



TEACHER-STUDENT INTERACTION AND CLASSROOM MANAGEMENT AS PREDICTORS OF SKILL ACQUISITION IN SECONDARY EDUCATION: EVIDENCE FROM CROSS RIVER STATE

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ABSTRACT

This study investigates the role of teacher-student interaction and classroom management as predictors of skill acquisition among secondary school students in Cross River State, Nigeria. Utilizing a multi-stage sampling technique, the study selected a representative sample of 1,176 junior secondary school students from 45 schools offering Basic Technology across three educational zones: Calabar, Ikom, and Ogoja. The research aimed to determine which classroom variables, specifically teacher-student interaction and classroom management, effectively distinguish between high and low skill acquisition groups. The study employed Fisher's linear stepwise discriminant analysis to analyze the data, revealing significant differences between classroom variables. Results indicated that teacher-student interaction (Wilk's Lambda = .993, $F = 7.779$, $p = .005$) and classroom management (Wilk's Lambda = .998, $F = 2.514$, $p = .113$) are crucial predictors of students' skill acquisition levels. The classification function accurately predicted 80.1% of the original group memberships, demonstrating a high efficiency in distinguishing between students with high and low skill acquisition. Moreover, the study found that classroom settings and thermal conditions also significantly influence students' skill acquisition. However, factors such as student-student interaction and classroom lighting showed no significant predictive power. The results underscore the importance of effective teacher-student interactions and robust classroom management in fostering an environment conducive to skill acquisition. The findings of this study have important implications for educational policy and practice, suggesting that enhancing teacher-student interactions and improving classroom management can significantly boost skill acquisition among secondary school students. The findings will guide educators, school administrators, and policymakers in implementing strategies that enhance learning outcomes and equip students with essential skills for future success.

KEYWORDS: Teacher-Student Interaction, Classroom Management, Skill Acquisition, Secondary Education, Predictors

Background to the study

In developed countries, extensive research has shown that teacher-student interaction and classroom management are critical predictors of skill acquisition in secondary education.

Studies in the United States and Europe indicate that positive teacher-student interactions contribute significantly to students' cognitive and emotional development, which in turn enhances their ability to acquire and apply new skills

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(Aldrup, Carstensen & Klusmann, 2022). Effective classroom management has also been linked to better academic performance and skill acquisition, as it creates a structured and supportive learning environment that allows students to focus on learning activities without frequent disruptions (McGarr, 2021). The integration of technology in classrooms in these countries has further enabled teachers to manage classrooms more efficiently and engage students in interactive learning processes, thereby fostering skill acquisition.

Within Africa, the impact of teacher-student interaction and classroom management on skill acquisition is increasingly being recognized, although research in this area is less extensive compared to developed countries. Studies conducted in South Africa and Kenya have highlighted the importance of teacher-student relationships in improving students' motivation and engagement, which are essential for effective skill acquisition (Siad, 2023). However, challenges such as large class sizes, inadequate teacher training, and limited resources often hinder effective classroom management and interaction. Despite these challenges, innovative approaches such as peer teaching and collaborative learning have shown promise in enhancing skill acquisition by fostering a more interactive and supportive classroom environment (Agwu, & Nmadu, 2023).

In Nigeria, the educational system faces significant challenges, including overcrowded classrooms, insufficient infrastructure, and a lack of trained teachers, which impact teacher-student interactions and classroom management. Despite these challenges, there is growing recognition of the importance of these factors in promoting skill acquisition among secondary school students. Research indicates that positive teacher-student interactions can lead to improved student outcomes by fostering a supportive and engaging learning environment (Owoyemi, 2024). Furthermore, effective classroom management practices are essential for creating an orderly and conducive learning atmosphere that facilitates skill acquisition (Anyaeji, 2023). The Nigerian government's efforts to improve teacher training and invest in educational infrastructure aim to address these issues and enhance the overall quality of secondary education, thereby promoting better skill acquisition among students.

In Cross River State, Nigeria, the significance of teacher-student interaction and classroom management as predictors of skill acquisition in

secondary education is becoming increasingly evident. The state's educational sector faces several challenges, including overcrowded classrooms, inadequate infrastructure, and limited resources, which hinder effective teaching and learning processes (Odok, Akpam, & Abana, 2023). Despite these obstacles, there is a growing awareness of the crucial role that positive teacher-student interaction and efficient classroom management plays in enhancing students' learning outcomes. Studies conducted in the region suggest that when teachers engage actively with their students and manage their classrooms effectively, students are more likely to acquire essential skills necessary for their academic and personal development (Okam, 2024). This is particularly important in a state like Cross River, where the educational system is striving to improve its overall quality and meet the demands of a rapidly changing world.

LITERATURE REVIEW

Teacher-student interaction has been identified as a crucial factor influencing students' academic performance and skill acquisition. Positive interactions between teachers and students can enhance students' motivation, engagement, and overall learning experience (Leenknecht, Snijders, Wijnia, Rikers, & Loyens, 2023). Studies show that when teachers develop strong, supportive relationships with their students, it fosters a conducive learning environment that encourages active participation and persistence in learning activities (Sadoughi, & Hejazi, 2023). Moreover, students who perceive their teachers as caring and supportive are more likely to exhibit higher levels of academic achievement and develop essential skills necessary for their future careers (Nunes, Oliveira, Castelli, & Cruz-Jesus, 2023).

Classroom management is another critical aspect that significantly impacts students' ability to acquire skills. Effective classroom management strategies help create a structured and orderly environment conducive to learning (Ahmed, 2024). Research indicates that classrooms characterized by clear expectations, consistent routines, and well-managed behaviors are more likely to facilitate skill acquisition among students (Igwe, & Amirize, 2023). Teachers who employ proactive management techniques, such as establishing rules and procedures and reinforcing positive behavior, can minimize disruptions and maximize instructional time, thereby enhancing

students' learning outcomes (Goodman, Mcbain, Ye, Sun, & Maitreesophon, 2023).

The interplay between teacher-student interaction and classroom management is pivotal in predicting skill acquisition in secondary education. Studies suggest that when teachers combine positive interactions with effective management practices, students are more likely to engage in meaningful learning activities and develop essential skills (Osterman, 2023). For instance, teachers who create a supportive classroom climate and manage their classrooms effectively can address diverse student needs, promote cooperative learning, and encourage self-regulation, all of which are vital for skill development (Kong, S. C., & Lai, M. (2023). This integrated approach not only enhances students' academic performance but also prepares them for real-world challenges.

Empirical studies provide robust evidence supporting the significance of teacher-student interaction and classroom management in skill acquisition. A study by Mallik, (2023), found that positive teacher-student relationships were associated with increased student engagement and academic success. Similarly, research by Archambault, Lampron-de Souza, Lamanque-Bélanger, Pascal, Pagani, & Dupéré, (2024). highlighted that effective classroom management is one of the strongest predictors of student learning outcomes. These findings underscore the importance of fostering positive interactions and implementing sound management practices to enhance students' skill acquisition in secondary education.

The findings from research on teacher-student interaction and classroom management have important implications for educational practice. Educators and policymakers should prioritize professional development programs that equip teachers with the skills needed to build positive relationships with students and manage their classrooms effectively (Gao, Bao, Du, & Yan, 2023). Additionally, schools should implement policies that support a collaborative and inclusive learning environment, where both teachers and students can thrive (Lakkala, Galkiené, Navaitiené, Cierpiałowska, Tomecek, & Uusiautti, 2021).

Owan, Beshel, Ovat, Anagbogu & Otu (2023) emphasizes the importance of establishing clear expectations, rules, and procedures to create a well-managed classroom. They also highlight the

need for effective classroom management to minimize disruptions and maximize learning time. They also stress the importance of building positive teacher-student relationships in managing classrooms.

Emmer and Stough (2001) demonstrate how effective classroom management can enhance skill acquisition by reducing distractions and increasing learning time. Brophy (2006) highlights the importance of classroom management in creating a supportive learning environment that fosters skill acquisition. They also show how well-managed classrooms can promote student engagement and motivation, leading to improved skill acquisition. This literature review highlights the interconnectedness of classroom management and skill acquisition. Effective classroom management creates an environment conducive to learning, while skill acquisition reinforces positive classroom behaviors and attitudes.

MATERIALS AND METHOD

The research design adopted in this study is the ex-post facto design. Cross River State, located in the south-south geo-political zone of Nigeria, is comprised of eighteen local government areas and lies within the tropical region characterized by both wet and dry seasons, with heavy rainfall due to its proximity to the Atlantic Ocean. Bordered by Benue State to the north, the Bight of Bonny and the Atlantic Ocean to the south, Cameroon to the east, and Abia, Akwa-Ibom, and Ebonyi states to the west, the state is rich in tourism attractions such as Agbokim waterfalls, Obudu Ranch Resort with the world's longest cable car, and the Tinapa business resort. The state is home to diverse ethnic groups including the Efiks, Yakurr, Bekwarras, and Ejahgams, with the major occupations being farming, fishing, and petty trading, although it is not heavily industrialized. Educational institutions include the University of Calabar and Cross River University of Technology. The study focuses on the population of 58,816 junior secondary school students in schools offering Basic Technology across the three educational zones—Calabar, Ikom, and Ogoja. Using a multi-stage sampling technique, the study selected 2% of the student population, resulting in a sample size of 1,176 students from sixteen out of eighteen local government areas, ensuring a representative and manageable sample for evaluating skill acquisition in Basic Technology.

Data collection was conducted using a single comprehensive instrument, constructed based on literature review and expert advice. This instrument included the Classroom Variable items (CVI) with six subscales to gather data on various classroom variables such as classroom setting, management skills, lighting, thermal conditions, and interactions among students and between teachers and students. Additionally, Skills Acquisition items (SAI) were used to assess the extent of Basic Technology skills acquired by the students. The instrument was face validated by two experts in Test, measurement and evaluation

who checked and ensured that the items were appropriate to measure what it meant to measure items those that lacked face validity were expunged and replaced with the correct ones. To determine the reliability of the instrument to be used for this study, 50 copies of the questionnaire were administered on 50 students drawn from the study area who were not subjects for the study. This was done using Cronbach Alpha reliability method. The reliability estimates ranged from .75 to .80. The respondents were informed of the exercise and essence of giving objective responses to the items. The questionnaires were administered personally by the researchers with the help of two research assistants.

TABLE 1: Distribution of sample by Education Zone

Zone	LGA	No. of Students	JSS	School Offering Basic Technology	Sample %
Calabar	Akamkpa	2649	8		53
	Akpabuyo	1218	2		24
	Biase	2288	2		46
	Calabar Mun.	9761	7		195
	Calabar South	5807	6		116
	Odukpani	2222	1		45
Ikom	Abi	1833	2		37
	Boki	3999	2		80
	Ikom	5750	1		115
	Obubra	3615	1		72
	Yakurr	3846	3		77
Ogoja	Bekwarra	2360	2		47
	Obaniku	1820	3		36
	Obudu	3806	2		76
	Ogoja	3415	1		68
	Yala	4427	2		89
Total		58816	45		1176

Result and discussion

Data for this study were collected from both primary and secondary sources, specifically from the State Ministry of Education and selected secondary schools in Cross River State. The data encompassed classroom variables such as class size, classroom setting, management skills, lighting, thermal conditions, and interactions, as well as students' skill acquisition levels. Table 7 reports the mean scores and standard deviations

for these variables, with classroom setting at 12.05 (SD = 2.791), student-student interaction at 12.47 (SD = 2.943), and teacher-student interaction at 12.20 (SD = 2.838), among others. The demographic breakdown of respondents included 503 males (46.2%) and 585 females (53.8%), with ages ranging from 10 to above 16 years. Class sizes varied, with the majority (47.9%) having more than 50 students.

TABLE 2: Descriptive statistics of variables

Variables	N	Mean	Standard Deviation
Classroom setting	1088	12.05	2.791
Student-student interaction	1088	12.47	2.943
Teacher-student interaction	1088	12.20	2.838
Classroom lightings	1088	13.06	2.968
Classroom management	1088	12.76	2.779
Thermal condition	1088	12.07	3.141
Attitude to learning	1088	11.85	2.766
Skill acquisition	1088	15.90	4.065
Verbal score	1088	13.43	6.050
Academic achievement score	1088	11.67	4.457

TABLE 3: Demographic Indices of Respondents

Variables	Responses	Percentage
GENDER		
Male	503	46.2
Female	585	53.2
Total	1088	100.0
AGE		
10-12	311	28.6
13-16	671	61.7
Above 16	106	9.7
Total	1088	100.0
CLASS SIZE		
20-30	85	7.8
31-40	52	4.8
41-50	430	39.5
Above 50	521	47.9
Total	1088	100.0

Source: Field survey, 2024

The study tested the hypothesis that classroom variable (class size, classroom setting, classroom management skills, classroom lighting, proper thermal conditions, student-student interaction, teacher-student interaction) do not significantly predict students' skill acquisition. The dependent variable are Students' low and high skill acquisition, while the independent variable is Class size, classroom setting, classroom management skills, classroom lighting, proper thermal condition, student-student interaction. Discriminant analysis was used, revealing significant mean difference in classroom setting, student-student interaction, teacher student interaction, classroom lightings, classroom management and thermal condition. The discriminant function analysis reveal an Eigen value of 0.14 accounting for 100% of the variance in the classroom variables with a Canonical Discriminant Function coefficients of classroom variables Classroom setting (-.169), Student-

student interaction (-.343), Teacher-student interaction (.622), Classroom lightings (-.332), Classroom management (.458) and Thermal condition (.131). The analysis showed that that 80.1% of the original grouped cases were correctly classified. It also shows that low skill acquisition 871 (100.0%) and high skill acquisition 217 (100.0%) of the students were correctly classified, indicating high efficiency in predicting students skill acquisition. The centroids (group means) for group 1, the low skill acquisition group (-.059) are quite far apart, when compared to that of group 2, the high skill acquisition group (.236), with a mean discrepancy of .295. While the log determinants were quite similar, Box's M indicated that the assumption of equality of covariance matrix was violated. However, given the large sample size, this problem was not considered serious. The study concluded that the discriminant function significantly predicts students learning outcomes, demonstrating the predictive power of classroom variables on skill acquisition.

TABLE 4: Group statistics for skill acquisition group

	Low Mean	Std.	High Mean	Std.	Total Mean	Std.
Classroom setting	12.01	2.804	12.24	2.737	12.05	2.291
Student-student interaction	12.36	2.970	12.91	2.797	12.47	2.943
Teacher student interaction	12.06	2.821	12.74	2.846	12.20	2.838
Classroom lightings	13.03	3.027	12.74	2.846	13.06	2.968
Classroom management	12.65	2.797	13.22	2.666	12.76	2.779
Thermal condition	11.99	3.149	12.41	3.092	12.07	3.141

TABLE 5: Tests of equality of group means of classroom variables

	Wilk's Lambda	F	p-level
Classroom setting	.999	1.197	.274
Student-student interaction	.994	6.009	.014
Teacher-student interaction	.991	9.884	.002
Classroom lightings	1.000	.335	.563
Classroom management	.993	7.356	.007
Thermal condition	.997	3.119	.078

df1=1, df2 = 1086

TABLE 6: Log determinants- skill acquisition

Skill acquisition groups	Rank	Log determinants
Low skill acquisition group	6	11.764
High skill acquisition group	6	11.286
Pooled within-group	6	11.697

TABLE 7: Box's M test result of the variance in the different classes of classroom variables

Box's M	30.713
F	1.447
Approx.	21
df1	574123
df2	.084
Sig.	

TABLE 8: Eigenvalues of the discriminant functions derived from the discriminant variables of students' classroom variables

Function	Eigenvalue	% of variance	Cumulative %	Canonical correlation
1	.014	100.0	100.0	.117

TABLE 9: Wilk's Lambda of the discriminating power of the classes from the discriminant variables of students' classroom variables

Test of Function	Wilk's Lambda	Chi-square	Df	Sig.
1	.986	14.989	6	.020

TABLE 10: Standardized canonical discriminant function coefficients in the prediction of class of students' classroom variables

Classroom variables	Function
Classroom setting	-.169
Student-student interaction	.343
Teacher-student interaction	.622
Classroom lightings	-.332
Classroom management	.458
Thermal condition	.131

TABLE 11: Structure matrix of the predicted discriminating functions

Classroom variables	Function
Classroom setting	.808
Student-student interaction	.630
Teacher-student interaction	.808
Classroom lightings	.149
Classroom management	.697
Thermal condition	.454

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions. Variables ordered by absolute size of correlation within function.

TABLE 12: Functions at group centroids

skill acquisition groups	Functions
1. Low skill acquisition group	-.059
2. High skill acquisition group	.236

Unstandardized canonical discriminant functions evaluated at group means

TABLE 13: Classification function coefficients

Classroom variables	Skill acquisition groups	
	Low skill acquisition group	High skill acquisition group
Classroom setting	.727	.709
Student-student interaction	.381	.416
Teacher-student interaction	.392	.457
Classroom lightings	.688	.655
Classroom management	.665	.714
Thermal condition	.522	.534
(Constant)	-21.128	-23.891

Fisher's linear discriminant functions

TABLE 14: Classification results

skill acquisition groups			Predicted group membership		Total
Original	Count		Low skill acquisition group	High skill acquisition group	
					Low skill acquisition group
		High skill acquisition group	217	0	217
	%	Low skill acquisition group	100.0	0	100.0
		High skill acquisition group	100.0	0.0	100.0

CONCLUSION AND RECOMMENDATIONS

The classroom variables (class size, classroom setting, classroom management skills, classroom lights, proper thermal condition, student-student interaction, teacher-students interaction) separately and collectively significantly predict students' skill acquisition. Considering the result of tests of equality of group means for skill acquisition.

1. The following variables namely; student-student interaction, teacher-student interaction and classroom management were statistically significant.

2. Classroom setting, classroom lightings and thermal condition were not statistically significant.

3. The variables that contributed most to discriminating between the two groups are: thermal condition, teacher-student interaction and classroom setting while those that contributed least in discriminating between the groups are: student-student interaction; classroom management; and classroom setting.

The Wilk's Lamda and associated Chi-square indicated that there was a significant variation between low and high students' skill acquisition, such that, one discrimination function was generated, which accounted for 100% of the relative variance.

The variables that contributed most to discriminating between the two groups are: thermal condition, teacher-student interaction and classroom setting while those that contributed least in discriminating between the groups are: student-student interaction; classroom management; and classroom setting and Wilk's Lamda and associated Chi-square indicated that there was a significant variation between low and high students' skill acquisition, such that, one discrimination function was generated, which accounted for 100% of the relative variance.

In conclusion, classroom variables significantly classify Basic Technology students high and low skill acquisition groups.

Based on the findings of the study, the following recommendations are made:

1. Schools should invest in improving classroom setting to create an environment that is conducive for learning considering factors like sitting arrangement, space and ergonomics.

2. Training programme should be developed for teachers to enhance their interaction skills with

students fostering a more supportive and engaging learning atmosphere.

3. Schools should ensure that classrooms are well equipped with proper ventilation system to maintain comfortable thermal conditions which can positively impact students concentration and performance.

4. Education institution should regularly access classrooms variables and make necessary adjustments based on feedbacks and observations to continuously improve the learning environment and optimize students' learning outcomes.

REFERENCES

- Agwu, U. D., and Nmadu, J., 2023. Students' interactive engagement, academic achievement and self concept in chemistry: an evaluation of cooperative learning pedagogy. *Chemistry Education Research and Practice*, 24(2), 688-705.
- Ahmed, N., 2024. The Role of Classroom Management in Enhancing Learners' Academic Performance: Teachers' Experiences. *Studies in Learning and Teaching*, 5(1), 202-218.
- Aldrup, K., Carstensen, B., and Klusmann, U., 2022. Is empathy the key to effective teaching? A systematic review of its association with teacher-student interactions and student outcomes. *Educational Psychology Review*, 34(3), 1177-1216.
- Anyaeji, A., 2023. Classroom Management Practices Adopted by Teachers for Enhancing Quality Teaching and Learning in Secondary Education in Anambra State, Nigeria. *UNIZIK Journal of Educational Management and Policy*, 5(2), 1-8.
- Archambault, I., Lampron-de Souza, S., Lamanque-Bélanger, C., Pascal, S., Pagani, L. S., and Dupéré, V., 2024. Low peer acceptance and classroom engagement: The protective role of elementary school teacher-student relationships for immigrant-background students.

- The Journal of Early Adolescence, 44(7), 934-953.
- Emmer, E. T and Stough, L. M., 2001. Classroom management: a critical part of educational psychology, with implications for teacher education. *Educational Psychologist* 36 (2), 103-112
- Gao, Q., Bao, C., Du, H., and Yan, R., 2023. The mediating role of basic psychological needs satisfaction in the relationship between teacher-student relationships and academic engagement in China. *Asia Pacific Journal of Education*, 43(2), 514-525.
- Goodman, A. M., Mcbain, R. A., Ye, Y., Sun, W., and Maitreesophon, B., 2023. Classroom Management Document Research: What are Effective: Proactive and Workable Techniques for Maximizing Learning and Minimizing Disruption in the Classroom?. *International Journal of Sociologies and Anthropologies Science Reviews*, 3(4), 13-20.
- Igwe, G. C., and Amirize, M., 2023. Classroom management for teachers' instructional effectiveness. *Central Asian Journal of Social Sciences and History*, 4(5), 54-71.
- Kong, S. C., and Lai, M., 2023. Effects of a teacher development program on teachers' knowledge and collaborative engagement, and students' achievement in computational thinking concepts. *British journal of educational technology*, 54(2), 489-512.
- Lakkala, S., Galkienė, A., Navaitienė, J., Cierpiałowska, T., Tomecek, S., and Uusiautti, S., 2021. Teachers supporting students in collaborative ways—An analysis of collaborative work creating supportive learning environments for every student in a school: Cases from Austria, Finland, Lithuania, and Poland. *Sustainability*, 13(5), 2804.
- Leenknecht, M. J., Snijders, I., Wijnia, L., Rikers, R. M., and Loyens, S. M., 2023. Building relationships in higher education to support students' motivation. *Teaching in Higher Education*, 28(3), 632-653.
- Mallik, B., 2023. Teacher-Student Relationship and Its Influence on College Student Engagement and Academic Achievement. *Anatolian Journal of Education*, 8(1), 93-112.
- McGarr, O., 2021. The use of virtual simulations in teacher education to develop pre-service teachers' behaviour and classroom management skills: implications for reflective practice. *Journal of Education for Teaching*, 47(2), 274-286.
- Nunes, C., Oliveira, T., Castelli, M., and Cruz-Jesus, F., 2023. Determinants of academic achievement: How parents and teachers influence high school students' performance. *Heliyon*, 9(2).
- Odok, A. O., Akpam, G. O., and Abana, C. U., 2023. AVAILABILITY OF SOME EDUCATIONAL FACILITIES IN OGOJA EDUCATION ZONE, CROSS RIVER STATE, NIGERIA. *International Journal of Education and Psychology in the Community*, 13.
- Okam, V., 2024. The Effect of Cooperative Instructional Method on Students' Achievement and Retention in Biology in Calabar South Local Government Area, Cross River State, Nigeria. *Cross River State, Nigeria* (February 17, 2024).
- Osterman, K. F., 2023. Teacher practice and students' sense of belonging. In *Second international research handbook on values education and student wellbeing* (pp. 971-993). Cham: Springer International Publishing.

- Owan, V. J., Beshel, C. A., Ovat, E. O., Anagbogu, G. A. and Otu, B. D., 2023. Skill possession and prospective university students' career decisions: Does prior exposure really matter? *International Journal of Education and Practice* 11 (3), 540-556.
- OWOYEMI, M. A., 2024. School-related Factors and Junior Secondary School Student's Motivation towards Learning in Ogun State, Nigeria. *JOURNAL OF CAPITAL DEVELOPMENT IN BEHAVIOURAL SCIENCES*, 12(1), 113-123.
- Sadoughi, M., and Hejazi, S. Y., 2023. The effect of teacher support on academic engagement: The serial mediation of learning experience and motivated learning behavior. *Current Psychology*, 42(22), 18858-18869.
- Siad, B., 2023. Effects of the problem-based learning approach on secondary School students' motivation and acquisition of critical Thinking skills in physics in Isiolo County, Kenya, Doctoral dissertation, Egerton University.