at 0.05 level of significance. Self-designed questionnaire was used as the research instrument which was validated by experts. The Cronbach alpha reliability coefficient of the items was found to be 0.87. Chi-square statistical tool was used for data analysis. The finding revealed that there is significant influence of peer group on the achievement of students in elementary mathematics in tertiary institutions ($X^2_{cal} = 465.004 > \text{critical value} = 8.666$); there is significant difference between male peer influence and female peer influence on the achievement of students in elementary mathematics in tertiary institutions ($X^2_{cal} = 331.738 > \text{critical value} = 8.383$); and there is significant difference between the achievement of students under positive peer influence and negative peer influence ($X^2_{cal} = 381.980 > \text{critical value} = 7.176$). It was concluded that peer group influence plays a vital role in the lives and social adjustment of students. Based on the study, it was recommended that parents should be watchful of the types of friends kept by their children.

Keywords: peer group, tertiary institutions, students' academic achievement, elementary, mathematics, ogun state

Introduction

Elementary mathematics involves the activities of human endeavors but in general terms, it is a discipline which helps to develop scientific thinking ability of an individual. The basic objectives of mathematics in tertiary institutions today are no longer realized. One of the reasons for this may be due to poor foundation on which mathematics finds itself right from secondary school level of the students which leads to the students' poor performance in it as a subject. One of the reasons for these students' poor performance may be the influence of their peer group on them (Okoye, 2018 & Ungar, 2000).

Mathematics can be defined an abstract representational system use in the study of number, shapes, structure and change and the relationships between these concepts. There is a range of views among mathematicians and philosophers as to the exact scope and definition of mathematics. Mathematicians seek and use them to formulate new conjectures. Mathematicians resolve the truth or falsity of conjectures by mathematical proof. When mathematical structures are good models of real phenomena, then mathematical reasoning can provide insight or predictions about nature. Through the use of abstraction and logic, mathematics developed from counting, calculation, measurement, and the systematic study of the shapes and motions of physical objects. Mathematics is essential in all field of life (Oni, 2006).

The term peer group is a group of people who are equal in some ways and share similar characteristics within themselves such as age, status, interests, social and political affiliations, etc. According to Kang (2016), peer group means a small group of friends which have close relations with

each other and they have regular interactions. They share views and exchange ideas with each other and do activities in groups. The members of a peer group are likely to influence the person's beliefs, behaviors, and most especially, the attitude and achievement of the person academically. Peer group can simply be said to be people of the same age and ability, that is, people who are knitted together by a feeling derived by a common concern as seekers of what is desirable for the group (Bielinski & Davidson, 2021). The peer group is the child own friends, and equal member of the group often have common characteristics or interest. The peer group interests are short range and temporary. In some cases, members roles are less defined and they change frequently. In some, it may not be clear who is a member and who is not. The peer group sets out certain standards for the group and they also have norms and values, which they follow.

The peer group influences are more pronounced and noted in tertiary institutions than in secondary or primary schools, partly because some of the students are away from home where parental supervision and contact is very limited (Burns & Darling, 2022). The influence of peer group on the student is great, both in and out of school, because there is tendency for members to be comfortable with the group norms and values. Sometimes, peer group influence may lead to aggressive behavior such as rioting in school. Peer group influence may also prompt students to form clique with nicknames such as Terror, Shark, Snake, Tempo, Blue Queen, Black Angel, etc. Students are always anxious to initiate their peers whether good or bad, they would want to go to the church or mosque due to their peer influences. They may also join different clubs like Girls Guides, Boys Scout, Brigade, Red Cross, etc., Onwuamanam (2021). The peer group has their own "acceptance" which they have to consider before a child could be accepted or rejected from a group. Some of these characteristics that are likely to make a child to be accepted to a group are friendship, sociability and introversion. Much may also depend on what a particular group values as qualities in its members.

Formation of peer group may occur when frustration sets in as a result of inability to comprehend or understand what is been taught in school, conflict with family members, societal norms, etc. Effects are usually made to compensate for rejection and uses leisure profitably. Through the formation of peer group, the student will want to gain freedom from home in order to be loyal to the group (Zeijl et al., 2020). In another way, Formation of peer group may occur from each extensive interaction with others initiate relationships develop and by these contacts, important attitudes and values are formed. These attitudes may influence the students' achievement in elementary mathematics either positively or negatively (Alderman, 2000).

The negative aspects which could be detrimental to students' achievement are the cases of group behavior such as truancy, persistent lateness to class, absenteeism from class, laziness, disobedience, disregarding school rules and regulations, etc. Negative peer pressure is friends negatively influencing each other. Examples of negative peer pressure include trying to talk someone into trying drugs, cigarettes, alcohol, and sex. Negative peer pressure can happen directly and indirectly. Direct negative peer pressure is friends directly asking someone to do something. This is a powerful form of peer pressure because it's much more difficult to resist. A student is afraid of ridicule and losing his/her friend(s) if he/she doesn't do what is asked. Indirect negative peer pressure is not as powerful but can still greatly influence the decisions a student makes. Indirect peer pressure is what student sees and hears other students doing. Since other students are wearing something or doing something, he/she should follow suit to fit into the group. No one necessarily asks the student to do anything but it's an unspoken pressure that he/she feels. This type may seem as though it would be easier for students to resist but it's actually just as difficult because the student may feel like it is not as "cool" if he/she doesn't do what the others are doing and it may make it more difficult to make friends (Castrogiovanni, 2019).

On the other hand, the influence could be geared towards positive aspects of students' academic performances. For instance, the student could be influenced socially, psychologically, etc. and all these boost students' academic achievements in elementary mathematics e.g. forming reading group, going to the library, anxious to join others in answering questions in the classroom, etc. This is the good type of peer pressure. It's when friends push a student to do great things and to excel. A student may feel empowered by his/her friends because of the positivity from them. Of course, everyone probably wishes all pressure from peers is positive, but the reality is that it's not as common as the negative form (Omeogun, 2022).

According to Friedman (2015), there are some other important functions that the peer group plays which greatly influence the attitude and achievement of students in elementary mathematics. They are as follows:

1. They provide the students with a considerable degree of emotional security which helps in the intellectual development of the students.
2. The peer group provides the students with a wide variety of experiences which can boost their academic performance.
3. They also provide the opportunity for the development of loyalties that goes beyond the immediate family e.g. political and social loyalties, which are important for future adjustment.
4. They provide them with the boldness to speak about what they are been taught or what they have learned.
5. They provide them with the courage to express themselves in the aspect of asking question and contribution rather than when they are being taught by their teachers for better understanding.
6. They provide opportunities for interpersonal relationship.
7. The peer group provides the standard of attitude and behavior to be pursued by its members. They establish the thoughts, opinions and ideas which members are to adopt. It is through these peer groups that cultures are established which will provide variations in standards of education and so on.
8. While in their respective groups, the individual member are prepared for performance of specific task such as leadership role, spirit of active participation, submissiveness etc., in this way the child learns to lead and follow. These are vital requirements for effective citizenship.

Peer groups can serve as a venue for teaching members gender roles. Through gender-role socialization, group members learn about sex differences, and social and cultural expectations. While boys and girls differ greatly, there is not a one-to-one link between sex and gender roles with males always being masculine and females always being feminine. Both genders can contain different levels of masculinity and femininity. Peer groups can consist of all males, all females, or both males and females. Peer groups can have great influence or peer pressure on each other's gender role behavior, depending on the amount of pressure (Okoye, 2018).

There is a need for tertiary institution students to be able to attend to elementary mathematics. It was discovered that some students at higher education, especially students from non-science faculties are have negative attitude toward the study of mathematics. Some factors are responsible for this but this study tends to investigate the influence of peer group on their achievement in elementary mathematics using Ogun State as a sample.

Purpose of the Study

The general purpose of this study is to investigate the influence of peer group on tertiary institution students' achievement in elementary mathematics in Ogun State, Nigeria. Specifically, the study sought to find out if;

1. there is significant influence of peer group on the achievement of students in elementary mathematics in tertiary institutions.

2. there is significant difference between male peer influence and female peer influence on the achievement of students in elementary mathematics in tertiary institution.
3. there is significant difference between the achievement of students under positive peer influence and students under negative peer influence.

Hypotheses

The hypotheses were tested at 0.05 level of significant.

H₀₁: There is no significant influence of peer group on the achievement of students in elementary mathematics in tertiary institutions.

H₀₂: There is no significant difference between male peer influence and female peer influence on the achievement of students in elementary mathematics in tertiary institution.

H₀₃: There is no significant difference between the achievement of students under positive peer influence and students under negative peer influence.

Methodology

Descriptive Survey design was employed for this study. The target population of the study comprised of students in all tertiary institutions in Ogun State. The accessible population consists of students of Tai Solarin University of Education (TASUED) and Olabisi Onabanjo University (OOU).

The sample size for this study consisted of four hundred (400) students randomly selected by the researcher. The selection was carried out using simple and proportionate stratified random sampling techniques in two tertiary institutions in Ogun State. Two hundred (200) students, comprising of males and females were selected from each of the institutions.

A self-designed questionnaire was used for the collection of data. The questionnaire comprised of three sections A, B and C. The section A contained items eliciting the demographic characteristics of the participating respondents. Section B contained statements on five Likert scale model, requiring the students to indicate their level of agreement and disagreement to the items, based on the issues raised in the chapter 1 of the study. The responses included Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly Disagree (SD). Section C contained 10 multiple choice questions extracted from 2014 UTME mathematics questions which served as a mathematics achievement test.

The administration of the questionnaires was undertaken by the researcher and the research assistants. Ideally, four hundred and ten (410) questionnaires were administered so as take care of attrition. Four hundred and five (405) questionnaires were properly filled. Consequently, four hundred (400) questionnaires were used for data analysis.

The instrument was validated through constructive suggestions and corrections from experts in the field of measurement and evaluation. To also ensure the reliability of the questions serving as a mathematics achievement test contained in the section C of the instrument, a pilot study was also carried out by the use of a test – retest technique. The questionnaires were administered twice to twenty students in Tai Solarin University of Education on the interval of fourteen days. The coefficient of reliability of the two sets of scores obtained was calculated using Pearson Product Moment Correlation Coefficient and found to be 0.87. Therefore, the instruments were considered reliable and appropriate for this study.

The hypotheses formulated for this study were subjected to statistical testing for the purpose of either accepting or rejecting them. The hypotheses were tested with Chi-square statistical tool.

Results

The hypotheses formulated for this study were subjected to statistical testing for the purpose of either accepting or rejecting them. The hypotheses were tested and interpreted with Chi-square statistical

tool as said in the chapter three of the study. This statistical tool is used to test whether the difference or relationship between the expected values and the actual values are subjective and statistically significant.

Hypothesis One: There is no significant influence of peer group on the achievement of students in elementary mathematics in tertiary institution.

Table 1: Chi-Square Test

Responses	Observed Value	Expected Value	Df	X ² Calculated	X ² Critical Value	P	Decision
Strongly Agree	132	80	16	465.004 ^a	8.666	0.05	Reject the null hypothesis
Agree	168	80					
Neutral	48	80					
Disagree	24	80					
Strongly Disagree	28	80					

X² calculated=465.004^a

X² critical=8.666

From the Chi-Square Test table above, it is seen that the X² calculated value of 465.004 is greater than the critical value of 8.666 at 0.05 level of significance with 16 as the degree of freedom. This means that the formulated null hypothesis which states that there is no significant influence of peer group on the achievement of students in elementary mathematics in tertiary institution is rejected while the alternative hypothesis is accepted. This implies that there is significant influence of peer group on the achievement of students in elementary mathematics in tertiary institutions.

Hypothesis Two: There is no significant difference between male peer influence and female peer influence on the achievement of students in elementary mathematics in tertiary institutions.

Table 2: Chi-Square Test

Responses	Observed Value	Expected Value	Df	X ² Calculated	X ² Critical Value	P	Decision
Strongly Agree	120	80	16	331.738 ^a	8.383	0.05	Reject the null hypothesis
Agree	192	80					
Neutral	44	80					
Disagree	28	80					
Strongly Disagree	16	80					

X² calculated=331.738^a

X² critical=8.383

From the Chi-Square Test table above, it is seen that the X² calculated value of 331.738 is greater than the critical value of 8.383 at 0.05 level of significance with 16 as the degree of freedom. This means that the posited null hypothesis which states that there is no significant difference between male peer influence and female peer influence on the achievement of students in elementary mathematics in tertiary institutions is rejected while the alternative hypothesis is upheld. This implies that there is significant difference between male peer influence and female peer influence on the achievement of students in elementary mathematics in tertiary institutions.

Hypothesis Three: There is no significant difference between the achievement of students under positive peer influence and negative peer influence.

Table 3: Chi-Square Test

Responses	Observed Value	Expected Value	Df	X ² Calculated	X ² Critical Value	P	Decision
Strongly Agree	68	80	16	381.980 ^a	7.176	0.05	Reject the null hypothesis
Agree	104	80					
Neutral	48	80					
Disagree	88	80					
Strongly Disagree	92	80					

X² calculated=381.980^a

X² critical=7.176

From the Chi-Square Test table above, it is seen that the X² calculated value of 381.980 is greater than the critical value of 7.176 at 0.05 level of significance with 16 as the degree of freedom. This means that the formulated null hypothesis which states that there is no significant difference between the achievement of students under positive peer influence and negative peer influence is rejected while the alternative hypothesis is accepted. This implies that there is significant difference between the achievement of students under positive peer influence and negative peer influence.

Discussion

In view of the above, the following emerged as a result of the studies carried out. These findings were used to investigate the influence of peer group on students' achievement in elementary mathematics in tertiary institutions.

It was deduced from the findings that there is a significant influence of peer group on the achievement of students in elementary mathematics in tertiary institutions. Also, there is a significant difference between male peer influence and female peer influence on the achievement of students in elementary mathematics in tertiary institutions. Likely, there is also a significant difference between the achievement of students under positive peer influence and negative peer influence. These findings buttress the work of Ryan (2012), Ungar (2014) and Ayodele (2016) that shows how important peer pressure is in students' achievement in life generally.

It is therefore very pertinent for students in tertiary institutions to examine the type of peer group that they belong or would like to belong to because it will influence their attitude and achievement in elementary mathematics.

Conclusion

From the findings of this research work, it could be seen that there is a significant influence of peer group on the achievement of students in elementary mathematics in tertiary institutions. Also, there is a significant difference between male peer influence and female peer influence on the achievement of students in elementary mathematics in tertiary institutions. Likely, there is also a significant difference between the achievement of students under positive peer influence and negative peer influence.

Peer group influence plays a vital role in the lives and social adjustment of students and they have a tendency to associate with members of their peer group. As a result of this association, the decisions of the peer group influence the decisions of the individual who belongs to that group. Therefore, students practice the behaviors of their peer mates, rather than those advocated by their parents, so it is imperative



for parents to watch out for the types of company their children keep. Peer groups provide a strong sense of security that allows students to build a sense of identity. For good or for bad, students spend much of their time with peers. Parents can have some influence in how that time is spent if they encourage activities they approve of without being over-bearing (Black, 2022). Based on research, the bottom line is that it is important for parents to be actively involved in their children's life. They should ask questions and be able to get a sense of how their son or daughter is spending his or her time. Parents need to be approachable and keep communication lines open in order for this to happen.

Also, from this research, it is found that the main values of the peer culture are social participation, group loyalty and individual achievement. Based on peer relationships, members of a group are influenced to do something they would not have attempted on their own, or prevented from doing something they might have wanted to do. It is the type of group that a student belongs to that determines his/her social disposition. Most of the crimes committed and deviant behaviors displayed by students in tertiary institutions result from negative peer influence because they want to live up to the groups' expectations or follow a particular fashion.

Finally, this researcher would like to stress the point that not all peer influence is negative. Peer groups are, in essence, necessary for students' growth and development. As such, educators should praise the positive choices that students make in regards to peers and work to combat the negative ones. It is obvious that peer groups are not a fad or a trend, they are around to stay. For this reason, peer influence is a phenomenon that will be studied throughout time.

Recommendations

Based on the findings of this research and the conclusions reached above, the following recommendations were made:

1. Parents should be watchful of the types of friends kept by their children. They need to serve as role models for their children to emulate. They should keep abreast with developmental changes in the world and make sure they provide their children with all what they need in school. Parents should be enlightened on the need to stay together as husband and wife to raise a good family and provide the parental love and care for their children. They should learn to persevere and tolerate each other in marriage. The parent-child relationship cordial enough to permit children to discuss any problem or peer pressure they might be facing with parents. Parents should be tolerant, patient and show unconditional love towards their children. It is important for parents to be actively involved in their children's life. They should be able to get a sense of how their son or daughter is spending his or her time. Parents need to be approachable and keep communication lines open for all these to happen.

2. Education-related professionals need to realize that both positive and negative peer influence is inevitable in the school setting. Educators and education psychologists should be aware that students are particularly vulnerable to all forms of peer influence. They should focus on creating and promoting classrooms of acceptance and appreciation for diversity. They should also not display favoritism towards any particular group of students in the school. They should work on how to discourage students from joining negative peer groups and how these negative peer groups can be eradicated.

3. A crucial element for the role of a school psychologist or a school counselor is simply being available. Students should try as much as possible to walk up to them to discuss any kind of peer pressure they might be facing with them so as to receive good ideas and advices from them. Also, they should feel free to discuss such issues with their parents also. They should be very cautious on choosing the kinds of friends they move with and they should face what their parents sent them to school for which is their study squarely. Finally, students should learn to be contented with whatever, no matter how little; their parents can afford and are able to provide for them.

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