

**TEACHERS' PROFESSIONAL COMPETENCE AND STUDENTS' ACADEMIC  
PERFORMANCE IN CHEMISTRY IN SECONDARY SCHOOLS IN UYO LOCAL  
GOVERNMENT AREA, AKWA IBOM STATE.**

**By**

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**ABSTRACT**

*The study investigated the relationship between teachers' professional competences and students' academic performance in basic science in secondary schools in Uyo Local Government Area of Akwa Ibom State. The researcher utilized the correlational research design in this study. The target population of the study consisted of all the 2,312 Public Senior Secondary school students (SS11) in Uyo Local Government Area of Akwa Ibom State during the 2022/2023 academic year. The sample size of the study consisted of 200 students offering chemistry drawn from eight (8) public secondary schools in Uyo Local Government Area of Akwa Ibom State obtained through multi-stage sampling technique. The research instruments used for the collection of data for the study was Teachers' Professional Competences Questionnaire (TPCQ) and Chemistry Performance Test (CPT). The questionnaire contained twenty items, (five items per domain). The Chemistry Performance Test (CPT) contained twenty objective questions with option A-D. all the instrument was validated by experts in test and measurement. Split- half reliability method was used in this study and the reliability of the two instruments stood at 0.82 and 0.79 respectively and they were deemed adequate for the study. The data collected from the instruments was analyzed using Pearsons' Product Moment Correlation (PPMC) statistics and the result from the data analysis indicated that there is a significant relationship between teachers' professional competences and students' academic performance in basic science in secondary schools in Uyo Local Government Area of Akwa Ibom State. One of the recommendations was that government (Ministry of Education) should provide enough instructional resources to*

*enhance updates of teacher knowledge for proper implementation of chemistry curriculum.*

**KEYWORDS: Teachers' Professional Competence, Students' Academic Performance, Chemistry, Secondary Schools, Uyo Local Government Area and Akwa Ibom State.**

## INTRODUCTION

The poor academic performance of students in Chemistry has generated a lot of issues in nearly all educational institutions, particularly in Akwa Ibom State. Chemistry is one of the main subjects that encompass valuable activities. Nonetheless, many instructors and learners consider Chemistry difficult to teach and to study. It plays an important role in the socio-economic development of various industries, including pharmaceuticals and petrochemicals. Chemistry is a supportive subject for various disciplines, including medicine, pharmacology, physiology, clinical, chemical industry and environment. It appears from the literature that the general perception of chemical education for many people have been described as challenging and difficult to understand (Frank 2020).

This may be related to the fact that Chemistry involves different terminologies, structures and calculations. The learning of these elements, for many teachers and students may cause different levels of difficulties. These challenges and difficulties according to Okon (2020) have been addressed to require a considerable attention by employing effective and competent teacher with good knowledge of instructional planning. Strategies. According to Brown (2019) teachers with good knowledge of instructional planning have the potential to teach Chemistry effectively in order to enhance students' academic performance. Students' performance, understanding and application of knowledge in chemistry are based on teachers' knowledge of instructional planning strategies. Effective instructional planning help to enhance students' academic performance.

Academic performance is commonly measured by examinations or continuous assessment test. Academic performance is the outcome of the extent to which a student, teacher or institution has achieved educational goals and objectives (Howard, 2017)). Academic performance is students' success in meeting short- or long-term goals in education. Franklyn (2019) reported that there are series of factors accounting for students' academic performance include poor instructional quality, students' negative attitude to school, overcrowded classroom, poor facilities, teachers' motivational skills, lack of instructional materials, parental socio-economic status and poor instructional delivery ability. Poor academic performance of pupils in basic science according to Lemlech (2018) is attributed to teachers used of expository method lack of professionalism and teachers' inability to formulate instructional objectives. Benedict (2018) found that most teachers' uses lecture method in teaching and learning process more than innovative methods leading to poor academic performance of students in basic science. Poor academic performance of students in basic science is also due to the fact that many teachers in secondary schools are not professionals and lack professional commences in their filed. This state has resulted in this study which intends to find out if teachers' professional competences can predict students' academic performance in basic science.

Teachers' professional competences are an integral part of teaching and learning process. Teachers' professional competences are skills teacher possessed to facilitate deliver lesson to the students. According to Anselmus (2019), teachers' professional competences are the right way of conveying units of knowledge, application and skills by the teacher to the students to enhance students' academic performance. The right ways include knowledge of content, process, selection of materials, methods, mode of evaluation and means of conveying the content. Greenspan (2019) observed that teachers' professional competence is the ability of the teacher to help, guide, counsel, direct students to learn effectively and to achieve high grades. Tella (2018) stressed that a professional teacher must meet the standard to teach satisfactorily and must have the requisite skills and an essential attribute of good sense of teaching and qualities that cannot be reduced to finite measurable skills.

Teachers are responsible for operating educational system and they need strong and efficient professional competencies. Teachers need to improve knowledge and skills to enhance, improve and explore their teaching practices to enhance student academic performance. Teachers' professional competences are defined as the set of knowledge, skills, and experience necessary for future, which manifests in teachers' activities. According to Gupta (2019) teachers' professional competence deals with knowledge, skills, attitudes, values, motivations and beliefs teachers need in order to be successful in teaching job. These skills help to enhance students' academic performance effectively in basic science. According to Idungafa (2021), most of the evaluations carried out for the purposes of determining whether or not school teachers are professional involve an administrator visiting classroom, recording observations and filling out a checklist indicating whether the teacher has demonstrated several defined behaviours to enhance students' academic performance.

Teachers' professional competence play a significant role in students' academic performance in Basic Science. Effective teachers' professional competences help teachers to generate change through increasing or shifting awareness, engage in reflective and collaborative work, improve teachers' skills, knowledge, experience and provide teachers with opportunities to develop their professional practice and receive feedback on it in order to improve students' academic performance. Teachers' professional competences help the teachers to develop constant awareness of their experience as professional teachers and become effective in teaching and learning process. Effective teacher professional competences help to reshape teacher's attitude to job performance and also helps in enhancing students' academic performance in schools.

Teachers' professional competences deals with teachers' acquisition of skills and knowledge to teach properly in order to enhance students' academic performance. Akpan (2019) identified those specific teachers' professional competences as teachers' knowledge of the subject matter, use of instructional materials, lesson delivery ability, classroom management and teaches' knowledge of formulation of instructional objectives in which the present study is focus. A professional teacher must be knowledgeable in formulation of instructional objectives to facilitate effective teaching and learning to enhance students' academic performance. Instructional objectives are explicit statement which describe in observable and measurable manner the expected changes in learners' behaviour as

a result of teaching or educational encounter. It is a statement of what the students will do at the beginning and end of the lesson.

Motivation is the internal state that arouses students to action and engaged students in certain activities. According to Okumbe (2018) motivation is a psychological or physiological need that activates behavior or drives that is arrived at a goal or incentive. Balungwa (2019) viewed motivation as a process that energizes individual to act in a particular way. Teacher's motivational techniques are practices that aim to create a working environment and to develop policies and practice that will provide for higher levels of performance of students. Teachers' motivational skills play a major role in students' academic work and then performance. It reflects in students' choices of learning tasks in their coping with the obstacles they encounter in the learning process (Bendalos, 2020).

Classroom management is the process of creating a favourable learning atmosphere in the classroom. According to Nwaogu (2019) classroom management is the process of maintaining orderliness and providing a conducive learning environment in the classroom during teaching and learning process. Classroom management ensures that students are motivated and are ready to learn and that group work is not disrupted (Edimah, 2018). The classroom is where most learning takes place and is very important in teaching and learning situation to promote students' attitude, interest and academic performance. Effective classroom management instructional delivery helps teachers in effective lesson delivery to enhance students' academic performance in basic science. Based on this background, the present study intends to investigate the relationship between teachers' professional competences and students' academic performance in basic science in secondary schools in Uyo Local Government Area, Akwa Ibom State.

## STATEMENT OF PROBLEMS

Basic science is a scientific discipline that combined mathematics, physics and biology together which help to provide students with the fundamental understanding of natural phenomena and the processes by which natural resources are transformed. Over the years, there has been issues of poor academic performance in basic science among students in secondary schools in Uyo Local Government Area, Akwa Ibom State. The researcher wonders what could be the reason behind this poor academic performance among basic science students in secondary schools. in Uyo Local Government Area, Akwa Ibom State. The researcher suggests could it be attributed to teachers' professionalism such as poor instructional delivery, teaching methods and lack of instructional materials for teaching and learning of basic science. It was also suggested by the researcher could it be attributed to teachers' persistent use of expository method in conveying instructions to large class size in basic science. A visit to some secondary schools in Uyo Local Government Area, Akwa Ibom State reveals that nearly all the teachers in the area lack professional competences such as teachers' knowledge of the subject matter, use of instructional materials, lesson delivery ability, classroom management and teaches' knowledge of formulation of instructional objectives. The problem of this study is to what extent can teachers' professional competences predict students' academic performance in chemistry. Based on this background the present study intends to investigate the relationship between teachers' professional competences and students' academic performance in Basic Science in secondary schools in Uyo Local Government Area, Akwa Ibom State.

## PURPOSE OF THE STUDY

The purpose of this study is to examine the relationship between teachers' professional competences and students' academic performance in chemistry. in secondary schools in Uyo Local Government Area, Akwa Ibom State. The specific objectives of the study are:

1. To determine the relationship between teachers' knowledge of formulation of instructional objectives and students' academic performance in chemistry. in secondary schools in Uyo Local Government Area, Akwa Ibom State.
2. To investigate the relationship between teachers' classroom management skills and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State

## RESEARCH QUESTIONS

The following research questions were raised for the purpose of the study:

- What is the relationship between teachers' knowledge of formulation of instructional objectives and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State?
- What is the relationship between teachers' classroom management skills and students' academic performance in chemistry .in secondary schools in Uyo Local Government Area, Akwa Ibom State?

## RESEARCH HYPOTHESES

The following hypotheses will be formulated to guide investigation and analysis of the study.

- There is no significant relationship between teachers' knowledge of formulation of instructional objectives and students' academic performance in chemistry. in secondary schools in Uyo Local Government Area, Akwa Ibom State.
- There is no significant relationship between teachers' classroom management skills and students' academic performance in chemistry. in secondary schools in Uyo Local Government Area, Akwa Ibom State.

## RESEARCH METHOD

This study utilized the correlational research design to determine the relationship teachers' professional competences and students' academic performance in Chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State. The target population of the study consisted of all 2,312 Public Senior Secondary school students (SS11) in Uyo Local Government Area of Akwa Ibom state during the 2022/2023 academic year. The sample size of the study consisted of 400 students offering chemistry drawn from eight (8) public secondary schools in Uyo Local Government Area of Akwa Ibom State through Multi-stage sampling technique was used. The research instruments used for the collection of data for the study was Teachers' Professional Competences Questionnaire (TPCQ) and Chemistry Performance Test (CPT). The instrument in the questionnaire contained twenty questions, five question per domain. All items were positive and they were scored from: SA: Strongly Agreed, A: Agreed, D: Disagreed, SD: Strongly Disagreed. Each instrument in the questionnaire measures teachers' knowledge of formulation of instructional objectives and teachers' classroom management skills.

The Chemistry Performance Test (CPT) contain twenty objective questions with option A-D. The instrument was validated by experts. Split- half reliability method was used in this study and the reliability of the two instruments stood at 0.82 and 0.79 respectively which was deemed adequate for the study. The data collected from the instruments was analyzed using Pearson's' Product Moment Correlation (PPMC) statistics.

## RESULTS

The result of this study is presented based on research questions and hypotheses.

### RESEARCH QUESTION 1

What is the relationship between teachers' teachers' knowledge of formulation of instructional objectives and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State?

**Table 1: Pearson Product Moment Correlation analysis of teachers' knowledge of formulation of instructional objectives and students' academic performance in chemistry**

Variables	$\Sigma x$	$\Sigma x^2$	$\Sigma xy$	r-cal	Decision
	$\Sigma y$	$\Sigma y^2$			
Instructional objectives X	2542	49383			Strong positive relationship
			49604	0.90	
Academic performance Y	2585	51715			

**n=400**

The result in Table 1 above reveals that the correlation coefficient (r) is 0.90. This indicate that a strong positive relationship exists between teachers' knowledge of formulation of instructional objectives and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State

## RESEARCH QUESTION 2

What is the relationship between teachers' classroom management skills and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State?

**Table 2: Pearson Product Moment Correlation Analysis of teachers' classroom management skills and students' academic performance in chemistry**

Variables	$\Sigma x$	$\Sigma x^2$	$\Sigma xy$	r-cal	Decision
	$\Sigma y$	$\Sigma y^2$			
Classroom management skills X	2485	48038			Strong positive relationship
			46477	0.762	
Academic performance Y	2585	51715			

**n=400**

The result in Table 2 above reveals that the correlation coefficient (r) is 0.762. This shows that a strong positive relationship exists between teachers' classroom management skills and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State?

## RESEARCH HYPOTHESES 1

There is no significant relationship between teachers' knowledge of formulation of instructional objectives and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State.

**Table 3: Correlation Analysis of the relationship between teachers' knowledge of formulation of instructional objectives and students' academic performance in chemistry**

Variables	$\Sigma x$	$\Sigma x^2$	$\Sigma xy$	r-cal	r-crit	Decision
	$\Sigma y$	$\Sigma y^2$				
Instructional objectives X	2542	49383				
			49604	0.90	0.139*	SN
Academic performance Y	2585	41715				

**n = 400, \*Significant;  $p < .05$ ;  $df = 198$ ; critical r-value = 0.139**

The result presented in Table 3 reveals that calculated r-value of 0.90 is greater than the critical r-value of 0.139 at 398 degrees of freedom and .05 alpha level. Therefore, the null hypothesis was rejected and the alternate hypothesis is retained. This shows that there is a significant relationship between teachers'

knowledge of formulation of instructional objectives and students' academic performance in basic science in secondary schools in Uyo Local Government Area, Akwa Ibom State.

**NULL HYPOTHESIS 2:**

There is no significant relationship between teachers' classroom management skills and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State.

**Table 4: Correlation Analysis of the relationship between teachers' classroom management skills and students' academic performance in chemistry**

Variables	$\Sigma x$	$\Sigma x^2$	$\Sigma xy$	r-cal	Decision
	$\Sigma y$	$\Sigma y^2$			
Classroom management skills X	2485	48038			
			46477	0.762*	SN
Academic performance Y	2585	51715			

**n = 400, \*Significant; P<.05, df = 198; critical r-value = 0.139**

The result presented in Table 4 reveals that calculated r-value of 0.762 is greater than the critical r-value of 0.139 at 398 degrees of freedom and .05 alpha level. Therefore, the null hypothesis was rejected. This shows that there is no significant relationship between teachers' classroom management skills and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State.

## DISCUSSION OF FINDING

The result presented in Table 1 revealed that strong positive relationship exists between teachers' knowledge of formulation of instructional objectives and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State. The result presented in Table 3 showed that there is a significant relationship between teachers' knowledge of formulation of instructional objectives and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State. The reason behind this result may be due to the fact that a teacher who knows how to effectively formulate instructional objectives have the ability to teach effectively in order to enhance students' academic performance. This study is in line with the earlier study of Okon (2020) who found out that instructional objectives are measurable terms that describe what learners will be able to do before and after the instruction which helps to enhance students' academic performance. An instructional objective is the focal point of a lesson plan which help the teacher to plan lesson effectively effective teachers lesson delivery ability help to discovered fact glued firmly to memory of students. Effective acquisition knowledge of formulation of instructional objectives by the teacher help to enhance academic performance in business studies. A professional teacher must be knowledgeable in formulation of instructional objectives to facilitate effective teaching and learning to enhance students' academic performance.

The result presented in Table 2 shows that strong positive relationship exists between teachers' classroom management skills and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State. The result presented in Table 4 showed that there is a significant relationship between teachers' classroom management skills and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State. This study is in line with the earlier study of Edem (2018) who found out that classroom management ensures that students are motivated and are ready to learn and that group work is not disrupted. The classroom is where most learning takes place and is very important in the teaching and learning of situation to enhance students' academic performance. Many factors contribute to create a learning environment in the classroom. This includes the teacher, students and the resources available for learning, the effect of these can be positive or negative, efficient or inefficient on students' attitudes towards learning.

## CONCLUSION

Based on the findings of the study, the following conclusions are drawn from the study. There is an established significant relationship between teachers' professional competences and students' academic performance in chemistry in secondary schools in Uyo Local Government Area, Akwa Ibom State. This is so because it was revealed that teachers' knowledge of formulation of instructional objectives, and teachers' classroom management skills have strong positive relationship with students' academic performance in Basic Science

## RECOMMENDATIONS

Based on the finding of this study, the following recommendations were made:

- Government (Ministry of Education) should provide enough instructional resources to enhance updates of teacher knowledge for proper implementation of chemistry curriculum.
- Seminars and workshop should be organized by the Ministry of Education for teachers to educate them on effective formulation of instructional objectives to enhance students' academic performance.
- Trained and professional teachers should be employed to enhance student academic performance in schools.
- The school counsellors should advice that teachers who have professional competence should be employed to teach in order to help improve upon students' academic performance in chemistry.
- The counsellors should encourage all the students to study hard and develop positive attitude towards chemistry and other subjects, knowing that there is no difficult subject if one remains resolute.

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