



PEER GROUPS, SUCCESS AND PUNISHMENT AS CORRELATES AND CONTRIBUTORS TO PUPILS' ACADEMIC PERFORMANCE IN MATHEMATICS IN BAMENDA II SUBDIVISION, CAMEROON

Beyoh Dieudone Nkepah (PhD)

STEM Education, Department of Teacher Education-TED, Faculty of Education-FED, The University of Bamenda-UBa , Cameroon

e-mail: beyohdieudone@gmail.com

Cite this article:

Beyoh Dieudone Nkepah (2023), Peer Groups, Success and Punishment as Correlates and Contributors to Pupils' Academic Performance in Mathematics in Bamenda II Subdivision, Cameroon. African Journal of Social Sciences and Humanities Research 6(6), 71-81. DOI: 10.52589/AJSSHR-JSYQ80TQ

Manuscript History

Received: 4 Aug 2023

Accepted: 23 Oct 2023

Published: 22 Nov 2023

Copyright © 2023 The Author(s).

This is an Open Access article distributed under the terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0), which permits anyone to share, use, reproduce and redistribute in any medium, provided the original author and source are credited.

ABSTRACT: *The study set out to determine the relative contributions of peer groups, pupils' success and punishment as motivating factors in mathematics classrooms on pupils' academic performance in mathematics in Bamenda II Subdivision, Cameroon. Three specific objectives, three research questions and three hypotheses guided the study. The study adopted the descriptive survey and correlational research designs. One hundred and fifty (150) primary three pupils from two functional public primary schools in Bamenda II Subdivision constituted the population of the study. Using the Krejcie and Morgan table, and employing the stratified proportionate sampling technique, 108 pupils were selected to form the sample of the study. Data was collected using a questionnaire. The questionnaire was validated by experts and its reliability of 0.82 assured using the Cronbach Alpha. The data was analyzed using Pearson product moment correlation (r), the coefficient of determination (r^2) to answer the research questions and the two tailed p -value for correlation to test the hypotheses at 0.05 level of significance. The findings of the study revealed that peer groups, pupils' success and punishment in mathematics classrooms all contribute significantly to their academic performance in mathematics. It was therefore recommended that punishment should be carefully utilized by the classroom teachers in a bid to keep them focused on the subject both in and out of the classroom. Furthermore, teachers should always use very easy questions either during set induction or during the introduction of new mathematical concepts—questions within the reach of all pupils. This is because perceived success in mathematics by pupils has proven to be a good motivating factor to students' in the subject. Lastly, group counseling should be done by both the school counselors and the classroom teachers, aimed at encouraging pupils to assist each other academically, especially in mathematics.*

KEYWORDS: Peer Groups, Pupils' Success, Classroom Punishment, Pupils' Academic Performance, Mathematics.



INTRODUCTION

Mathematics is generally viewed as the most indispensable tool in the sciences, technology and engineering. No doubt, numerical literacy is considered as one of the 21st century skills. It is almost impossible to do anything in this 21st century without the application of mathematics in one way or the other. Great scientific inventions have only been possible because of the application of mathematical knowledge. Although this subject is compulsory to all pupils and secondary school students up to the GCE Ordinary Level, its concepts are very challenging to master. This has led to a lot of fear for the subject among pupils and students with some of them dreading the subject in primary and secondary schools. Some students who even drop the subject at the advanced level still find it appearing among their lists of courses when they get into higher institutions.

Experience and observation show that one of the main factors responsible for the aforementioned phobia is the porous foundation that is laid at the initial stage of study of the subject in primary schools. Some primary school teachers do not only lack mastery of this very important subject, but are very much unaware of how they can motivate and sustain the motivation of their pupils in this challenging subject.

Motivation could be seen as our enthusiasm for doing something. It is the reason behind every action. Motivation is the reason or reasons for acting or behaving in a particular way. It helps us to set a goal and reach it. Etymologically, the term motivation is derived from the Latin verb “movere” which literally means to move (Hawthorne, 2021). It is therefore what keeps us moving in education. Motivation helps children and young people to focus their attention on a key goal or outcome. In doing so, they are not worried by possible distractions and are therefore able to maintain their attention during longer periods of time. Students who are motivated display goal-oriented behaviors. They take initiative, show resilience, harness their curiosity, care for and respect their work. They are equipped to orchestrate their own learning journey.

Getting pupils engaged in a lesson or unit of work is something a talented teacher can achieve, but motivating them to become better learners, who strive to achieve their true potential, can be incredibly challenging, especially as our experience of motivation is often unconscious. Unmotivated students are often disengaged or disaffected, which can lead to challenging behavior. Motivation is the force that keeps children going even when they face barriers or challenges. It charges them with the energy required to fulfill their potential. A child who is motivated is committed, energetic, and innovative; they see the value in what they are learning and are determined to achieve their goals.

It is obvious that education never ends. The whole of our lives from birth till the moment we leave the world, we acquire knowledge and observe the world. As it is said, “living is all about learning” and the learning process ends when you stop breathing. The ones who encourage us mostly are our teachers. Teachers can be considered sculptors who create an extraordinary and unique status from a shapeless stone (Chirkov & Ryan, 2001). A teacher is never tired of helping his pupils with his motivation and pure love. While teaching, teachers should take into account some psychological factors which play a dominant role in the learning process also to upbringing the youths and assist them to be educated people in the society. What inspires teachers to work and what encourages a learner to proceed, of course, is motivation. It is the most essential psychological factor. Those who are motivated can possibly learn faster and more



effectively. Also, it is clear that motivation is an individual feature because every person may have different ways of being motivated.

Motivation in the early years is especially crucial, as this is when we have the opportunity to mould children into confident, resilient, lifelong learners. From a young age, children learn about the world around them through curiosity. Many approaches to the early years adopted by children in learning, according to Vansteenkiste et al. (2006), include the curiosity approach and the harnessing of children's innate interest in their environment. However, as children get older, this eagerness to discover and learn is often not so strong. Instead, many look for external rewards as a mechanism to help them achieve their aims. These two drivers of behaviours are intrinsic and extrinsic motivation.

Those who are intrinsically motivated do not require sanctions or rewards to help steer their efforts (Chirkov & Ryan, 2001). Very young children are often naturally intrinsically motivated and are led by their innate curiosity. This form of motivation often encourages more efficient and successful learners in the classroom. There are many studies which suggest that children who are intrinsically motivated are better at learning. In fact, intrinsic motivation is often shown as one of the most powerful predictors of academic achievement. Education providers often cultivate intrinsic motivation through extrinsic means. Vansteenkiste et al. (2006) define extrinsic motivation as the desire of people to participate in activities in order to gain something different from the task itself. Examples of extrinsic motivation include medals for the winners of a race, chocolate for good attendance, extra break time for positive behavior, vouchers for reading for pleasure, and completing homework in order to avoid a detention.

Finding ways to increase motivation is crucial because it allows us to change behavior, develop competencies, be creative, set goals, grow interests, make plans, develop talents, and boost engagement. Herzberg's theory of motivation believes that most people (and pupils) are capable of working many times harder and smarter than they usually do. Motivation can therefore boost performance massively. Pupils' past successful memories in mathematics, peer pressure, and classroom punishment during mathematics lessons can be observed as factors which can possibly contribute greatly to pupils' performance in this subject.

Peer influence is when learners choose to do something they would not otherwise do, because they want to feel accepted and valued by their friends. It is not just or always about doing something against their will. Peer pressure and influence can be positive. For example, a learner might be influenced to become more confident, try new beneficial activities or get more involved with studies. On the other hand, peer pressure can also influence learners negatively too. Steinmayr and Spinach (2009) argue that some young people might choose to try things they normally would not be interested in, like smoking or behaving in pugnacious ways. No doubt the rate of aggressive behaviors within school milieus are on the rise.

Pupils are more likely to succeed when they have succeeded in similar expeditions, especially when they are directed, focused, nurtured, engaged, connected and valued. Pupils' previous success can contribute to academic performance because it influences their perception on when, what, and how things are learned (Kendra, 2019). It surely has an impact on pupils' learning even when cognitive skills prove to be static.

Punishment in this study refers to pupils being subjected to a painful stimulus or having a pleasant one removed as a consequence of engaging in undesirable behavior. Punishment is



often associated with increased pupils' aggression, low self-esteem, and feelings of shame and guilt because the pupils might feel frustrated, different from other pupils, or at worst, that perhaps there is something wrong with him or her. Punishment would also lead to blockage of creative thinking, and shyness in pupils. If a pupil gets punished for everything he or she says or does, that would lead to a future adult with low self-esteem, an adult who does not believe in himself/herself, and who thinks his or her ideas are not worth discussing, and consequently feel very shy about expressing his/her ideas for fear of someone laughing at him/her. All these will certainly impinge on the academic performance of pupils in mathematics in one way or the other.

Kendra (2019) sees academic performance as the knowledge attained or skills developed in the school subjects, usually determined by test scores or marks assigned by teachers or both. It is the specified level of attainment or proficiency in academic work as evaluated by the teachers, by standardized tests or by a combination of both. Bhatnagar (2015) on his part considers Academic Achievement or Academic Performance of students as an aspect of their total behaviour. It is the product of the interaction of the student as an individual with his environment, namely school, teachers and peers. Kagama (2018) indicates many ways in which academic achievement is influenced. He reports that marks earned on an examination make incredible differences between pupils. Marks help to determine whether a pupil thought of himself as successful or smart or as a failure, an outcast or nitwit. Therefore, pupils' academic performance in mathematics are scores obtained after measurement, which represent how effectively the pupils are able to learn, develop and demonstrate an understanding of mathematical concepts taught. Some researchers have attempted to research on how some motivating factors affect learners' academic performance. According to Olalekan (2016), it is generally observed that peer groups have a lot of influence on students. This is seen from the role played by the peer group in the life and learning of a child; evidence abound that students feel more comfortable and relaxed among students. A child who is brilliant and surrounded by dull friends would lose interest in learning. On the other hand, a peer group which is prone to study would have a positive effect on a dull member towards learning and stimulate his/her interest in learning. Olalekan (2016) writes that the nature of a peer group determines the impact on the motivation of and achievements of its members. He further suggests that one group may have a negative impact on its members while the other may have a positive impact on its members as well.

Muhammed et al. (2021) carried out a study on how reward and punishment can improve student achievement. This research was carried out in Indonesia using eleven classes. The study adopted a descriptive survey design. A questionnaire was used to collect data and it was found that the reward and punishment method engages students to be active in various activities, giving rewards as appreciation, and punishment as a trigger not to fail, resulting in increased learning motivation. The researcher realized that punishment was another motivating aspect for students' learning achievement.

It is against the aforementioned background that the researcher resorted to finding out how some motivating factors such as peer group influences, success and punishment correlate and contribute to pupils' academic performance in mathematics in public primary schools in Bamenda II Sub-Division.



Statement of the Problem

Countries all over the world are striving to achieve qualitative education for their citizens. Mathematics appears to be at the center of every invention in this 21st century—a century characterized by explosions in technological inventions. GCE results in O/L mathematics indicate that this subject is very challenging to comprehend. Akoko (2021) further indicates that one of the reasons why students face challenges in understanding mathematics is because of the foundation that they had at the level of the primary schools. To him, pupils do not appear to be motivated enough. Thus, motivating factors have a great role to play not only on pupils' performance in mathematics but also on the overall development of the pupils and their educational upbringing in particular. Their development of these mathematical competencies will help them to further develop other 21st century skills which will enable them to survive as global citizens in this present century. How do motivating factors such as peer influence, pupils' success and punishment contribute to pupils' academic performance in mathematics? This question formed the focus of this study. It is against this background that this study set out to determine the relative contributions of motivating factors on pupils' academic performance in mathematics in Bamenda II subdivision.

Objectives of the Study

The objectives that guided the study were to determine the contribution of:

- Peer groups to pupils' academic performance in mathematics.
- Pupils' success to their academic performance in mathematics.
- Classroom punishment to pupils' academic performance in mathematics.

Research Questions

The following research questions guided the study:

- What is the relative contribution of peer groups to pupils' academic performance in mathematics?
- What is the relative contribution of pupils' success to their academic performance in mathematics?
- What is the relative contribution of classroom punishment to pupils' academic performance in mathematics?

Hypotheses

H0₁: Peer groups have no significant contribution to pupils' academic performance in mathematics.

Ha₁: Peer groups have a significant contribution to pupils' academic performance in mathematics.

H0₂: Pupils' success has no significant contribution to their academic performance in mathematics.



H₂: Pupils' success has a significant contribution to their academic performance in mathematics.

H₀₃: Classroom punishment has no significant contribution to pupils' academic performance in mathematics.

H_{a3}: Classroom punishment has a significant contribution to pupils' academic performance in mathematics.

METHODOLOGY

The descriptive survey and the correlational research designs were used in this study. The survey research design was used because the researcher was interested in generalizing the findings gotten from the sample to the entire population. On the other hand, the correlational research design was also considered appropriate because the study had to establish relationships between variables.

The study was carried out in the North West region of Cameroon, precisely in the Bamenda II subdivision. Bamenda II subdivision is one of the seven subdivisions that make up the Mezam division. The population of this study was made up of all the 150 primary three pupils of the two functional public primary schools in the Bamenda II subdivision (See Table 1).

Table 1: Distribution of Study Population

Public Primary Schools	Population		
	Male	Female	Total
Goupemang Mobile Intervention (GMI) Bamenda	27	40	67
Government Bilingual School (GBS) Down Town	34	49	83

With the aid of the Krejcie and Morgan table, a representative sample of 108 pupils was appropriate for the population of 150 pupils. The stratified proportionate sampling technique was used to select the sample size of 108 (See Table 2).

Table 2: Distribution of Study Sample

Public Primary Schools	Sample Size		
	Male	Female	Total
Goupemang Mobile Intervention (GMI) Bamenda	19	29	48
Government Bilingual School (GBS) Down Town	25	35	60



Primary data was collected by the use of a self-designed questionnaire. The questionnaires were distributed to the 108 pupils of GMI and GBS. Pupils' annual averages in mathematics in the 2022/2023 academic year were considered as their performance in this study.

The face and the content validities of the instrument were assured. On the other hand, the Cronbach alpha reliability of the questionnaire yielded an overall index of 0.82. Thus, the reliability of the questionnaire was assured as the minimum accepted value for Cronbach's alpha according to Fisher (2002) is 0.70 with maximum expected value being 1. Data was collected using the Direct Delivery Technique (DDT). The researcher personally went to the two sampled schools and distributed the questionnaires to the 108 pupils after obtaining permission from the various class teachers and with the aid of the respective class teachers. The researcher also helped to clarify some difficulties which some pupils had.

Data was analyzed using Pearson product-moment correlation (r), the coefficient of determination (r^2) to answer the research questions and the p-value for correlation to test the hypotheses at 0.05 level of significance. The analysis was carried out with the aid of the Statistical Package for Social Sciences (SPSS) version 26.

FINDINGS

Research Question 1: What is the relative contribution of peer groups on pupils' academic performance in mathematics?

H₀₁: Peer groups have no significant contribution to pupils' academic performance in mathematics.

H_{a1}: Peer groups have a significant contribution to pupils' academic performance in mathematics.

Table 3: Relative Contribution of Incentives and Rewards to Pupils' Academic Performance in Mathematics

		Peer groups	Pupils' Academic Performance	Coefficient of Determination (r^2)
Peer groups	Pearson Correlation (r)	1	.384**	.147
	Sig. (2-tailed)		.000	
	N	108	108	
Academic Performance	Pearson Correlation (r)	.384**	1	
	Sig. (2-tailed)	.000		
	N	108	108	

** . Correlation is significant at the 0.05 level (2-tailed).

The table reveals that a low positive relationship (0.384) exists between peer group influence and pupils' academic performance in mathematics. This means that when positive peer group influence in mathematics increases, pupils' academic performance in the subject also increases.



Furthermore, the relationship between peer group influence and pupils' academic performance in mathematics is significant at the 0.05 level of significance ($p=0.000$). Lastly, the findings show that 14.7% of the variations in pupils' academic performances in mathematics can be accounted for by peer group influence. This means that peer group influences in mathematics have a significant contribution to pupils' academic performance in mathematics as indicated by a p-value of 0.000.

Research Question 2: What is the relative contribution of pupils' success to their academic performance in mathematics?

H₀₂: Pupils' success has no significant contribution to their academic performance in mathematics.

H_{a2}: Pupils' success has a significant contribution to their academic performance in mathematics.

Table 4: Relative Contribution of Pupils' Success to Their Academic Performance in Mathematics

		Pupils' Success	Pupils' Academic Performance	Coefficient of Determination (r^2)
Pupils' Success	Pearson Correlation (r)	1	.321**	.103
	Sig. (2-tailed)		.003	
	N	108	108	
Academic Performance	Pearson Correlation (r)	.321**	1	
	Sig. (2-tailed)	.003		
	N	108	108	

** . Correlation is significant at the 0.05 level (2-tailed).

The table reveals that a low positive relationship (0.321) exists between pupils' success in mathematics and their academic performance. This means that when pupils' success in mathematics increases, their academic performance also increases. Furthermore, the relationship between pupils' success and their academic performance in mathematics is significant at the 0.05 level of significance ($p=0.003$). Lastly, the findings show that 10.3% of the variations in pupils' academic performances in mathematics can be accounted for by their success in the subject. This means that pupils' success has a significant contribution to their academic performance in mathematics as indicated by a p-value of 0.003.

Research Question 3: What is the relative contribution of punishment to pupils' academic performance in mathematics?

H₀₃: Classroom punishment has no significant contribution to pupils' academic performance in mathematics.

H_{a3}: Classroom punishment has a significant contribution to pupils' academic performance in mathematics.



Table 5: Relative Contribution of Punishment on Pupils' Academic Performance in Mathematics

		Punishment	Academic Performance	Coefficient of Determination (r^2)
Punishment	Pearson Correlation (r)	1	.221**	.049
	Sig. (2-tailed)		.006	
	N	108	108	
Academic Performance	Pearson Correlation (r)	.221**	1	
	Sig. (2-tailed)	.006		
	N	108	108	

** . Correlation is significant at the 0.05 level (2-tailed).

The table reveals that a low positive relationship (0.221) exists between punishment and pupils' academic performance in mathematics. This means that when punishment in mathematics increases to a certain extent, pupils' academic performance in the subject also increases. Furthermore, the relationship between punishment and pupils' academic performance in mathematics is significant at the 0.05 level of significance ($p=0.006$). Lastly, the findings show that 4.9% of the variations in pupils' academic performances in mathematics can be accounted for by punishment. This means that punishment in mathematics classrooms has a significant contribution to pupils' academic performance in mathematics as indicated by a p-value of 0.006.

DISCUSSION OF FINDINGS

The findings show that 14.7% of the variations in pupils' academic performances in mathematics can be accounted for by peer group influence. This means that peer group influences in mathematics have a significant contribution to pupils' academic performance in mathematics as indicated by a p-value of 0.000. The finding supports that of Olalekan (2016) who observed that peer groups have a lot of influence on students. The finding of this study suggests that a pupil who is brilliant in mathematics but surrounded by dull friends would likely lose his/her motivation in learning mathematics. On the other hand, a peer group which is prone to study mathematics would have a positive effect on a dull member towards learning and stimulate his/her motivation to study mathematics. interest on learning. Thus, the nature of a peer group determines the impact on the motivation to study mathematics and the achievements of its members in the subject.

The findings show that 10.3% of the variations in pupils' academic performances in mathematics can be accounted for by their success in the subject. This means that pupils' success has a significant contribution to their academic performance in mathematics as indicated by a p-value of 0.003. This finding suggests that when a pupil is used to succeeding with varied mathematical activities, he/she develops more confidence in the subject which can



lead to an improvement in his/her performance in mathematics. On the other hand, a pupil will likely become demotivated when he/she keeps failing upon multiple trials.

The findings show that 4.9% of the variations in pupils' academic performances in mathematics can be accounted for by punishment. This means that punishment in mathematics classrooms has a significant contribution to pupils' academic performance in mathematics as indicated by a p-value of 0.006. This finding agrees with that of Muhammed, Edi and Ulul (2021) who established that punishment can improve students' achievement greatly. It is worth mentioning that excessive punishment may instead lead to trauma for these young mathematicians in the primary schools. Therefore, punishment should be administered with much caution.

CONCLUSION

The study, which set out to determine the relative contributions of peer groups, pupils' success and punishment as motivating factors in mathematics classrooms on pupils' academic performance in mathematics, was carried out in Bamenda II subdivision in Cameroon. It was guided by three specific objectives, three research questions and three hypotheses. The study adopted the descriptive survey and correlational research designs. One hundred and eight (108) primary three pupils from two functional public primary schools in Bamenda II subdivision, selected from a population of 150 pupils using the stratified proportionate sampling technique, constituted the sample of the study. The findings of the study revealed that peer groups, pupils' success and punishment in mathematics classrooms all contribute significantly to their academic performance in mathematics. It was therefore recommended that punishment should be carefully utilized by the classroom teachers in a bid to keep pupils focused on the subject both in and out of the classroom. Furthermore, teachers should always use very easy questions either during set induction or during the introduction of new mathematical concepts—questions within the reach of all pupils. This is because perceived success in mathematics by pupils has proven to be a good motivating factor for students' in the subject. Lastly, group counseling should be done by both the school counselors and the classroom teachers, aimed at encouraging pupils to assist each other academically, especially in mathematics.

REFERENCES

- Aslihan, H., & Sundus, Y. (2020). *Handbook on Mathematics and Science Education*. Kafkas.
- Bhatnagar, S. C. (2015). *Learning style among creative students Allahabad*. Central Publishing House.
- Chaplin, D. N. (2016). *A study of achievement motivation in relation intelligence, vocational interests, achievement sex, and socio-economic status*. Delhi U.
- Chirkov, V. I., & Ryan, R. M. (2001). Parent and teacher autonomy-support in Russian and U.S. adolescents: Common effects on well-being and academic motivation. *Journal of Cross Cultural Psychology*, 32, 618–635.
- Fisher, R. W. (2002). *Getting to Yes: Negotiating agreement without giving in*. Penguin.
- Hawthorne, H. (2021). Motivation: The silent push to hard work. *Journal of Social Sciences*, 13, 56–72.



- Kagama, J. (2018). The school curriculum and its influence on teacher motivation in curriculum implementation in Kenya. *Journal of Culture and Values in Education, 1* (1), 9–25.
- Kendra, C. (2019). Everything Psychology (2nd ed.) Murayama.
- Muhammad, F., Edi, S., & Jul, A. M. (2021). *Gaining the best from motivation*. Faculty of teacher training and education, University of Tempory, Indonesia.
- Rapiudin, A. U. (2019). Students perception on their motivation in English (The analysis of students' Motivation based on Maslow's concept). *Biomatika Jurnal Ilmiah Fakultas Keguruan Dan Ilmu Pendidikan, 5*(02), 155–166.
- Steinmayr, R., & Spinath, B. (2009). The importance of motivation as a predictor of school achievement. *Learning and Individual Differences, 19*(1), 80–90. doi: 10.1016/j.lindif.2008.05.004
- Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2006). Motivating learning, performance, and persistence: The synergistic role of intrinsic goals and autonomy-support. *Journal of Personality and Social Psychology, 87*, 246–260.