RELATIONSHIP BETWEEN STUDENTS' PERCEPTION OF TEACHERS' COMMUNICATION BEHAVIOURS AND PERFORMANCE IN BASIC SCIENCE IN ANAMBRA STATE, NIGERIA

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Abstract: *The study investigated the relationship between students' perception of teachers' communication behaviours and performance in Basic Science in Anambra State, Nigeria. Three research questions and three null hypotheses tested at 0.05 alpha level guided the conduct of the study. The study adopted the correlation survey research design. The population comprised of 26,261 upper basic nine students in the 261 state government-owned secondary schools in Anambra State. A sample of 540 upper basic nine students obtained using multi-stage sampling procedure was used. The Teachers' Communication Behaviour Questionnaire (TCBQ) adapted by the researchers with reliability coefficients of 0.80 was used for data collection. The instrument was validated by three experts from Faculty of Education in Nnamdi Azikiwe University, Awka. Data were collected by administering the instruments to the students with the aid of four research assistants. The upper basic eight promotion results of the students in Basic Science were used as performance scores of the students. Data collected were analyzed using the Pearson Product Moment Correlation Coefficient and t-test of correlation analysis. The findings of the study revealed that a significant low positive relationship exists between students'*

perception scores of their Basic Science teachers' communication behaviours and performance scores in Basic Science. Also, findings of the study revealed a significant low positive relationship exist between students' perception scores of their Basic Science teachers' communication behaviours and performance scores in Basic Science with respect to gender. It was recommended amongst others that sufficient strategies be deployed by government, school authorities and the teachers in improving the classroom communication behaviours of teachers.

Keywords: *Teachers' communication behaviours; students' perception; performance; Basic Science*

Introduction

Teaching is one among the many activities that go on in any educational setting. It involves the use of many skills and attitudes which are expressed through the manifested behaviours of the teacher and it is instrumental for influencing learners' behaviours. Teaching is a set of events that take place outside of the learners and designed to support their internal learning process (Sequeira, 2012). Teaching according to Gafoor and Babu (2012) is seen as a performing art, which makes use of activities such as voices, gestures and movements to elicit, maintain attention and stimulate students' emotions.

To make desirable impact, teaching must aim at the total development of the individual, that is, to enhance intellectual capabilities, developmental and cognitive intellectuality, foster psycho-social skills, and draw out neuro-physical aptitude of the learners (Akinmusire, 2012). Ultimately, the objective of teaching is to help students develop their potentials on their own journey to adulthood so that they can become good, productive and useful citizens to their nations. Hence, the key personnel in the educational settings that stimulate learner's learning using various activities is the teacher and to achieve this objective, teacher's effectiveness is paramount.

The concept of teachers' effectiveness as defined by Okwuduba and Okigbo (2018) is the teacher's ability to transfer information to students and it is dependent on the teacher's level of pedagogical content knowledge. This concept however, is difficult to define since there has not been a consensus agreement among researchers on what measures a quality teacher. Nevertheless, as posited by Stronge, Ward and Grant (2011), it is possible to measure some teachers' attributes like interaction with students, teaching strategies, motivation, pedagogical content knowledge, classroom

management and communication through quantitative and qualitative research as these attributes can serve as indicators of teachers' effectiveness. These teachers' attributes according to Nwune, Nwoye, Oguezue and Okoye (2021) can be measured using the perceptions of teachers themselves – teachers' self-evaluation, principals/school administrators – hierarchical evaluation, other teachers/colleagues – peer evaluation and students – students' evaluation. For the purpose of this study, students' perception of teachers' classroom communication, one of the indicators of teachers' effectiveness will be considered.

Classroom communication according to Kazi, Abdul-Razak and Mosa (2012) includes the face-to-face interactions and the communications necessary between the teachers and the students in the classroom so as to ensure that learning takes place. According to Ahmad (2018), classroom communication is the process of sending and receiving messages that enables teachers and students to share knowledge, attitude and skills. It is the verbal and non-verbal interactions between the teacher(s) and the student(s) that exists in a classroom or any other learning centre and holds the key to any meaningful teaching and learning. According to Okorji (2014), many communication activities go on in the classroom either in the form of teaching, students' discussions and conversation. Okorji asserted further that the initiator of these communications is the teacher. All the strategies adopted and used by a teacher in the classroom to effectively communicate to students in order to bring about meaningful teaching and learning are referred to as the teacher's communication behaviours.

Eupena (2012) defined teachers' communication behaviours (TCBs) as the classroom behaviours of any teacher that serves as a communication link between the teacher and his/her students. The researcher posited that these behaviours are vital elements in the creation of a quality learning environment that determines the academic fate of the students. According to Sng Bee (2012), teachers' communication behaviours are really important for a teacher in transmitting of education, classroom management and interaction with students in the class. The importance of teachers' classroom communication behaviours cannot be over emphasized as Akudo (2020) posited that these behaviours can help to make classroom lessons clear and easy for students to learn; make the teacher's work in classroom management process easier as well as create an enabling environment for effective teaching and learning. Literature (Marzano & Marzano, 2019) has also identified teachers' classroom communication behaviours as a veritable tool for classroom management which invariably leads to improved learning experiences of learners.

According to She and Fisher as cited in Eupena (2012), there are five dimensions of teachers' classroom communication behaviours needed for

effective classroom communication between the teachers and the students in any classroom environment. These dimensions include: Challenging (this entails the use of high order questions to challenge students, stimulate their interest as well as motivate them to learn), encouragement and praise (this involves the use of praises and encouragement, a form of reinforcement in stimulating learners' interest and getting them to learn), non-verbal support (this include the use of non-verbal communication strategies such as gestures and facial expression in interacting with students), understanding and friendly (this involves the classroom teachers' understanding and friendliness with students) and controlling (this involves the use of certain classroom control strategies in controlling and managing students' classroom behaviours). From the foregoing, one can attribute high and/or low students' academic achievement to teachers' communication behaviours in the classroom, thus portraying the fact that they could be a relationship between the way students' perceive their teachers to be effective in communication and their academic performance.

Asrar, Tariq and Rashid (2018) showed in their study that there is a high and a positive relationship between teachers' communication and students' performance. Akudo (2020) also observed a high and positive relationship between teachers' communication and students' attitude toward science and motivation respectively in her study. When students are intrinsically and extrinsically motivated as well as develop positive attitude towards their academics, they no doubt would achieve more academically. Obilor (2020) also found in his study that teachers' communication influences students' academic performance.

Academic performance is the sum total of a student's learning outcomes in relation to a given standard over a specified period of time (Okpala & Okigbo, 2021). According to Ayibatonye and Ikechi (2018), it is a psychological construct that measures the level of knowledge acquired and skills developed in school subjects, generally indicated by marks obtained in tests in a term or annual examination. For the purpose of this study, the students' academic performance would be measured using their scores in Basic Science in the promotion examination for the 2020/2021 session.

Basic Science according to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2015) is defined as an approach to the teaching of science which involves the expression and the presentation of science concepts and principles as a fundamental unit of scientific thought, in order to avoid undue stress in the distinction between the various scientific fields. Basic Science involves the study of elementary biology, anatomy, earth/solar system, ecology, genetics, chemistry and physics as a single science subject (Omiko, 2016). It offers the basic training in scientific skills required for human survival, sustainable development and societal

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transformation. Basic science studies also involve bringing together traditionally separate science subjects so that students grasp a more authentic understanding of science.

According to the Nigerian Educational Research and Development Council (NERDC, 2012), the objectives of Basic Science now called Basic Science and Technology should be directed at enabling students who are exposed to the Basic Science curriculum to acquire the following: Develop interest in science and technology, acquire basic knowledge and skills in science and technology, apply scientific and technological knowledge and skills to contemporary societal needs, take advantage of the numerous career opportunities provided by science and technology, become prepared for further studies in science and technology, avoid drug abuse and related vices and be safety and security conscious. To achieve these objectives, Basic Science and Technology has been structured along the three levels of basic education in Nigeria as lower basic 1-3 (formerly known as primary 1-3), middle basic 4-6 (formerly known as primary 4-6) and upper basic 7-9 (formerly known as junior secondary 1-3). Unfortunately, it has been observed that the aforementioned objectives are not practically achieved as the learning of Basic Science for understanding as well as integrating its knowledge for future use is not reflected in most schools (Ezeoguine & Amaechi-Udogu, 2019). This is probably because students' performances in the subject both in internal and external examinations have not been impressive over the years.

The problem of poor performance in Basic Science has been a source of concern to all well meaning stakeholders in the educational sector, probing into the major causes of the poor performances in the subject with differing opinions. While some researchers attributed it to the difficult nature of the subject (Afuwape & Olugbuyi, 2019), others have attributed it to the poor and inadequate teaching and learning facilities, inadequate laboratories as well as the teachers handling the subject (Ayibatonye & Balafama, 2017; Umar & Samuel, 2018). Some studies (Oludipe, 2012; Ayibatonye & Ikechi, 2018) also attributed students' poor performances in Basic Science to some socio-cultural variables such as gender.

Gender is defined as the social or cultural construct, characteristics, behaviours and roles which society ascribes to males and females (Okeke, 2011). It is also defined as the personality traits, attitudes, behaviours, values, relative power, influence, roles and expectation that society ascribes to the two sexes (male and female) on a differential basis (Ezeh, 2013). The influence of students' gender in the relationship between students' perception of their teachers' communication behaviours and academic achievement has remained inconclusive as researchers share differing views. While the study of Al-Madani (2015) showed that students' gender is not significant in the relationship between students' perception of their teachers' communication

behaviours and academic achievement, the study of Han and Tosten (2016) reported otherwise. There is need therefore to investigate the moderating influence of gender in the relationship between students' perception of teachers' communication behaviours and Basic Science performance in Anambra State, Nigeria. Specifically, the study sought to determine the;

1. relationship between students' perception scores of their teachers' classroom communication behaviours (TCBs) and performance scores in Basic Science
2. relationship between male students' perception scores of their TCBs and performance scores in Basic Science
3. relationship between female students' perception scores of their TCBs and performance scores in Basic Science

Research Questions

The following research questions guided the conduct of the study.

1. What is the relationship between students' perception scores of their TCBs (challenging, encouragement and praise, non-verbal support, understanding and friendly, controlling) and performance scores in Basic Science?
2. What is the relationship between male students' perception scores of their TCBs (challenging, encouragement and praise, non-verbal support, understanding and friendly, controlling) and performance scores in Basic Science?
3. What is the relationship between female students' perception scores of their TCBs (challenging, encouragement and praise, non-verbal support, understanding and friendly, controlling) and performance scores in Basic Science?

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance.

1. There is no significant relationship between students' perception scores of their TCBs (challenging, encouragement and praise, non-verbal support, understanding and friendly, controlling) and performance scores in Basic Science.
2. There is no significant relationship between male students' perception scores of their TCBs (challenging, encouragement and praise, non-verbal support, understanding and friendly, controlling) and performance scores in Basic Science.
3. There is no significant relationship between female students' perception scores of their TCBs (challenging, encouragement and praise, non-verbal support, understanding and friendly, controlling) and performance scores in Basic Science.

Method

The study adopted a correlation survey research design. This design according to Nworgu (2015) seeks to establish the relationship that exists between two or more variables.

The population of the study consist of 26,261 upper basic nine students in the 261 state government-owned secondary schools in the six education zones in Anambra State. The sample of the study comprised 540 upper basic nine students from three education zone in the state. The sample was selected through a multistage sampling procedure. The stages were as follows: The first stage was to put the six education zones in Anambra State into six strata and utilize stratified simple random sampling technique to select three out of six education zones in the state. The second stage involved purposely and randomly selecting four co-educational/mixed schools with large students population from each of the three selected education zones so as to get both male and female students working together under the same teacher and environment and also get a sufficient number of respondents from each of these schools. This gave a total of 12 schools. The third stage involved using simple random sampling to draw 45 upper basic nine students from each of the 12 schools to obtain a sample size of 540.

The Teachers' Communication Behaviour Questionnaire (TCBQ) adapted from the Teacher Communication Behaviour Questionnaire (TCBQ) of She and Fisher (2002) with a reliability coefficient of 0.80 was used to collect data for this study. The TCBQ has four point response options of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with weights of 4,3,2,1 and 1,2,3,4 for positive and negative responses respectively.

The validation of the TCBQ was done by three experts, one from the Department of Science Education and two from Measurement and Evaluation unit and Educational Psychology unit of the Department of Educational Foundations, all from Nnamdi Azikiwe University. In order to ensure the reliability of the instrument, a trial testing involving simple administration method was carried out in Enugu state, outside the study's area of interest using a sample size of 50 upper basic nine students. A Cronbach alpha technique was used to determine the internal consistency of the items in the instrument. An internal reliability coefficient of .80 was obtained for the TCBQ.

The researchers administered the research instrument personally with the help four trained research assistants. The research assistants were briefed on the objectives of the study and how to collect data using the instruments. The research assistants assisted the researchers in the administration and collection of the instruments and in each of the selected schools; the instruments were administered and collected on the same day. The Basic

Science scores of the students from their upper basic eight promotion examination for the 2020/2021 session were obtained from the form teachers and these served as their Basic Science performance scores.

In analyzing the collected data, Pearson Product Moment Correlation was used to answer the research questions while the t-test of correlation analysis was used to test the research hypotheses at .05 level of significance. The interpretation was as follows; for research questions, a score of .80 and above is considered high relationship, .31 - .79 is considered moderate relationship while .30 and below is considered low relationship. In taking decision, where P-value is less than or equal to significant value of .05 ($P \leq$ .05), the null hypotheses were rejected otherwise (P>.05) the null hypotheses were accepted.

Results

Research Question 1: What is the relationship between students' perception scores of their TCBs (challenging, encouragement and praise, non-verbal support, understanding and friendly, controlling) and performance scores in Basic Science?

Table 1: Pearson Correlation Coefficient (r) of Students' Perception Scores of their TCBs (Challenging, Encouragement and Praise, Non-Verbal Support, Understanding and Friendly, Controlling) and Performance Scores in Basic Science

TCBs	N	Performance (r)	Remark
Challenging	540	.08	Low positive relationship
Encouragement and praise	540	.25	Low positive relationship
Non-verbal support	540	.13	Low positive relationship
Understanding and friendly	540	.23	Low positive relationship
Controlling	540	.03	Low positive relationship
Overall	540	.21	Low positive relationship

Table 1 shows Pearson correlation coefficients of .08, .25, .13, .23 and .03 for the relationship between secondary school students' perception scores of the challenging, encouragement and praise, non-verbal support, understanding and friendly and controlling dimensions of their teachers'

communication behaviours and performance scores respectively. The table also shows an overall Pearson correlation coefficient of .21 which indicates that a low positive relationship exists between students' perception scores of their teachers' communication behaviours and performance scores in Basic Science.

Research Question 2: What is the relationship between male students' perception scores of their TCBs (challenging, encouragement and praise, non-verbal support, understanding and friendly, controlling) and performance scores in Basic Science?

Table 2: Pearson Correlation Coefficient (r) of Male Students' Perception Scores of their Teachers' Communication Behaviours (TCBs) (Challenging, Encouragement and Praise, Non-Verbal Support, Understanding and Friendly, Controlling) and Performance Scores in Basic Science

TCBs	N	Performance (r)	Remark
Challenging	222	.15	Low positive relationship
Encouragement and praise	222	.29	Low positive relationship
Non-verbal support	222	.07	Low positive relationship
Understanding and friendly	222	.16	Low positive relationship
Controlling	222	.04	Low positive relationship
Overall	222	.19	Low positive relationship

Table 2 shows Pearson correlation coefficients of .15, .29, .07, .16 and .04 for the relationship between male students' perception scores of the challenging, encouragement and praise, non-verbal support, understanding and friendly and controlling dimensions of their teachers' communication behaviours and performance scores respectively. The table also shows an overall p-value of .19 which indicates a low positive relationship exists between male students' perception scores of these dimensions of their teachers' communication behaviours and performance scores in Basic Science.

Research Question 3: What is the relationship between female students' perception scores of their TCBs (challenging, encouragement and praise, non-verbal support, understanding and friendly, controlling) and performance scores in Basic Science?

Table 3: Pearson Correlation Coefficient (r) of Female Students' Perception Scores of their Teachers' Communication Behaviours (TCBs) (Challenging, Encouragement and Praise, Non-Verbal Support, Understanding and Friendly, Controlling) and Performance Scores in Basic Science

TCBs	N	Performance (r)	Remark
Challenging	318	.02	Low positive relationship
Encouragement and praise	318	.24	Low positive relationship
Non-verbal support	318	.18	Low positive relationship
Understanding and friendly	318	.27	Low positive relationship
Controlling	318	.02	Low positive relationship
Overall	318	.23	Low positive relationship

Table 3 shows Pearson correlation coefficients of .02, .24, .18, .27 and .02 for the relationship between female students' perception scores of the challenging, encouragement and praise, non-verbal support, understanding and friendly and controlling dimensions of their teachers' communication behaviours and performance scores respectively. The table also shows an overall p-value of .23 which indicates a low positive relationship exists between female students' perception scores of these dimensions of their teachers' communication behaviours and performance scores in Basic Science.

Hypothesis 1: There is no significant relationship between students' perception scores of their TCBs (challenging, encouragement and praise, non-verbal support, understanding and friendly, controlling) and performance scores in Basic Science

Table 4: t-Test of Significance of Relationship between Students' Perception Scores of their Teachers' Communication Behaviours (TCBs) (Challenging, Encouragement and Praise, Non-Verbal Support, Understanding and Friendly, Controlling) and Performance Scores in Basic Science

TCBs	Performance (r)	P-value	Decision
Challenging	.08	.07	Not significant
Encouragement and praise	.25	.00	Significant

Non-verbal support	.13	.00	Significant
Understanding and friendly	.23	.00	Significant
Controlling	.03	.50	Not
Overall	.21	.00	significant
			Significant

Table 4 shows p-values of .00, .00 and .00 respectively for the relationship between students' perception scores of the encouragement and praise, non-verbal support and understanding and friendly dimensions of their teachers' communication behaviours and performance scores in Basic Science. These p-values are less than the .05 alpha level and thus indicates a statistical significant relationship exists between the variables. Also, the table shows p-values of .07 and .50 respectively for the relationship between students' perception scores of the challenging and controlling dimensions of their teachers' communication behaviours and performance scores in Basic Science. These p-values are greater than the .05 alpha level and thus indicates a non statistical significant relationship exists between the variables. The overall p-value of .00 as indicated in the table which is less than the .05 alpha level shows a statistical significant relationship exists between secondary school students' perception scores of their teachers' communication behaviours and performance scores in Basic Science.

Hypothesis 2: There is no significant relationship between male students' perception scores of their TCBs (challenging, encouragement and praise, non-verbal support, understanding and friendly, controlling) and performance scores in Basic Science

Table 5: t-Test of Significance of Relationship between Male Students' Perception Scores of their Teachers' Communication Behaviours (TCBs) (Challenging, Encouragement and Praise, Non-Verbal Support, Understanding and Friendly, Controlling) and Performance Scores in Basic Science

TCBs	Performance(r)	P-value	Decision
Challenging	.15	.02	Significant
Encouragement and praise	.29	.00	Significant
Non-verbal support	.07	.00	Significant
Understanding and friendly	.16	.02	Significant

Controlling	.04	.59	Not
Overall	.19	.00	significant
			Significant

Table 5 shows p-values of .02, .00 .00 and .02 respectively for the relationship between male students' perception scores of the challenging, encouragement and praise, non-verbal support and understanding and friendly dimensions of their teachers' communication behaviours and performance scores in Basic Science. These p-values are less than the .05 alpha level and thus indicates a statistical significant relationship exists between the variables. Also, the table shows p-value of .59 for the relationship between male students' perception scores of the controlling dimension of their teachers' communication behaviours and performance scores in Basic Science. This p-value is greater than the .05 alpha level and thus indicates a non statistical significant relationship exists between the variables. The overall p-value of .00 as indicated in the table above, which is less than the .05 alpha level shows a statistical significant relationship exists between male students' perception scores of their teachers' communication behaviours and performance scores in Basic Science.

Hypothesis 3: There is no significant relationship between female students' perception scores of their TCBs (challenging, encouragement and praise, non-verbal support, understanding and friendly, controlling) and performance scores in Basic Science

Table 6: t-Test of Significance of Relationship between Female Students' Perception Scores of their Teachers' Communication Behaviours (TCBs) (Challenging, Encouragement and Praise, Non-Verbal Support, Understanding and Friendly, Controlling) and Performance Scores in Basic Science

TCBs	Achievement(r)	P-value	Decision
Challenging	.02	.68	Not significant
Encouragement and praise	.24	.00	Significant
Non-verbal support	.18	.00	Significant
Understanding and friendly	.27	.00	Significant
Controlling	.02	.68	Not significant
Overall	.23	.00	Significant

Table 6 shows p-values of .00, .00 and .00 respectively for the

relationship between female students' perception scores of the encouragement and praise, non-verbal support and understanding and friendly dimensions of their teachers' communication behaviours and performance scores in Basic Science. These p-values are less than the .05 alpha level and thus indicates a statistical significant relationship exists between the variables. Also, the table shows p-values of .68 and .68 for the relationship between female students' perception scores of the challenging and controlling dimension of their teachers' communication behaviours and performance scores in Basic Science. These p-values are greater than the .05 alpha level and thus indicates a non statistical significant relationship exists between the variables. The overall p-value of .00 as indicated in the table which is less than the .05 alpha level shows a statistical significant relationship exists between female students' perception scores of their teachers' communication behaviours and performance scores in Basic Science.

Discussion

The findings of this study showed a low positive relationship exists between upper basic nine education students' perception scores of the challenging, encouragement and praise, non-verbal support and understanding and friendly and controlling dimensions of their teachers' communication behaviours and performance scores in Basic Science. The findings of the study also showed the same low positive relationship for both male and female students. This relationship can be attributed to the view that students being the recipients' of classroom teachers' teachings are influenced by their teachers' communication behaviours in the class and thus may be willing to put in more effort towards optimum academic performance when they perceive these communication behaviours of their teachers to be effective and geared towards their academic success.

The findings of this study is in line with the study of Eupena (2012) who posited that all the dimensions of the science teachers' communication behaviours were instrumental in improving students' performance in science. The findings of this study also agree with the findings of Akudo (2020) who was of the opinion that students can be motivated towards academic success by their teachers through the use of effective communication strategies. The findings of this study also lends credence to the findings of Asrar, Tariq and Rashid (2018) as well as Obilor (2020) that effective classroom teachers' communication improves students' success and academic performance.

Again, the findings of the study showed that the low positive relationship exists between upper basic nine education students' perception scores of the encouragement and praise, non-verbal support and understanding and friendly dimensions of their teachers' communication behaviours and performance scores in Basic Science are significant while that of challenging

and controlling dimensions are not significant. For the male students, only the low positive relationship between male students' perception scores of the controlling dimension of their teachers' communication behaviours and performance scores in Basic Science is not significant while the others are significant and this could be attributed to the male gender's inherent tendencies to resist behavioural control or regulations of all forms. For the female students on the other hand, the low positive relationship between their perception scores of the challenging and controlling dimension of teachers' communication behaviours and performance scores in Basic Science are not significant while the others are significant and this could be attributed to the female gender's inclinations to fragility and their recently developed tendencies to resisting behavioural control or regulations just like their male counterparts.

However, the findings of this study show that the influence of gender in the relationship between students' perception scores of their teachers' communication behaviours and performance scores in Basic Science is not significant. This finding agreed with the findings of Al-Madani (2015) that no statistical difference is found between students' achievement and their faculty members' verbal communication across their gender and even year of study. This finding however, contradicts the assertion of Han and Tosten (2016) who opined that a statistical difference exists between students' perception of their teachers' in-class and teacher-to-student communication.

Conclusion

The findings of this study are pointers to the fact that the way students perceive their teachers to be effective in classroom communication influences their academic performance in Basic Science. This influence is same for both male and female students.

Recommendations

Based on the findings of the study, the following recommendations were made;

1. sufficient strategies such as in-service training, conferences and seminars be deployed by governments and school authorities for engaging teachers in order to improve their communication behaviours
2. the services of school guidance counsellors should be employed in order to help teachers with poor communication behaviours
3. governments and other relevant stakeholders should provide educational facilities and incentives that would attract only the best to the teaching profession

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