SOCIAL COMPETENCE AND GENDER AS PREDICTORS OF JUNIOR STUDENTS' ACADEMIC ACHIEVEMENT IN BASIC SCIENCE IN ENUGU STATE

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Abstract
The study investigated social competence and gender as predictors of junior secondary school students' academic achievement in basic science in Enugu state. Three research questions and three null hypotheses guided the study. The predictive correlation design was adopted for the study. The population of the study was 9,192 upperbasic science students in Enugu state. The sample size for the study was 1000 students drawn using multi-faceted sampling procedure involving purposive and random sampling techniques. The instrument for data collection was Students' Social Competence Scale. The students' achievement scores in Basic science were obtained from the teachers' score folder. Data generated from the study was analysed using simple and multiple linear regressions. The findings of the study revealed among others that 1.6% and 1.1% of the variance in achievement in Basic science was attributed to social competence and gender of Basic science students' respectively. Also, achievement scores in Basic science were significantly predicted by social competence and gender, individually and jointly. It was recommended that basic science teachers should ensure that the atmosphere within the classroom is gender friendly enough, making sure that both male and female students have a conducive social atmosphere to be actively involved in learning Basic science.

Keywords: *Social- Competence, Gender, Basic-Science, Achievement, Predictor*

Introduction

Learning is often a difficult activity especially for a new concept. Learners may however learning very easily if someone has learnt what they are trying to learn and guides them in their own leanring. Students as a result may either continue or cease any profitable academic behaviours depending on how they are reinforced or rewarded within the social environments of the school and the atmosphere within the classroom. Students by observing the teacher or fellow students as model, pay attentions to the skills they have, retain them in order to reproduce and are motivated; and reinforce those skills depending on the rewards that proceed from them (Amna, 2021). The whole tenet of the

social learning theory therefore is founded on the idea that learning is a social endeavor that must happen within a social context. The social learning theorists hold that meaningful learning barely occurs in isolation and therefore, learners require certain level of social competence to thrive academically.

Social competence refers to the broad set of emotional, social, and cognitive skills needed for adaptation to a diverse array of developmental contexts and challenges (Anisa, Suganda & Jaya, 2019). Social competence according to Bajer (2015) is the effectiveness or skill in interpersonal relations and social situations, increasingly considered an important component of mental health. It involves the ability to evaluate social situations and determine what is expected or required; to recognize the feelings and intentions of others; and to select social behaviours that are most appropriate for that given context. It is important to note, however, that what is required and appropriate for effective social functioning is likely to vary across settings. In academic settings, when students face challenges in learning, interpersonal social competence is necessary for obtaining assistance from both teachers and peers (Franco, Beja, Candeias & Santos, 2017). Learners with higher in social competence develop social support networks, which provide for higher academic achievement which are often achieved through interpersonal communication.

When students know how to communicate their ideas, listen to what others have to say, and cooperate with others, they have a far easier time achieving success in the classroom and in most academic task. Unsurprisingly, students who learn proper social skills demonstrate far more positive behaviours and far fewer negative ones both in their personal lives and their academic ones (Junge, Valkenburg, Deković & Branje, 2020). Cooperating with peers according to Franco et al. (2017) is a necessary skill in order for students to work productively to overcome problems and develop solutions. Whether it is conflict resolution or learning to understand others' points of view, social skills help students work with their peers and motivate each other to reach goals by listening actively.

Students may find it difficult to learn when they listen inattentively or are only paying some attention or even none at all in their class. Learning thus requires active listening (Hoffman et al., 2021). Active listening means consciously and intentionally listening to a speaker, such as a student's teacher. However, active listening can be quite difficult, particularly for students who struggle with social competence. By learning to actively listen, students as Hoffman et al. (2021) noted can comprehend more of what they hear and respond more thoughtfully, greatly improving their ability to learn and their performance in the classroom especially in subjects like basic science which is often perceived to be difficult among junior secondary school students.

Basic science formally known as integrated science is an approach to the teaching of science, of which concepts and principles are presented so as to express to fundamental unity of scientific thought and avoid premature or undue stress on the distinction between the various scientific fields (Nwankwo, 2020). The term "integrated

science" is often used as a synonym for interdisciplinary and unified science, which may be applied generally to any curriculum effort in which two or more previously separated science subjects are combined. It is thus important in learning science at higher level of education as it forms the foundation of science learning. At the secondary school level of education, basic science according to Agbidye (2015) poses some learning challenges to students owing to its unitive nature which is not structurally coherent given that its contents are not arranged to suit the Nigerian student. Students achievement in the subject Basic science according Nwankwo and Okoli (Adegbola, 2023) to is therefore not consistently satisfactory. Science learning as well as its application requires collaboration among learners or scientist in other to reach success. The collaboration among scientist to make novel discoveries or among science students in order to learning meaningful is not different for basic science (Adegbola, 2019). Thus students require high levels of social competence to thrive in basic science.

Studies like those of Ekpenyong, Adediran and Adeyemi (2019) showed that social competence is highly correlated with and greatly influenced school pupils' academic achievement. Shehu (2019) similarly reported in her study that social competence was a significant predictor of academic achievement in elementary school students. In a related study, Nurfadila (2019) showed that students' social competence was not a significant predictor of academic achievement in English language. The study however noted that all the dimensions of social competence; communicative, assertiveness, future orientation, critical thinking, identity formation and pro-social tendency did not significantly determine academic achievement in English language. In a contrasting study however, Amna (2021) found out that that there was no statistically significant relationship between children's social competence and their academic achievement. These disparities in research findings on the predictive association between social competence and academic achievement suggest the need for further investigation. The need for further studies is necessitated also by the gender gaps in science achievement, a phenomenon that is not alien to the learning of basic science.

Gender is usually categorized as female or male but there is variation in the biological attributes that comprise sex and how those attributes are expressed (Baker & Milligan, 2016). Gender refers to the socially constructed roles, behaviours, expressions and identities of girls, women, boys, men, and gender diverse people. There was no measurable difference detected in the average scores by gender in either the life science or physical science domains. Males outperformed females overall in science in 2003, which was also the case in 1995. Recent studies in the developed world have shown a reversal in academic performance between males and females, with females outperforming males in almost all disciplines at various levels of the educational ladder. Ani, Obodo, Ikwueze and Festus (2021) reported that gender (male/female) had no significant effect on students' achievement in basic science. Science classrooms even at the basic level can be dominated by male or female students depending on which gender has the dominant social competency skills (Bajer, 2015). There is need therefore to also

examine the interaction of social competence and gender in the prediction of academic achievement of students' in basic science.

Statement of Problem

Basic science is one of the core subjects in junior secondary school, and despite its importance and efforts made by stakeholders in the educational sector to optimize the learning of basic science as a foundational science subject for students of pure science subjects and for technological advancement of the country, students' academic achievement in basic science has remained unsatisfactory. Basic Science as a subject registers a good percentage of pass among students in Upper Basic classes in Enugu state as is evident from analysis of students' results in Basic Education Certificate Examination (BECE). However, the students' academic achievement has not remained satisfactorily stable; neither has it become comparable to the standards found in advanced countries. Although, several factors such as the structural problems in Basic science curriculum arrangement and teaching methods adopted by science teachers have been implicated for the poor academic achievements in the subject, little or no attention has been given to predictive effect social competence and gender on basic science students' achievement in basic science.

Majority of the studies on the relationship between social competence and gender and academic achievement in science subjects at secondary school levels in Nigeria have significantly focused on students at the senior level with evidences of such relationships among students at the junior level being scanty. In light of these issues, the need arises for an empirical investigation into the predictive values of social competence and gender in upper basic science students' academic achievement. Thus, the problem of the study posed as a question therefore is: Does social competence and gender predict upper students' academic achievement in basic science?

Purpose of the Study

The purpose of this study was to investigate social competence and gender as predictors of junior students' academic achievement in Enugu State. Specifically, the study sought to determine the:

1. Amount of variation in Basic science students' achievement scores that is attributed to their social competence.
2. Amount of variation in Basic science students' achievement scores that is attributed to students' gender.
3. Amount of variation in Basic science students' achievement scores that is attributed to both social competence and gender.

Research Questions

1. What is the amount of variation in Basic science students' achievement scores that is attributed to their social competence?

2. What is the amount of variation in Basic science students' achievement scores that is attributed to students' gender?
3. What is the amount of variation in Basic science students' achievement scores that is attributed to both social competence and gender?

Hypotheses

The following null hypotheses were proposed for the study, which was tested at .05 level of significance.

1. Social competence is not a significant predictor of junior secondary school students' academic achievement in Basic Science.
2. Gender is not a significant predictor of junior secondary school students' academic achievement in Basic Science.
3. Social competence and gender do not significantly co-predict junior secondary school students' academic achievement in Basic Science.

Method

The design adopted for the study was predictive correlation. Correlation research design according to Nworgu (2015) attempts to establish relationships between two or more variables and generally cover studies concerned with the relatedness of two or more variables. The correlation design indicates the direction and size of the relationship between the variables and may employ a group of statistics known as regression analysis. The study was carried out in Enugu state. 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. Enugu, the capital city of Enugu state, is approximately two and half driving hours away from Port Harcourt. Enugu Education Zone comprises of three local government areas, namely: Enugu East local government area, Enugu North local government area and Isiuzo local government area. Enugu education is suitable for the study because students' achievement in Basic science in Basic science within the zone has not met the satisfactory standard and expectations of teachers and researcher. The findings of the study may therefore inform educational practices that could improve academic achievement in the state. The population of the study comprises 9,192 junior secondary school two (JSS2) students in Enugu State. The sample for the study consisted of 100 JSS2 students obtained using multi-faceted sampling procedure involving random and purposive sampling techniques. The instrument for data collection was the self-report students' Social competence Scales (SSCS).

SSCS was a self-report students' version of the Social competence Scales adopted from Trevisan *et al.* (2018). The instrument requires the students to rate themselves on a 5-point likert scale ranging from 'not true or almost never true' to 'very true or almost always true'. Higher scores indicated greater agreement with an item and thus, higher level of social competence. The instrument had 77 items according to content domains of the dimensions and a demographic data

section that was used gather information on students' gender. It has seven dimensions namely: social motivation, social inferencing, empathic concern, social knowledge, verbal conversational skills, non-verbal sending skills and emotion regulation.

The validity of SSCS was done by three lecturers in the department of science education, Nnnamdi Azikiwe University, Awka. The reliability of SSCS was established using Cronbach's Alpha which yielded a coefficient of internal consistency of 0.77. The researcher with the help of 20 research assistants who are subject teachers in the sampled schools administered the instrument directly to the respondents. The researchers briefly oriented the research assistants on the objectives of the study and how to administer the instrument and collect the data. The instruments were administer and collected on the spot to reduce sample mortality. The data generated from the instrument were collated by the researchers and inspected and was used for data analysis. The data for the study was analysed using simple linear and multiple regressions. The criteria for rejecting or not rejecting any null hypothesis which were tested at 0.05 level of significance was that whenever the P-value was less than or equal to 0.05 ($P \leq 0.05$) the null hypothesis was rejected and whenever the Pvalue is greater than 0.05 ($P > 0.05$), the null hypotheses was not rejected.

Results

Research Question 1: How does social competence predict junior secondary school students' academic achievement in Basic Science?

Table 1: Prediction of Junior School Students' Achievement score in Basic Science by Social Competence

Model	R	R^2	Adjusted R^2	Unstandardized coefficients ( )	Std. Error
Constant Social competence	.128[a]	.016	.015	85.291 .093	11. 868

a. Predictors: (Constant), Social Competence

Table 1 shows that a positive correlation (R = 0.128) exists between junior secondary school students' social competence and their achievement score in Basic Science. The R-Square value of 0.016 indicates that 1.6percent of the variance in Basic Science scores is predicted by social competence. The unstandardized coefficient of 0.093 shows that a unit rise in social competence increases academic achievement score in Basic science by 0.093.

Hypothesis 1: Social competence is not a significant predictor of junior secondary school students' academic achievement in Basic Science.

Table 2: Significance of Prediction of Achievement score in Basic Science by Social Competence

Model		Sum of Squares	df	Mean Square	F	Pvalue
1	Regression	2325.403	1	2325.403	16.510	.000[b]
	Residual	140564.197	998	140.846		
	Total	142889.600	999			

a. Dependent Variable: Achievement score
b. Predictors: (Constant), Social Competence

Table 2 shows that social competence is a significant predictor of achievement scores in Basic Science, $F(1, 998) = 16.510$, $p < 0.05$. The null hypothesis was therefore rejected meaning that social competence is a significant predictor of junior secondary school students' academic achievement in Basic Science.

Since social competence 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 = 85.291 and b value = 0.093 is:

AABS = 85.291 + 0.093(SC)

Where, AABS = Academic Achievement in Basic Science and SC = Social Competence.

Research Question 2: How does gender predict junior secondary school students' academic achievement in Basic Science?

Table 3: Prediction of Junior School Students' Achievement score in Basic Science by Gender

Model	R	R^2	Adjusted R^2	Unstandardized coefficients ( )	Std. Error
Constant	.103[a]	.011	.010	77.653	11.902
Gender				-2.923	

a. Predictors: (Constant), Gender

Table 3 shows that a positive correlation (R = 0.103) exists between junior secondary school students' gender and their achievement score in Basic Science. The R-Square value of 0.011 indicates that 1.1percent of the variance in Basic Science scores is predicted by gender. The unstandardized coefficient of -2.923 shows that in moving from male to female students, academic achievement score in Basic science decreases by 2.923.

Hypothesis 2: Gender is not a significant predictor of junior secondary school students' academic achievement in Basic Science.

Table 4: Significance of Prediction of Achievement score in Basic Science by the Dimensions of Parental Involvement

Model		Sum of Squares	df	Mean Square	F	Pvalue
1	Regression	1512.760	1	1512.760	10.679	.001[b]
	Residual	141376.840	998	141.660		
	Total	142889.600	999			

a. Dependent Variable: Basic Science Achievement
b. Predictors: (Constant), Gender

Table 4 shows that gender is a significant predictor of achievement scores in Basic Science, F (1, 998) = 10.679, $p < 0.05$. The null hypothesis was therefore rejected meaning that gender is a significant predictor of junior secondary school students' academic achievement in Basic Science.

Since gender 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 3, where constant = 77.653 and b value = 2.923 is:

AABS = 77.653 + 2.923(GEND)

Where, AABS = Academic Achievement in Basic Science and GEND = Gender.

Research Question 3: How does social competence and gender co-predict junior secondary school students' academic achievement in Basic Science?

Table 5: Co-Prediction of Junior School Students' Achievement score in Basic Science by Social Competence and Gender

Model	R	R^2	Adjusted R^2	Unstandardized coefficients ( )	Std. Error
Constant				90.098	
Social competence	.162[a]	.026	.024	.091	11.813
gender				-2.843	

a. Predictors: (Constant), Social competence, Gender

Table 5 shows that a positive multi-correlation (R = 0.162) among junior secondary school students' social competence, gender and their achievement score in Basic Science. The R-Square value of 0.026 indicates that 2.6percent of the variance in Basic Science scores was co-predicted by social competence and gender. The unstandardized coefficients of 0.091 and -2.843 shows that while social competence increases academic achievement in basic science by 0.091, being a female students results in correspondent decrease in achievement by 2.843

Hypothesis 3: Social competence and gender do not significantly co-predict junior secondary school students' academic achievement in Basic Science.

Table 6: Significance of Prediction of Achievement score in Basic Science by the Dimensions of Parental Involvement

Model		Sum of Squares	df	Mean Square	F	Pvalue
1	Regression	3756.200	2	1878.100	13.458	.000[b]
	Residual	139133.400	997	139.552		
	Total	142889.600	999			

a. Dependent Variable: Basic Science Achievement
b. Predictors: (Constant), Social Competence, Gender

Table 6 shows that social competence and gender are a significant co-predictors of achievement scores in Basic Science, F (2, 997) = 13.458, $p < 0.05$. The null hypothesis was therefore rejected meaning that social competence and gender significantly co-predicted junior secondary school students' academic achievement in Basic Science.

Since social competence and gender are significant co-predictors of achievement scores in Basic Science, the regression model ($Y= a + bX_1 + bX_2$) for the prediction of achievement score in Basic Science as derived from Table 5, where constant = 90.098, b value = 0.091 and c value = -2.843 is:

AABS = 90.098 + 0.091 (SC) - 2.843(GEND)

Where, AABS = Academic Achievement in Basic Science, SC = Social Competence and GEND = Gender.

Discussion

The findings of the study showed that social competence is a significant predictor of academic achievement in basic science. The findings of the study can be hinged on the fact that students who have high level of social competence develop self-awareness which enables them to effectively engage with other students and gain deeper understanding over the learning materials for which they interact. Social competence gives the students the effectiveness needed for greater interpersonal communication helping them in their learning progress. Thus, socially competent students are often sufficiently disposed to foster greater academic relationship with their peers and classmates as well as their teachers. These interactions help them to be at ease when exposing their lack of understanding in order to learn from their fellow peers or to ask questions.

Social competence also plays significant role in facilitating greater academic commitment and engagement in the learning process. Since socially competent students know how to navigate the social environment within academic setting, their interest is easily aroused and sustained in the learning process. This engagement is often enhanced by the introduction of more social activities within the classroom by either calling for role play, individual presentation and focus group discussions or collaborative learning. Since knowledge is not acquired in isolation, the engagement of socially competent

students in the learning process affords them the opportunity not only to learn from the teachers but also to learn from the fellow students or their seniors, thus, improving academic achievement.

The findings of the study are in agreement with the findings of Ekpenyong, Adediran and Adeyemi (2019) that social competence is highly correlated with and greatly influenced primary school pupils' academic achievement. The findings of the study support the findings of Shehu (2019) that social competence and attitudes towards school were significant predictors of academic achievement in elementary school students. The findings of the study contradict the findings of Nurfadila (2019) that students' social competence was not a significant predictor of academic achievement in English language.

The findings of the study showed that gender was a significant predictor of academic achievement in Basic science. However, with respect to social competence, male students tend to achieve more than female students in Basic science. The observed variance in academic achievement with respect to gender could be attributed to the inherent gender stereotype common in classrooms. Male students tend to receive more attention and show more interest when the subject matter involves science. This may incite the teacher to focus more on the males or allow the male students dominate the basic science without ensuring that gender equity is met. Thus, socially competent males may interact more among themselves or with other male students over science subjects like basic science and dominate the classroom to the unconscious neglect of the teacher resulting in male having higher academic achievement irrespective of their level of social competence. The findings of the study further showed that social competence and gender together significantly predicted academic achievement in Basic science. The interaction between the variables showed that although male students may perform better than female students in Basic science, high social competency skills could mitigate this gender gap by enable female students to relate properly with other students over their learning and thereby improve academic achievement. The findings of the study are disagree with the findings of Ani, Obodo, Ikwueze and Festus (2021) that there is no significant influence of gender on students' academic achievement in basic science.

Conclusion

Social competence is a significant predictor of academic achievement in Basic science. It plays a significant role in students' academic achievement a gives students the capacity to adapt to the social dynamics of the academic environment, maximize their learning through varying relationships with students and teacher and thereby enhance academic achievement. It is also concluded that gender is a significant factor in junior secondary school students' academic achievement in Basic science. The significance of the co-predictive power of social competence and gender on academic achievement of junior secondary school students in Basic science denotes the fact gender disparities exist

in the social competence of students with male students possessing higher social competence.

Recommendations

1. There should be in-depth study into gender disparities in academic achievement of junior secondary school students in basic science with respect to the social dynamics employed by Basic science teachers within the school periphery.
2. Basic science teachers should ensure that the atmosphere within the classroom is gender friendly enough, making sure that both male and female students have a conducive social atmosphere to be actively involved in the learning process.
3. Effort should be made by science teachers to facilitate greater interaction among male and female students especially over learning materials in relation to Basic science. This can be achieved through teacher-directed group studies initiated with a view to mitigate any bias to learning or to address any form of gender-stereotype issues within the classroom.

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