



Teachers' Professional Competencies as correlates of Student's Academic Achievement in Public Secondary Schools in Anambra State

Onyekwelu, Raphael Azubuike

Department of Educational Foundations, Faculty of Education, Chukwuemeka Odumegwu Ojukwu, University, Igbariam Campus

Email: zubisogbuefi@yahoo.com

Abstract

The study investigated Teachers' Professional Competencies as correlates of Student's Academic Achievement in Public Secondary Schools in Anambra State. Two research questions and two null hypotheses guided the study. The study adopted a correlational research design. The population of the study consisted 23,040 Senior Secondary two in the 263 public secondary schools in the six Education Zones in the State as recorded by the Post Primary Schools Service Commission (PPSSC), Awka. The sample of this study comprised 600 SS two students randomly selected from the population. This study adopted stratified and simple random sampling technique for the study. The instruments for data collection was a questionnaires structured by the researcher titled 'Professional Competencies Questionnaire' (PCQ), and then a proforma which was used to collect students' mathematics score to determine their academic achievement. The instruments were subjected to face and construct validity by three experts. The instruments were analyzed using Cronbach Alpha statistics to determine its' reliability, and the average reliability coefficient showed a value of .75 for "Professional Competencies Questionnaire (PCQ), which was considered adequate for the study. The questionnaires were administered by the researcher and five research-assistants by direct contact and collected on the spot. Pearson Product Moment Correlation was used to answer the research questions while Hypotheses were tested using test of significance of simple regression analysis at .05 level of significance. After analyzing the data of the study, the following findings were discovered: there exist a very positive and a significant relationship between professional Competencies variables: content knowledge, pedagogical skills and student academic achievement in Mathematics in public secondary schools in Anambra State. Based on the findings from the study, it was recommended among others: Ministry of Education should re-organize teacher programmes to groom the teacher-trainees with adequate pedagogical skills with which they would relate to the contents to be taught in schools.

Key Words; Competencies, Content Knowledge, Pedagogical Skills, Academic Achievement

Introduction

Education has been described as the bedrock of every society and a tool for nation building. Investment in education is enormous, especially these days when the cost of education is on the rise, and it is usually painful whenever students fail or drop out of school. The broad goal of Nigerian secondary education as specified by the Federal Republic of Nigeria FRN (2013) is summed up to the preparing students for useful living within the society and higher education. Nsini and Emeya (2015) posited that secondary education assumes the role of training and producing students for tertiary institutions and manpower for

national development and world of work. The goal of secondary education is to prepare students for useful living within the society and higher education (FRN, 2013). The broad goal of Nigerian secondary education could only be achieved with professional teachers.

Teachers are required professionals who are capable of inculcating knowledge that will help students to build, identify and acquire skills that would be used to face the challenges of life. Teachers also provide to the students, knowledge, skills and values that enhance educational development. Teachers have fundamental impact to play in preparing students not only to face the



future with confidence but to build it with purpose and responsibility. Donna (2014) asserted that a teacher is the only person who has capacity of inculcating knowledge and mentoring the youths to the wider scope of knowledge. Teachers are capable of influencing the youths such that their power is paramount as they determine the fate of the society. The necessity of the teachers as agents of change, promoting understanding and tolerance, has never been more obvious than today, yet poor academic achievement has been of concern to many stakeholders in the educational system.

Academic achievement is the extent to which a student, teacher or institution has achieved their short or long-term educational goals. It is commonly measured through examinations or continuous assessments, but there is no general agreement on how it is best evaluated or which aspects are most important. However, no matter the indicators used to measure it, there is a common understanding in all definitions that they represent intellectual endeavors' and thus, more or less, mirror the intellectual capacity of a person. Buyse and Verschuer (2011) defined academic achievement as student's success in meeting short or long term goals in education in the big picture.

Achievement in mathematics is inextricably linked to future career opportunities, plays an important role in the level of the students general learning acquisitions as well as a reliable criterion to divide students into scientific or literary streams. Achievement in mathematics can be a gate way to well rewarded and high-status positions; the functional role of Mathematics to Science and Technology is so multifaceted and multifarious that no area of science, technology and business enterprise escapes its application. Mathematics enables one to make the invisible to be visible, thereby solving problems that would be impossible otherwise. Mathematics as a father of all science and as well as an integral part of everyday life, plays a vital role in every human; despite the importance of mathematics, there are a number of observable problems associated with its teaching and learning especially at the secondary school level (Jega & bashir, 2018). The large failure of learners can be traced to many factors that could be categorized into the domains of schools, government, parents, students, teachers, language of instruction and society. Moreover, the causes of mass failure of students in public examinations are multi-dimensional in nature (Ogundele et al, 2014). They further opined that high failure in academic achievement of students in Nigeria is no longer news in the recent years. Consequently, the

poor state of teachers' Professional competencies and classroom management strategies in public secondary schools in Anambra State could be the cause of poor academic achievement in Mathematics among students in Public Secondary Schools.

The term "competencies" describes the personal capacity to cope with specific situational demands. Competencies is, by definition, learnable and teachable skills that are related to the way in which the teacher carries out the activities and what results are achieved (Klieme et. al., 2018). Westera (2014) in his study "Competencies in Education" explained in detail about the different aspects of competencies. In his opinion competencies is a complex concept which can further be decomposed into sub-competencies. In his opinion competencies is a highly valued quality which involves the effective use of knowledge and different skills in different situations. The success of any curriculum to be implemented needs teachers who are competent (Wamala & Seruwagi, 2013). Same has been echoed by Ilanlou and Zand (2014) who argued that educational plans are likely to be successful if teacher are well trained with the requisite competencies for delivery and execution of the plans. Akiri (2013) noted that the performance of learners and subsequent quality of education is dependent on service delivery by teachers. The role of teachers' professional competencies is to guide teachers in building new instructive practices and help them to develop their skills in teaching and learning Professional competencies is a core issue in all discussion of what makes a "good teacher". Insights into why teachers show different levels of professional competencies can be expected to inform both teacher education and recruitment of more suitable candidate to the teaching profession (Korthage, 2014). The term Professional competencies refers to the set of knowledge, skills, values, attitudes, capacities and beliefs people need for success in a profession. Teachers' professional competencies includes three main components: Interpersonal Skills, pedagogical skills (teaching skills) and content Knowledge (Feryal, 2010).

In the light of the above, the researcher discussed two components of professional competencies, content knowledge is defined as the concepts, principles, relationships, processes, and applications a teacher should know within a given academic subject, appropriated for him/her and organization of the knowledge (Ozden, 2018). Content knowledge is knowledge about the actual subject matter that is to be learned or taught. The content to be covered



in social studies or algebra is very different from the content to be covered in computer science or art and history. Teachers must know and understand the subjects that they teach, including knowledge of central facts, concepts, theories, and procedures within a given field; knowledge of explanatory frameworks that organize and connect ideas; and knowledge of the rules of evidence and proof (Mishra & Koehler, 2016). Teachers must also understand the nature of knowledge and inquiry in different fields. For example, how is a proof in mathematics different from an historical explanation or a literary interpretation? Teachers who do not have these understandings can misrepresent those subjects to their students. Mastery of the subject matter is one of the most important aspects of teachers' competencies (Ebiringa, 2014). Gaji (2014) opined that teachers with deeper knowledge of subject matter produced better students than those with shallow knowledge of subject matter. It therefore means that a competent teacher is expected to possess the rudimental knowledge and skills of the subject and be able to communicate these knowledge and skills. They should also be able to make decisions and organize the subject area within the changes in the society (Onuoha, 2017). Offorma and Ogah (2013) noted that effective teaching demands that the teacher should have a sound knowledge of all that the students must know (Anderson, 2016).

Accordingly, Pedagogical skills are the teaching skills teachers use in teaching students and these skills enable students to learn the knowledge and skills related to different subject areas. Researchers have opined that pedagogical skill of the teacher is a powerful force (Amusan, 2016). The foregoing makes it pertinent for teachers' competencies to be prioritized in senior secondary schools so as to enhance students' academic performance and also have quality students emerging as graduates prepared for useful living within the society. Teacher's pedagogical skills refers to the teaching skills teachers use and the activities these skills generate to enable students to learn specialized knowledge and skills related to different subject areas. 1)

Academic achievement has been one of the most important goals of the educational process Failure in academic achievement of students in Nigeria is no longer news in the recent years. Consequently, the poor state of teachers' Professional competencies in public secondary schools in Anambra State may be the cause of poor academic achievement among students. Analysis of results of examination bodies like the West Africa Examination Council (WAEC), the National

Examination Council (NECO) and the Unified Tertiary Matriculation Examination (UTME), provide information regarding students' academic achievement in Anambra State. For instance, WAEC records of results released in Anambra State in 2019/2020 was reported as being not too good in recent years. This dismal performance in external examination may be an indictment on the professional competencies in secondary schools in the state. Unsatisfactory academic achievement in Mathematics in particular among public secondary school students in Anambra State has posed concern to parents, teachers, educational administrators and government for years. One suspects that this unsatisfactory academic achievement in Mathematics may be attributable to inadequate teachers professional among others.

The researcher however, have observed that Anambra State Public Secondary School teachers are not properly professionally competent in their class as expected which might be the cause of students poor academic achievement in both internal and external examination in mathematics .The problem of this study therefore is do professional competencies correlates with students' academic achievement in Public Secondary Schools in Anambra State?

Research Questions

The following research questions guided the study;

1. What is the extent of relationship between teachers' content knowledge and students' academic achievement in Public Secondary Schools in Anambra State?
2. What is the extent of relationship between teachers' pedagogical skills and students' academic achievement in Public Secondary Schools in Anambra State?

Hypotheses

The following hypotheses guided the study and were tested at .05 level of significance:

There is no significant relationship between teachers' content knowledge and students' academic achievement in Public Secondary Schools in Anambra State.

There is no significant relationship between teachers' pedagogical skills and students' academic achievement in Public Secondary Schools in Anambra State.



Research Method

The researcher adopted a correlational research design for this study. According to Nworgu (2015), correlational research design shows the direction and magnitude of the relationship between or among variables in a given study.

The area of the study is Anambra State. Anambra State is made up of three senatorial zones namely: Anambra North, Anambra Central, and Anambra South.

The geographical scope of the study is delimited to SS 11 students in Public Secondary Schools in Anambra State while the content scope includes teachers' professional competencies of content knowledge and pedagogical skills as correlate of students' academic achievement in mathematics.

The population for the study consisted 23,040 Senior Secondary SS 11 students in all the 263 Public secondary (Post Primary Schools Service Commission (PPSSC), Anambra State, 2021).

The sample of the study comprised 600 SS11 students as respondents. Simple random sampling technique was adopted in selecting students from the public secondary schools in the six educational zones across the state. In selecting the respondents, simple random sampling technique was used to draw 10 students from each 10 schools in each zone given a total of 100 students multiply by 6 zones which gave the sample of 600 in the study.

The instrument for data collection was structured questionnaires by the researcher, the first instrument is titled "Teachers Professional competencies Questionnaire (TPDQ) with two sections : section A which contains information's on the demographic variables of the respondent and B which contained the items on Teachers Professional competencies Questionnaire in line with the study research questions one to two with 2 clusters of 10 items statement in each cluster structured along optional responses, in the following order: Very High Extent (VHE), High Extent (HE), Low extent (LE) Very low extent (VLE) Then, Academic Achievement of SSII students in mathematics collected from the classes of the sampled teachers .

The instruments were face and construct validated by three experts, the scope and purpose of the study, research questions, and hypotheses were presented to the experts. These experts ascertained the clarity and relevance of the items to the research work. On the other hand, to ensure the 'purity' with which the instruments measures the constructs it is designed to measure, construct validation was conducted by the use

of exploratory factor analysis, The $KMO = .752$; $X^2 = 7733.531$; $DF = 394$; $P < .000$; $Cronbach's \alpha = .733$; $Percentage\ of\ variance\ explained = 61.570\%$.

SPSS statistics version 23. The Cronbach's alpha coefficients are: (0.745), (0.701), No factor was excluded in the measurement model as the results of Cronbach's alpha coefficients were above 0.600. Based on the results of the EFA, the teachers professional competencies in this study were adequate.

To ascertain the internal consistency of the instrument the researcher will conduct a trial test using 20 teachers in Enugu State. Enugu State Public Secondary School was chosen because they have the same characteristics with the current population of the study in terms of structure, teaching, environment, curriculum and governance. The data collected was analysed using Cronbach Alpha reliability estimate. Cronbach's Alpha is a measure of internal consistency and is deemed appropriate as the items are polycotomous scored and does not have right or wrong answers. The reliability yielded coefficients of .80 for content knowledge , .77 for pedagogical skills. The average reliability coefficient showed a value of .81 for Teachers Professional competencies Questionnaire (TPCQ)", which is considered adequate for the study

The instruments were administered to the respondent by the researcher with the help of six research assistants who were briefed on how to administer and retrieve the instruments on respondent in a one day consultative meeting during which the researcher acquainted them with the purpose of the study and how to exhibit good human relation during data collection.

It was on the spot hand delivery for the administration and collection of the instrument where the researcher and research assistant waited for the respondent to fill the Questionnaires and retrieved them immediately. However the researcher returned to school to collect those of respondent who were not disposed to fill the questionnaire on the spot, 607 instruments were administered and 600 were collected, representing 99% return and 1% loss.

Pearson Product Moment Correlation was used to determine Professional competencies as correlates Students Academic Achievement in public Secondary Schools in Anambra State. In answering the research questions, the coefficient (r) and the size of the relationship was interpreted using the interpretation of correlation coefficient by Downie and Heath cited in Nworgu (2015) as shown: .80 and above for very high, .80 to below .60 for high , .40 to .60 for medium. 20 to



.40 for low and .00 to .02 for very low respectively. The null hypotheses 1-2 were tested using test of significance of Regression Analysis at .05 level of significance and the decision rule was that null

hypothesis be rejected wherever P value is less than or equals .05 ($P \leq .05$) and would not be rejected wherever P value is greater than .05 ($P > .05$).

Results

Table 1: Summary of Pearson correlation analysis on the relationship between content knowledge and students’ academic achievement in Public Secondary Schools in Anambra State.

		Students Achievements	‘Academic Content Knowledge	Remarks
Students Academic Achievements	Pearson Correlation	1	.963	
	Sig. (2-tailed)		.017	
	N	600	600	Very High positive
Content Knowledge	Pearson Correlation	.963	1	
	Sig. (2-tailed)	.017		
	N	600	600	

****Significant at $p < .05$**

Table 1 presented an analysis showing that there exist a positive relationship between content knowledge and students’ academic achievement scores in Public Secondary Schools in Anambra This deduction comes as a result of the ‘r’ having a positive value, $r = .963$

and $n = 600$. Hence, the study concluded that there exist a very high positive correlation (relationship) between content knowledge and students’ academic achievement in Public Secondary Schools in Anambra State

Table 2: Test of Significance of Simple Regression Analysis between teachers’ content knowledge competency and students’ academic achievement in Public Secondary Schools in Anambra State

	B	B	T	P	Remarks
Constant	3.745		3.192	.001	
Content knowledge	.009	.664	.361	.963	Significant
R	.963				
R ²	.927				
F	.002			.017	

****Significant at $p < .05$**

The table 2 above indicates the regression coefficient (R) as .963 while the $R^2 = .927$. The F-ratio associated with regression is .002 with the P -value = .001. Since the P -value is less than the stipulated 0.05 confidence level, the null hypothesis that there is no significant relationship between teachers’ content knowledge

competency and students’ academic achievement in Public Secondary Schools in Anambra State is rejected and thus is concluded that there is a significant relationship between teachers’ content knowledge competency and students’ academic achievement scores in Public Secondary Schools in Anambra State.

Table 3: Summary of Pearson correlation analysis on the relationship between teachers’ pedagogical skills and students’ academic achievement in Public Secondary Schools in Anambra State

	Students’ Academic Achievements	Teachers’ Pedagogical Skills	Remarks
Students’ Academic Achievements	1	.828	Very High Positive
Pearson Correlation		.019	
Sig. (2-tailed)			
N	600	600	
Teachers’ Pedagogical Skills	.828	1	
Pearson Correlation			
Sig. (2-tailed)		.019	
N	600	600	

**Significant at $p < .05$

Table 3 presented an analysis showing that there exist a very high positive relationship between teachers’ pedagogical competency and students’ academic achievement scores in Public Secondary Schools in Anambra State. This deduction comes as a result of the ‘r’ having a high positive value, $r = .828$

and $n = 600$. Hence, the study concluded that there exist a positive correlation (relationship) between teachers’ pedagogical competency and students’ academic achievement in Public Secondary Schools in Anambra State

Table 4: Test of Significance of Simple Regression Analysis between teachers’ pedagogical competency and students’ academic achievement State Public Secondary Schools in Anambra

	B	B	T	P	Remarks
Constant	4.330		10.009	.019	Significant
	.173	.452	1.434	.190	
R	.828				
R ²	.686				
F	2.056			.190	

**Significant at $p < .05$

The table 4 above indicates the regression coefficient (R) as .828 while the $R^2 = .686$. The F-ratio associated with regression is 2.056 with the P -value = .019. Since the P -value is less than the stipulated 0.05 confidence level, the null hypothesis that there is no significant relationship between teachers’ pedagogical competency and students’ academic achievement in Public Secondary Schools in Anambra State is rejected and thus is concluded that there is a significant relationship between teachers’ pedagogical competency and students’ academic achievement in Anambra State Public Secondary Schools.

Discussion of Findings

Findings from the study showed there exist, to a very high extent, a positive correlation (relationship) between teachers’ content knowledge and students’ academic achievement in Public Secondary Schools in Anambra State. Again, there exists a significant relationship between content knowledge and students’ academic achievement in Public Secondary Schools in.

This finding is as a result of students agreeing that teachers developed content knowledge foster student creativity, possession of good understanding of the content to teach helps students to better understanding, acquisition of content Knowledge help teachers to transfer / update facts to students during instructional process, content Knowledge helps in creating a greater chance of continuing success in students’ achievement, helps teachers to have capabilities to teach their subject in confidence, content knowledge helps teachers in giving clear instructional presentation of a topic, helps teachers get greater focus in task accomplishment, through content knowledge, teachers reflect on the theoretical knowledge of specific content to learning, a professional competent teacher has capacity to apply learning theories .The study finding is in disagreement with the finding of Akpan (2022) which showed that there is a negative, moderate significant relationship between teacher’s skills ($r = 0.0552$; $p < 0.05$) and students’ attitude to Biology. ,while the study finding is in agreement with that of Isah (2014) whose major



findings showed that a positive significant relationship exists between NCE integrated science students' subject content knowledge. Similarly the findings of the present study is in agreements with that of Ozden (2018).which found that content knowledge also influenced effective teaching.

Findings from the study on teachers' pedagogical skills and students' academic achievement in Public Secondary Schools in Anambra State showed a positive correlation (relationship) between teachers' pedagogical skills and students' academic achievement in Public Secondary Schools in Anambra State which is to a very high extent. Also there exists a significant relationship between teachers' pedagogical skills and students' academic achievement in Public Secondary Schools in Anambra State. This finding is as a result of student agreeing that pedagogical skills provide efficient organization of the instruction, help teachers in making use of teaching skills that motivate the students' performances, varying teaching skills used in 1) teaching, provide instructional material for quality teaching, skills provide stimulating classroom climate by using various animated pictures. These findings of the study are in agreement with Amali (2013), whose results showed a positive correlation between teachers' pedagogical skills and students' performance in Social 2) Studies, while there was no correlation between teachers' use of instructional materials and students' performance in Social Studies.

Also, Isah (2014) whose major findings from his study were: Positive significant relationship exists between NCE integrated science students' subject content knowledge and pedagogical skills, male integrated science students' subject content knowledge and pedagogical skills, female integrated science students' subject content knowledge and pedagogical skill. The findings of the study is also in agreement with that of Ben (2018) whose finding indicated that there is existing relationship between pedagogical knowledge of teacher and academic performance among students in the subject area at that level. Udogu, Ifeako and Njelita (2018) evaluated the pedagogical skills of science technology and mathematics teachers (STM) in secondary schools in Anambra State. The perceptions of 15 science teachers were sought and a modified classroom observation schedule was used to evaluate the level of the usage of pedagogical skills. T-test statistic was used to analyze the data. The result of their study indicated that pedagogical skills were never used by the STM teachers adding that instructional practices

of STM teachers appear to be didactic approach which leaves the learners to learn by memorization of fact.

Conclusion

The study examined teachers' professional competencies as correlates of students' academic achievement in public secondary schools in Anambra State. Professional competencies variables: content knowledge and pedagogical highly positively and significantly correlated students' academic achievement in public secondary schools in Anambra State. Thus, the study concluded that teachers professional competencies showed a high positive and significant relationship with students' academic achievement in public secondary schools in Anambra State.

Recommendations

The following recommendations were made from the findings of this study

Ministry of Education should sponsor teachers' to training to improve on their level of professional competencies for improved students' academic achievement. This would help in the development of knowledge and capacity building to foster students' creativity and adaptation of new techniques.

Curriculum planners' should re-organize teacher programmes to groom the teacher-trainees with adequate pedagogical skills with which they would relate to the contents taught Ministry of Education should equip teachers' through various development programmes such as conferences, training and retraining sessions to enable them use innovative instructional methods to motivate students' interest, and develop them to learn for better academic achievement.

References

- Anderson, T. (2016). The theory and practice of online learning (2nd ed.). Edmonton, AB: AU Press.
- Amusan, M. A. (2016). Cultivating effective pedagogical skills in in-service teachers: the role of some teacher variables. *JISTE*, 20(1), 83-89.
- Buyse, E., Verschueren, K., Verachtert, P., & Van Damme, J. (2011). Predicting school Adjustments in early elementary school: Impact of teacher-child relationship quality and relational classroom climate. *Elementary school journal*, 110 (2), 119-141. <http://dx.doi.org/10.1086/605768>.



- Gaji, A. A. (2014). Perception of the relationship between teachers' quality and students' academic performance in Hausa language of senior secondary schools in Kano Metropolis. Unpublished M.Ed Thesis, Kano State University.
- Nsini, A.A. & Emeya, S. (2015). Effect of study habit on academic achievement of agricultural science students in senior secondary schools in Emohua Local Government Area of Rivers State, Nigeria. *International Journal of Education and Evaluation*, 1(8); 118-125.
- Offorma, G. C. & Ogah, M. E. U. (2013). Teachers' perception of competencies for effective teaching of secondary school French Language. *The Journal of world council*. 4(2), 216-224.
- Onuoha, J. C. (2017). Influence of school location on students' achievement in social studies using concept mapping as instructional strategy. *Nigerian social science education review* 3(1), 116- 126.
- Ozden M(2018). The effect of content knowledge on pedagogical content knowledge: The case of teaching phases of matters. *Educational Sciences: Theory and Practice*.8(2):633- 645.
- Ilanlou, M., & Zand, M. (2014). Professional Competencies of Teachers and the Qualitative Evaluation. *Procedia - Social and Behavioural Sciences*, 29, 1143 – 1150.
- Jega, S.H. & Bashir, K. (2018). The Relationship between Teachers' variables and students' achievement and interest in mathematics in Kebbi State, *Internal Journal of Education*, 4(3), 30.
- Klieme E., Hartig, J. & Rauch, D. (2018). *The Concept Of Competence In Educational Context*. In: Hartig, J./Klieme, E./Rauch, D. (Eds.): *Assessment Of Competencies In Educational Context*. Göttingen: Hogrefe, Pp. 3–22.
- Ogundele, G. A., Alanipekun, S. S. & Aina, J.K. (2014). Causes of Poor Performance in West African School Certificate Examination (WASCE) in Nigeria. *Scholars Journal of Arts, Humanities and Social Sciences*, 2(5), 670-676.
- Wammula AJ(2013). Factors influencing academic performance in Kenya certificate of secondary education examinations in private schools in Kenya. University of Nairobi
- Westera. W. (2016), —Competences in Education: A confusion of tongues. In *Journal of curriculum studies* 33(1), (PP, 75-88).