

**ASSESSMENT OF THE FACTORS AFFECTING STUDENTS PERFORMANCE  
IN CHEMISTRY EDUCATION IN THE UNIVERSITY OF BENIN, BENIN CITY,  
EDO STATE.**

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## CERTIFICATION

We, the undersigned, certify that this research project was carried out by **Mariam Adenike ABDULAZEEZ** in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City.

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## **DEDICATION**

This body of work is dedicated to myself and my loving parents for their support, care and advice they offered to me during my time of study in the school.

## ABSTRACT

The main purpose of the study was to assess the factors affecting students' academic performance in chemistry in the University of Benin. The specific object of the study was to investigate into the factors affecting poor performance of chemistry students, to determine the relationship between teaching methods and academic performance in chemistry. The study also intended to determine the strategies adopted to improve the performance of undergraduates in chemistry and to determine if there is an effect of teacher's utilization of instructional materials on the performance of undergraduates.

The research design adopted for this study was a descriptive survey design and the population of the study are chemistry undergraduate in the University of Benin. The study uses a stratified sampling technique and questionnaire was distributed to the selected samples and responses was elicited from them. The study was validated by face and content validity from the supervisor and professors in the department. The data collected was analyzed using counts, frequencies and percentages.

The study found out that students' attitudes towards learning plays a major role in an effective and productive learning. Findings revealed that the method of teaching can lead to poor performance in chemistry. Teacher's attitudes are not left out as it indirectly affects the interest of students towards learning. Inadequate school infrastructures, facilities and instructional materials also contribute to students' poor academic performance in chemistry.

Teachers should employ the use of better teaching methods that would draw the attention of students, affect their learning positively and also help students face the aspect of chemistry they find challenging. Positive teacher and student's relationship can enhance students learning and performance in chemistry. Students should also be enlightened on the effects of positive attitude towards learning chemistry as a course. The school administrators and government should provide school facilities and instructional materials that would facilitate teaching and learning in chemistry.

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The researcher also wishes to acknowledge her parents Mr Azeez, R.O and Mrs. Selima Abdulazeez, siblings Fathia Abdulazeez, Mueez Abdulazeez and Khalid Abdulazeez and for their immense support rendered during the course of the academic pursuit. The researcher however is also grateful to course mates who helped in one way or the other during the project work and also the respondents who responded to the questionnaire. Finally, the researcher is grateful to Almighty Allah for his benevolence all through her academic career.

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## CHAPTER ONE

### INTRODUCTION

#### **Background to the Study**

Chemistry is a science that deals with the composition, structure and properties of substances and with the transformations that they undergo. It is the scientific study of the properties and uses of matter.

Chemistry is a study that has existed since ancient times. Over the years, chemistry has evolved, and now it encompasses various areas of specialization, that continues to increase in number and interrelate to create further interdisciplinary fields of study. A degree in chemistry in University of Benin prepare students for a variety of careers and some of them are Lab technicians, Food chemist, toxicologist, environmental chemist ,Analytical chemist. Your skills will also be in demand in other areas. A study in chemistry helps you to develop logical thought and numerical skills and ability to write accurate and concise reports.

The importance of chemistry cannot be over emphasized as it's implication to the social and economic life of the people. Some of its knowledge is applied in food, medicine, making of soaps and detergent, agricultural industry, textile industry, brewery industry, cement industry, petrochemical Industry etc.

Chemistry being a science course has a relationship with other science related courses like physics, biology, mathematics, geography, agricultural science etc. With chemistry being interwoven with the aforementioned science courses, it can be used in the field of

them that needs the knowledge of chemistry.

The University of Benin (UNIBEN) is one of the leading universities in Nigeria, offering a range of courses, including chemistry. However, the performance of students in chemistry has been a concern for educators and policymakers in the University of Benin. There has been a decline in the performance of students in chemistry in recent years, which has led to questions about the factors affecting their performance.

The assessment of the factors affecting students' performance in chemistry in the University of Benin is important because it can help identify the underlying causes of poor performance and provide insights into how to improve performance. The study will help to identify the factors that are contributing to poor performance in chemistry, such as the learning environment, prior knowledge, teaching methods, motivation, study habits, and personal factors.

The findings of the study will be useful to educators and policymakers in the University of Benin as they seek to develop strategies to improve students' performance in chemistry. The study will provide insights into the areas that need improvement, such as the teaching methods used, the resources available, and the support provided to students.

Overall, the assessment of the factors affecting students' performance in chemistry in UNIBEN is important in improving the quality of education and ensuring that students are well-prepared for the challenges of the future. By improving the performance of students in chemistry, the University of Benin can produce graduates who are better equipped to contribute to the development of the country and the world.

## **Statement of the Problem**

The performance of students in chemistry at the University of Benin is not at the desired level. Despite being a reputable institution offering science-related programs, students' performance in chemistry has shown areas of concern. It is important to identify and assess the factors that contribute to this underperformance in order to develop effective strategies for improvement.

The study aims to address the factors affecting students' performance in chemistry at the University of Benin, how its teaching and learning methods impact students' understanding and performance. It also talks about the extent to which the curriculum and course content influence student's performance in chemistry.

The study further addresses the relationship between student's study habits and their performance in chemistry, the availability of resources and laboratory facilities affect the students understanding and application of chemistry concept. Individual factors such as motivation, interest and prior knowledge play in student's performance in chemistry are also not left out. By exploring and understanding these factors, the study aims to provide insights and recommendations for improving students' performance in chemistry at the University of Benin.

## **Research Questions**

The following research questions were raised to guide this study

1. Does poor teaching methods affect students' poor academic performance in

chemistry?

2. What strategies can be adopted to improve undergraduates' performance in chemistry?
3. Does teacher utilization of instructional materials have any effect on the academic performance of undergraduates?

### **Purpose of the Study**

The purpose of this study is;

1. To know if poor teaching methods affect student poor performance in chemistry.
2. To know what strategies that can be adopted to improve undergraduates' performance in chemistry.
3. To know if teachers utilization of instructional materials have an effect on the academic performance of undergraduates.

### **Significance of the Study**

The study will be of immense benefit to students, lecturers, university administrator and future researchers.

1. The study will raise the lecturers level of consciousness and comprehension of the factors associated with academic performance of undergraduates in chemistry.
2. The study will also have an effect on the academic performance and study habit of the student.
3. University and educational administrator need empirical data on the overall

achievement of undergraduates to enhance proper curriculum policies and programs for effective recording of data.

4. Future researchers will also be of benefit of this study as it assist them in related discipline.

### **Scope and Delimitations of the Study**

The study will focus on undergraduates studying chemistry and chemistry related courses in the University of Benin. The study is majorly concerned with the factors affecting the performance of undergraduates in the University of Benin.

### **Definitions of Terms**

The following terms were operationally defined as used in the study:

#### 1. Chemistry

Chemistry is the scientific study of the properties, composition and behavior of matter. It is a physical science that covers the elements that make up matter to the compounds made of atoms, molecules and ions .Their structure, properties, behavior, and the changes they undergo during a reaction with other substances.

#### 2. Chemistry Education

Chemistry education is the study of teaching and learning chemistry in schools, colleges and universities. It includes understanding how students learn chemistry, how best to teach chemistry and how to improve learning outcomes.

#### 3. Students' performance

Students' performance is the extent to which a student meets academic goals and expectations. Performance can include behavior, knowledge and the ability to apply knowledge.

## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

This chapter is concerned with the review of literature related to the study. The review is done under the following subheadings.

- Quality of teachers
- Chemistry curriculum
- School facilities and Instructional materials
- Overcrowded classrooms
- Student Gender
- Low entry grades
- Lack of incentives to study
- Teacher's attitudes towards teaching
- Students' attitude towards learning
- Summary of Reviewed Literature

#### **Quality of Teachers**

The quality of teachers is a major criteria in the performance of students in chemistry. A teacher is supposed to have an in-depth knowledge of the subject or course he or she is about to transfer to learners. The Education Policy Review

Commission Report, EPRCR (1989), explains teacher aptitude as having knowledge of the development of learners, materials to be taught and methods that are up to standard,

his skills must also give him the capacity to teach, advise and guide his students, community and culture with which he also plays a part of; his attitudes should be dogmatic without being aggressive, so that his examples are likely to be ensued as he imparts overt and covert the national aims, moral and social virtues.

The characteristic and qualities an effective teacher should possess are stated in the Education Policy Review Commission Report (1989). There are few students who perform well without teachers in some subjects, while others with well qualified teachers still perform poorly. In the case of chemistry, being a since inclined course, having an effective and qualified teacher cannot be overemphasized. The role of a teacher is very much vital in guiding and leading the students in both the theoretical and practical aspect of the course. It is imperative to know that while the theoretical aspect of the course is not left out, the experimental aspect will hasten the student's comprehension on the course. The researcher therefore aims at establishing the effect of teacher competence on academic performance of students in the University of Benin.

### **Chemistry Curriculum**

According to Carey et al (1994), the development of curriculum designed to serve all students has perpetuated unfairness. One reason for this is that the developers have not considered what is known about how students can learn chemistry with comprehension. In some occasions, there has been little communication between researchers in mainstream chemistry education who have not been directly concerned with fairness

issues and equity researchers who have not been concerned with critical mainstream research (Barnes M, 1991). Before, truly equitable classrooms can be developed, concerns about equity and knowledge gained using a cognitive science research exemplar contributes to our understanding of learning in schools. The nature of the curriculum and syllabus is one critical element for the opportunity to learn effectively. The curriculum is overcrowded thus affecting the opportunity to learn effectively and productivity of teaching to take place. Chemistry being a course with a vast and wide scope of curriculum and syllabus, most teachers are not able to cover it adequately, thus reducing the ability of the students to learn (Otieno K, 1997). Although teachers attempt to cover all the content of the syllabus, the frequent disruptions in the teaching time due to holidays, late start of the semester and so on may not allow the completion of the syllabus in most schools. The result of this indicated that not all the content of the syllabus may be relevant to the needs of the students either for further education or use in real life. The content is then superficially covered to prepare students for exams.

The setback of this funding is that curriculum review that is focused on the needs of the society is necessary (Barnes M, 1991). There are some students that perform very well whether the curriculum was covered or not and also some students that perform poorly even if the curriculum was fully covered. The researcher therefore aims at carrying out a research of a fully covered syllabus on chemistry.

- School facilities and Instructional materials

The success or failure of an undergraduate is measured against the presence or absence of

structures and facilities provided by the school management. An important element of a good academic institution is that of facilities. A good school should have enough facilities which help with teachers to teach effectively and with students to learn efficiently in a convenient and comfortable environment. Physical facilities contribute a lot to the general atmosphere of the school (Kochhar, 2001).

The study stated that healthy environment and proper arrangement leave little room for irritation. A large number of studies in developing countries have confirmed that availability of school facilities and instructional materials positively influences learner's academic performance. The levels of infrastructure seem to have a reciprocal relationship to the academic performance of a student and availability of instructional materials and aid have a constant positive effect on a learner's achievements. The need for facilities in academic institutions cannot be overemphasized. Most schools require facilities which include well equipped science laboratories for science courses, a convenient and comfortable classroom or lecture theaters, libraries, teaching materials etc. The possession of adequate facilities in schools is a quality of an effective school.

Generally, there are many students who perform poorly in schools with scarce facilities and likewise there are many students who also perform poorly in schools that are well facilitated. The researcher, hence, aims at carrying out an exact analysis of the correlation between academic performance and the availability of facilities in University of Benin.

## **Overcrowded Classes**

In regards to the above stated, the issue of overcrowded classes is another factor for students' poor performance in chemistry. In a very large class, lecturers find it quite stressful to teach students and provide classroom exercise so as to minimise the quantity of work they have to do after classes like marking and grading.

According to the National Center for Education Statistics (NCES), the overall student-to-faculty ratio at degree granting institutions was 14 to 1 in 2018. A ratio below that number may be considered low. According to NCES data, public universities reported a 14 to 1 ratio in 2018, while private universities had a 10 to 1 student to faculty ratio. A student to faculty ratio that exceeds the national average of 14 students per faculty member is typically high. Overcrowded classes gives little or no space to conduct group work that would enhance coverage of the curriculum.

Overcrowded curriculum minimizes students' chance to learn chemistry as teachers as teachers try to over too much curriculum content in too little time available. The amount of students in chemistry department are more than the capacity of the classrooms, hence, making the classes overcrowded. In this process, some students lost track of the learning going on at that moment and thereby lose interest in the learning going on.

## **Student Gender**

Research on gender differences in academic achievement offers educators of undergraduate information on implications and guidance in specific directions to take.

The aggregate literature on this topic covers student's self-assurance in learning chemistry, gender-typed expectations for performance in chemistry, self-appraisal of ability to learn chemistry, risk-taking behaviours, laboratory experiences for females and participation in science activities. In this study, the researcher pays attention to gender differences in chemistry and academic achievement and also offers a connection to school administrators addressing the education of undergraduates.

Gender differences in academic concept have been a topic for research study for several decades. Particular interest has been given to differences in chemistry concept and have also been explored. One reason why gender differences in academic achievement is important is that construct are strongly related and also a variety of motivational indicators (Skinner, Wellborn and Connelly, 1990). Research provided facts that relation between construct are mutual and that self-evaluation affect achievement more strongly with an increase in age.

Gender differences in academic self-evaluation may therefore result in subsequent gender differences in academic achievement and motivation (Sax, 1994). Chemistry being a science-inclined course needs students to possess self-estimation which includes self-perceived abilities and self-motivation. In conclusion, inadequate research studies has been conducted on gender and academic performance in chemistry and therefore this study seeks to contribute to this area of study.

## **Low Entry Grades**

According to Malinga and Ezati et al (2021), universities mostly base their decisions to admit their new students in the applicant's pre-university academic results. However, it has not been confirmed that students' pre university academic achievement determine their performances at university level. In earlier studies, findings were explored and they determined the relationship between entry grades and the academic performance of University students.

In the research, studies were taken to assemble the literature in the relationships between the students' entry grades and their university academic performance in order to proofread the validity of earlier assertions and as well as to identify opportunities for further research in this field, if any. During the course of this research, a systematic review of articles was carried out by drawing 58 articles from different online electronic databases including Free Scientific Publication, the Worldwide Science org, and the Directory of Open Access Journal (DOAJ). The majority of these reviewed studies were drawn from America and Europe. Out of the 59 reviewed articles, only 53 met the standard and the key findings, among others, 43 of them revealed the existence of positive, negative and mixed correlation between the entry grades and the academic performance of University students. The remaining 10 articles, however, did not reveal any notable correlation between the two variables; instead they insinuated to the existence of difference in these relationships between male and female students, thus implying the need for positive action schemes.

In the University of Benin, research has shown that there is yet no correlation in student's entry grades and the academic performance of students studying chemistry. In essence, the study revealed that there is yet no consensus over whether pre University academic performance at the university level, thus, revealing the need for further research in this field.

### **Lack of Incentives to Study**

Performance -based incentives for students have received increasing research attention as a means to improve learning outcomes in both developed and developing countries (Fryer, 2017). Standard economic theory predicts that financial incentives can improve students' effort and thereby increase academic outcomes. Notwithstanding, there are several potential setbacks. For instance, incentives for some courses may lead students to reallocate efforts and learn less other courses. Incentives may crowd out inherent motivation to learn eventually decreasing performance. (Bénabou & Tirole, 2006, Gneezy et al, 2011).

The widely known incentive scheme in education is an individual-schemed incentive whereby the highest performing students in an exam are rewarded. The scheme is quite attractive because they allow policy makers to set a stable budget for the incentives. However, individual-schemed in which relatively few students receive the reward may prompt effort only from top students. In the same circle, bottom students who are unlikely to receive the reward may not be encouraged to apply more effort. These effect

could result for increased unfairness in academic performance.

Most educators believe that, as an ideal, all learners should learn as much as their capacity and effort will allow. Yet, on the contrary, school administrators reward high achievement alone, vividly assuming that the lure of high grades and test scores, will encourage effort in all. Due to the fact that high ability students always have the best grades and test scores, the efforts of upcoming students is not often recognized and the grades they get for it do not inspire effort.

However, low ability students and those who are drawn back students who must work hardest have the least incentives to do so. (Gavin M.K, 1997). Students like this find the relationship between their high efforts and low grades unsatisfactory and something to be dodged if possible. Some of them express their displeasure by a lack of enthusiasm, others by discontinuation and deception. The researcher therefore aims at carrying out a study in establishing the effects between lack of incentives and low ability performance among students who study chemistry in the University of Benin.

### **Teacher's attitudes towards teaching**

The charisma of the teachers taking chemistry is worrisome. The teachers have weak academic backgrounds on the chemistry contents to be delivered (Barnes M & Home M, 1996). The teacher's attitude to chemistry may contribute to their inability to inspire the students to learn chemistry. The commonly used "talk and chalk" mode of delivery which sometimes may not provide a detailed explanation to chemistry. The teachers, at times,

are under pressure to enable their students pass examination and are therefore forced to water down the implemented curriculum (Anderson W.I, 1991).

However, teachers have a decisive role in any educational system and their competences do not automatically ensure positive attitudes towards the teaching process. Frankly, teachers' attitudes are important because they affect the students' performance. Teacher's attitudes and the effective use of instructional materials to break down difficult concepts in chemistry are important because they affect the students learning ability.

The researcher therefore aims at carrying out a research study for the critical analysis of the relationship between teachers' attitudes towards teaching and the academic performance of undergraduate studying chemistry in the University of Benin.

### **Students' Attitudes towards Learning**

Attitude is a complex mental state involving belief (Hussion & Ali et al, 2011).

Attitude in science means the scientific approach presumed by an individual for solving problems, assessing ideas and making decisions in the sciences. Research has shown that those with positive attitude towards the learning of chemistry tend to perform better in the subject than those with lack of interest. The affective behaviors in the classroom are strongly related to achievement and the attitudes towards learning are cultivated. A study of the influence of students attitude towards learning chemistry and their academic performance found that the teacher's method of teaching chemistry and his personality greatly accounted for the students' positive attitude towards the study of chemistry to

improve their achievement in the course (Bolaji, 2005). According to Bassey (2010), students' academic achievement in chemistry is a function of their attitudes. Attitudes as an effective construct has been explained as the underlying factor for both intellectual preparedness and motivation in learning. This study therefore attempts to examine the contribution of different attitudes towards chemistry and the chemistry teacher's ken of their learners' ability in chemistry as a contributor towards an undergraduate poor achievement in chemistry.

A concrete students-teacher relationship are valuable resources to achieve excellent academic grades (Humre & Pianta, 2006). The study suggested that having a positive relationship with a teacher allows students to be able to work in their self because they know they can count on their teachers if problems arises that the teacher will identify and pay delicate attention to. Regular communication with a teacher and conducting observations in the classroom will provide vital and unique information for designing interventions. Research concluded that relationships with teachers allow students to feel safer and more secure in the school settings, feel more competent, make more positive connections with peers and make greater academic gains.

According to Downey (2008), a study synthesizing educational research on factors that influence academic success stated that a teacher-personal interaction with his or her students made a significance difference. The recommendation from Downey's analysis were that students need teachers to build strong inter-personal relationships with them, focusing on strengths of the students while maintaining a great realistic expectations for

success. The relationships should be based on respect, trust, caring and cohesiveness and a sense of belonging are all by product of a strong teacher - student relationship that pertains to a student success in school.

Another aspect of students' attitudes is the regularity and consistency in class attendance. Regularity in school is pertinent to a successful academic performance. (Pascopella, 2007). According to Stanca (2004), undergraduates benefit from attending lectures. Skipping classes has an adverse effect on achievement only for more able students. Research further shows that there seems to be an effect of skipping classes for lower ability student. According to Park & Kerr (2000), a research on determinant of academic achievement using "A multinomial logit approach" and reported that the class attendance was statistically significant in explaining why a student received a D rather than an A, B or C grade. The statistical test employed identified that a consistent class attendance was a significant determinant in minimizing a student's opportunity of receiving a D or F grade. A research made by Romer (2003), made a report that there is a significant difference in the mean GPA of students with strong attendance over those with poorer attendance.

In a meta analytical review of the relationship of class attendance with grades and students' characteristics, discovered that the highest performing students had either very good or very poor class attendance and those students in the lowest fifth grades were most likely to have average attendance. In conclusion, research has shown there is no reciprocal between student's class attendance and the academic performance of students

in chemistry in the University of Benin, thus, indicating the need for more research in this field of study.

### **Summary of related literature**

The literature review assessed a lot of factors affecting the academic performance of undergraduates studying chemistry in the University of Benin. The study stated factors affecting students' performance which included absence of qualified teachers, chemistry curriculum, school facilities and instructional materials, overcrowded classrooms, student's gender, low entry grades, lack of incentives. The psychological factors such as teachers' attitudes and students' attitudes were also not left out.

The literature reviewed the factors affecting the poor performance of the students in chemistry departments in the University of Benin. One of the concepts is the quality of teachers which is a major setback affecting students' academic performance. The literature reviewed the characteristic and qualities an effective teacher should possess. The vast and large nature of the chemistry curriculum is also not left out as it might hinder the academic performance of a student if not adequately covered or rushed. The research also pointed out at lack of resources, school facilities and infrastructures as the measure of the success or failure of undergraduates studying chemistry. According to Kochhar (2001), physical facilities contribute to the general atmosphere of a school and her students' performance. The lack of adequate facilities may I turn lead to the overcrowding of classrooms that may leave the bottom students to little or nothing to

learn thereby leaving their academic performance stunted. Gender differences in academics have also been a factor stated in previous researcher. Studies have shown that self-perceived abilities and self-motivation improves the academic achievement of chemistry undergraduates.

Entry grades have also been accounted in the factors that may affect the poor performance of students studying chemistry. Though, researcher have shown that there was no correlation between pre university grades and the students' academic performance on chemistry. Previous studies also cited incentives as an encouragement tool that boost students' academic achievement. It explains that incentives are built for high performance students and that students with low ability have the least incentives. A majority of study never fail to show the relationship between the human psychology towards teaching and learning activities. The teacher's teaching attitudes and the students' learning attitudes. Students' interpersonal relationship between teachers and the peers will increase their academic achievement. The students' attendance to classes will also improve their academic success.

This study, however, wishes to assess the factors and find suitable and lasting solution to them in order to improve the quality of academic performance amongst undergraduates studying chemistry in the University of Benin. In the process of doing so, promoting the quality of graduates of chemistry and also improving the quality of teachers produced in the field of chemistry and education as a whole.

## **CHAPTER THREE**

### **METHODOLOGY**

This chapter is concerned with a description of the methods and procedure adopted in conducting the study. It is organized under the following subheadings.

- Design of the study
- Population of the study
- Sample and Sampling techniques
- Research Instrument
- Validity of the Instrument
- Reliability of the Instrument
- Method of data collection
- Method of data analysis

#### **Design of the study**

The research design adopted for this study was descriptive survey design. Survey design, specially designed to systematically collect data about a group of people with similar characteristic through the use of written collection instrument like questionnaire, interviews. It is specially designed for this study because it is quite economical for the researcher. A large sample of undergraduates with similar characteristic are drawn to gather information with the use of a close ended questionnaire. It enabled the researcher to study as a group, the factors affecting the poor performance of undergraduates in

chemistry.

### **Population of the Study**

The population of the study comprises of all undergraduate that take chemistry education as part of their courses. The population ranges from students from year one to year four. There are over 300 students in departments offering chemistry as courses. The case study is selected because the researcher's discipline is chemistry, thereby the work load and cost is reduced. The selected course area has garnered poor performance in recent times, hence, the need to find a lasting solution.

### **Sample and Sampling Techniques**

The sample of the study comprises of chemistry education students and known in the University of Benin. The sample consists of about 10 students in a each year ranging from year one to four, totaled 50.

The sample technique for this study is a stratified random sample technique. This sampling technique gives respondents equal probabilities of being selected. The respondents were allowed to express themselves in a close ended questionnaire that was distributed to them. This process was repeated over many times.

### **Research Instrument**

The instrument of research for this study is a close ended questionnaire, a chemistry achievement test (CAT) and an interview with selected lecturers in the departments. The

questionnaire was designed to probe the factors affecting students' academic performance in chemistry in undergraduates in the University of Benin. The questionnaire was designated in two parts, section A and section B. Section A entails about the personal information of the respondents and section B was a four rating scale developed by Likert by requiring the respondents to fill in according to how they agree or disagree to the stated. The rating scale consists of responses which include strongly agree, agree, strongly disagree and disagree which were decided to be SA, A, SD, D respectively. The items to be responded to be classified into 4 sub- sections which consists of; method of teaching and teacher's attitudes, chemistry curriculum, school facilities and students attitudes. Teaching and teacher's attitudes consisted of 6 items, chemistry curriculum consisted of 9 items, school facilities consisted of 4 items and student's attitudes consisted of 9 items. All of the items in the questionnaire summed up to 28 items.

The chemistry achievement test were administered to the respondents and it consisted of two sections. The first section was a multiple choice questions of 30 items and the second section consisted of 6 essay questions. The questions covered the prescribed the syllabus and curriculum of all undergraduates from year one to year four.

The interview with the selected lecturers was a one-to- one interview. This was done to elicit information covering how they assessed the academic performance of students and the ratio of good performance to poor performance.

### **Validity of the Instrument**

The study was validated by face and content validity which was further validated by the project supervisor and other research experts in the department of curriculum and instructional technology before administering it to the students sample for research.

### **Reliability of the Instrument**

The reliability used in the research is a test-retest reliability. To determine the reliability of the research instruments, the instruments were re-administered to 20 students who were not part of the sample study. Using the Pearson Correlation Coefficient between the two sets of data scores is 0.83. Since the correlation is greater than 0.8, the researcher concluded that the study has a good test-retest reliability.

### **Method of Data Collection**

The method of data collection for this study is a questionnaire. The researcher visited various departments that read chemistry as a course and distributed the questionnaire to the students and they were administered and responses were elicited from them. The researcher took permission from all necessary authorities before administering the instruments. The instruments were administered properly for a period of 3 days and were retrieved immediately the tasks was accomplished.

### **Method of Data Analysis**

The method of data analysis adopted for the collected data was descriptive statistics. The information was analyzed using frequency count, percentages and tables to answer the research questions.

## CHAPTER FOUR

### PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

This chapter is concerned with the analysis of data, presentation of results and discussion of findings. The chapter is presented into two subheading as follows;

- Presentation of result
- Discussion of findings

#### **Research question 1: Does poor teaching methods affect students' academic performance in chemistry?**

To achieve this, respondents were asked questions related to the objective. Data collected was analyzed under the method of teaching and teachers attitudes.

**Table 1: Responses on the Method of Teaching and Teacher's Attitudes.**

Items	SA (Strongly Agree)		A (Agree)		SD (Strongly Disagree)		D (Disagree)	
	F	%	F	%	F	%	F	%
My chemistry lecturer uses lecture method of teaching chemistry								
My chemistry lecturer gives an in-depth explanation of the course	17	34%	31	62%	1	2%	1	2%
My chemistry lecturer makes leaning interesting	1	2%	23	46%	6	12%	20	40%
My chemistry lecturer makes leaning	3	6%	17	34%	3	6%	24	48%
My chemistry lecturer makes use of teaching aid to enhance learning.	2	4%	21	42%	5	10%	22	44%
My chemistry lecturer finisher the curriculum before the start of exams	6	12%	12	24%	7	14%	25	50%

My chemistry lecturer encourages us to ask question after teaching	6	12%	30	60%	3	6%	11	22%
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According to the analysis show on the table of the responses on the method of teaching and teacher's attitudes, the following were drawn out.

34% of the respondents strongly agreed that the lecture method is what their chemistry teacher adopted in teaching the course, 62% agree while 2% strongly disagreed and 2% disagreed. 2% of the respondents strongly agreed that their chemistry lecturer gives an in depth explanation of the course while teaching. However 46% agreed while 12% strongly disagreed and 40% disagreed. 6% of the respondents strongly agreed that their chemistry lecturer makes leaning interesting, 34% agreed while 12% strongly disagreed and 48% disagreed. 4% of the respondents strongly agreed that their chemistry lecturer makes use of teaching aid to enhance learning, 42% agreed while 10% strongly disagreed and 48% disagreed. 12% of the respondent strongly agreed that their lecturer finished with the curriculum before the start of exams 24% of the respondents agreed while 14% strongly disagreed and 50% disagreed. 12% of the respondents strongly agreed that their lecturers encourages them to ask questions after teaching, 60% agreed to it however, 6% strongly disagreed and 22% disagreed.

The information gathered from the respondents on the method of teaching and teacher's attitude revealed that majority of the chemistry lecturer adopts the lecture method of teaching chemistry to students. This explains that the lecturer method or "talk and chalk" method is the commonly used method of leaching, which may not provide a detailed

explanation to chemistry. The survey also revealed that only quite a number of lecturers makes use of teaching aid to teach chemistry and also makes learning interesting. Chemistry being a science inclined course needs more teaching aid on other to facilitate understanding and make it more interesting to the learners.

The findings shows that majority of the lecturers do not finish the chemistry curriculum before the start of exams. This may be as a result of the wide scope of the curriculum (Otlene K, 1997). The respondents agreed. That not finishing the chemistry curriculum has, in one way, affected their performance. The student also revealed that teachers encouraged them to ask questions in the classroom when the need arises. Research of the finding shows that a fully covered syllabus increases high performance. In conclusion, teacher's attitudes and the method of teaching are important because they affect the students academically.

**Research questions 2: What strategies can be adopted to improve undergraduates' performance in chemistry?**

Questions were generated in regards this research questions. The student's attitudes and the chemistry curriculum is a major factor in this research questions. Data collected was analyzed under student's attitudes and the chemistry curriculum.

**Table 2: Responses on the Effects of Chemistry Curriculum**

Items	SA (Strongly Agree)		A (Agree)		SD (Strongly Disagree)		D (Disagree)	
	F	%	F	%	F	%	F	%
The overall teaching in chemistry excellent	2	4%	10	20%	9	18%	29	58%

The difficulty level of chemistry is very challenging	10	20%	35	70%	2	4%	3	6%
I prefer inorganic chemistry to organic chemistry	6	12%	19	38%	6	12%	19	38%
Chemistry calculations are easy to grab	1	2%	22	44%	2	4%	25	50%
Chemicals and reagents are not available in the laboratory	4	8%	19	38%	6	12%	21	42%
Laboratory instructors do not provide enough guidance to aid chemistry understanding	13	26%	22	44%	4	8%	11	22%
Environmental chemistry is the most interesting aspect of chemistry	17	34%	28	56%	1	2%	4	8%
Chemistry kinetics are difficult to grab because of the bulkiness of the cover	16	32%	28	58%	-	-	5	10%
Practical chemistry are tough	5	10%	24	48%	2	4%	18	36%

The analysis in the table above shows that 4% of the respondents strongly agreed that the overall teaching in chemistry is excellent. However 20% of the respondents agreed that overall teaching in chemistry is excellent while 18% strongly disagreed and 58% disagreed.

20% of the respondents strongly agreed that the difficulty level of chemistry is very challenging while 70% of the respondents agreed. However 4% strongly disagreed and 6% of the respondents disagreed to it. 12% of the respondents strongly agreed that they preferred inorganic chemistry to organic chemistry while 38% of the respondents agreed. However 12% of the respondents strongly disagreed and 38% disagreed. 4% of the respondents strongly agreed that chemistry calculations are easy to grab while 44% agreed. However 4% of the respondents strongly disagreed and 50% disagreed to it.

44% of the respondents agreed that the laboratory instructors do not provide enough guidance to aid chemistry understanding while 26% strongly agreed. However, 8% strongly disagreed 22% disagreed.

56% of the respondents agreed that environmental chemistry is the most interesting aspect of chemistry while 34% strongly agreed to it. However 2% of the respondents strongly disagreed and 8% disagreed 58 of the respondents agreed that chemical kinetics are difficulty to grab because of the bulkiness of the course while 32% strongly agreed. However, 10% of the respondents disagreed to it and 0% of the respondents strongly disagreed to it. 48% of the respondents agreed that practical chemistry are tough while 10% strongly agreed. However 4% of the respondents strongly disagreed and 36% disagreed. 2% of the respondents did not respond.

The information gathered from the respondents shows that the overall teaching in chemistry is not so excellent, however, increasing the difficulty level of chemistry, thereby making it look challenging. An improve in the quality of teaching may lessen the level of difficulty and hence makes it less challenging. More findings have shown that students have preferred aspects in chemistry as it is a course with different aspects. This finding show a reflection in the aspect that the student perform better in. a quite number of respondents have shown preference in inorganic chemistry to organic chemistry. Half of the respondents have shown disagreed that chemical calculations are easy to grab. Majority of the respondents have agreed that environmental chemistry is the most interesting aspect of chemistry.

Majority of the students agreed that chemistry kinetics are difficult to grab because of the bulkiness of the course. The findings also revealed that laboratory instruction do not provide enough guidance to aid chemistry understanding and chemical and reagents are not always available in the laboratory. The student also pointed that practical chemistry are not always tough. More emphasis should be laid on the aspect of chemistry that students often perform poorly in and practical chemistry should be carried out more often to enhance learning and comprehension.

**Table 3: Responses on Students Attitudes towards Learning Chemistry**

Items	SA (Strongly Agree)		A (Agree)		SD (Strongly Disagree)		D (Disagree)	
	F	%	F	%	F	%	F	%
I spend 5 to 10 hours studying chemistry	4	8%	16	32%	9	18%	21	42%
I feel motivated and interesting in studying chemistry	5	10%	20	40%	6	12%	19	38%
I managed my time and prioritize my studies moderately well	7	14%	34	68%	1	2%	8	16%
I feel very comfortable asking questions in the classroom	4	8%	11	22%	10	20%	24	48%
I gather more knowledge on chemistry form accessible sources asides lecturers' note.	18	36%	28	56%	-	-	4	8%
I participate actively during chemistry practical sessions	9	18%	33	66%	1	1%	6	12%
I do group allowed to use the school library to get chemistry books without restrictions	12	24%	30	60%	-	-	8	16%
I am allowed to use the school library to get chemistry books without restrictions	8	16%	33	66%	-	-	9	18%
I attend private lessons for all chemistry course	15	30%	23	46%	1	2%	11	22%

From the analysis show in the table, 8% of the respondents strongly agreed that they spend 5 to 10 hours studying chemistry, however, 32% agreed while 9% strongly disagreed and 42% disagreed to it. 10% of the respondents strongly agreed that they are always interested and motivated in studying chemistry, 40% agreed and 12% strongly disagreed while 38% disagreed to it. 14% of the respondents strongly agreed that they managed their time and prioritize their studies moderately well. However 68% agreed while 2% strongly disagreed to it. 8 % of the respondents strongly agreed that they felt

very comfortable asking questions in the classroom. 22% agreed while 20% strongly disagreed and 48% disagree, 2% of the respondents did not respond .36% of the respondents strongly agree that they gather more knowledge from accessible sources besides lecturer's note. However, 56% agreed while 0% strongly disagreed and 8% disagreed to it. 18% of the respondents strongly agree that they participate more actively during chemistry practical sessions, however 66% agreed while 2% strongly disagreed and 12% disagreed. 2% of the respondents did not respond.

24% of the respondents strongly agreed that they do group reading with their course mates, 60% agreed while 0% strongly disagreed and 18% disagreed to it. 30% of the respondents strongly agreed they attend private lessons for all chemistry course. However, 40% agreed while 2% strongly disagreed and 22% disagreed to it.

From the result of the findings on student's towards learning, findings have shown that attitudes play great role in the performance of chemistry among undergraduates student's academic achievement in chemistry is a function of their attitudes (Bassey 2010) further findings stated that interest and motivation is key to a better performance in all academic exercise which on turn bring about a good performance. A negative attitude can bring about poor performance.

**Research Question 3: Does teacher utilization of instructional materials have any effect on the academic performance of undergraduates?**

Questions were generated from this research questions and the data collected was analyzed under the heading school facilities and instructional materials.

**Table 5: School Facilities and Instructional Materials**

Items	SA		A		S D		D	
	F	%	F	%	F	%	F	%
The classes are well ventilated and comfortable	5	10%	15	30	14	28%	16	32%
We have well equipped laboratories to carry out practical.	4	8%	13	26%	11	22	22	44
All chemistry course are made more understandable by practical exercises.	8	16%	24	48%	6	12%	12	24%
I have access to the laboratory apparatus in the school during practical class	7	10%	25	50%	5	10%	13	26%

The findings gotten from the responses on school facilities and instructional materials have revealed the following 10% strongly agreed that the class rooms are well ventilated and comfortable. However 30% agreed while 28% strongly disagreed and 32% disagreed to it. 8% of the respondents, strongly agreed that the laboratories are well equipped to carry out practical. However 26% agreed while 22% strongly disagreed and 44% disagreed. 16% of the respondents strongly agreed that all chemistry course are made more understandable by practical exercises. However 48% agreed while 12% strongly disagreed and 24% disagreed. 14% of the respondents strongly agreed that they have access to the laboratory apparatus in the school during practical class. However 50% agreed while 10% strongly disagreed and 26% disagreed.

An elements of a good academic institutions is that of facilities. Physical facilities and instructional materials contribute a tot to the general atmosphere of the school and effective learning of students (Kochhar, 2001). The responses so far have shown that classes are not well ventilated and conducive for learning laboratories are also not well

equipped to carry out practical exercises. Results further revealed that a majority of the students have access to the laboratory apparatus in the school during practical classes and not all chemistry course are made more understandable by practical exercises. Inadequate school facilities, sometimes may result in overcrowded class rooms which may reduce the quality of teaching and learning.

### **Discussion of Findings**

The findings of this study have shown that the methods of teaching and teacher's attitudes are related to the academic performance of undergraduates in chemistry education in the University of Benin. The information gathered from the findings shows that the methods of teaching and teacher's attitude revealed that majority of the chemistry lecturers adopts the lecture method of teaching chemistry. The findings of this study revealed that lecturers do not give an in-depth explanation of the course. The major findings on methods of teaching and teacher's attitude is that only a few lecturers finishes the curriculum before the start of exams and that lecturers who encourages students to ask question after teaching record a high frequency of high performance,

Based on the chemistry curriculum, the findings have shown that the quality of teaching is not satisfactory. The findings also showed that the difficulty level is quite on the high side. Majority of the findings on the nature of chemistry curriculum explains that chemical kinetics are difficult to understand due to the bulky state and also that environmental chemistry is the easiest aspect of chemistry. The results of the findings

explained that chemicals and reagents are not always available and laboratory instructors do not provide enough guidance to aid chemistry understanding. This emphasized on the need of more and well equipped school facilities that would enhance effective performance.

The findings based on students' attitudes revealed that, attitudes plays a great role in a students' academic achievement (Bassey, 2010). It showed that motivation and interest is key to a students' academic performance. The findings revealed that students who participated in class tasks and prioritize their time and studies moderately well had high academic achievement when compared to those who didn't prioritize their time and studies moderately well.

Further findings have made it known that school facilities and instructional materials are the elements of good academic institutions (Kochhar, 2001). The availability of school facilities and instructional materials facilitates teaching and learning and also produces a good academic performance amongst undergraduates.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter is focused on the summary of the findings of the study, conclusion as well as recommendations and suggestions for further studies on the assessment of the factors affecting students' performance in chemistry in the University of Benin.

#### **Summary**

This study was designed to examine the factors associated with poor performance amongst undergraduates studying chemistry in the University of Benin, how the teaching and learning method impacts students understanding and performance.

Literature review was duly carried out to survey the views of some authors and researchers on the problem. The respondents were a total number of 50 students randomly selected in the department of chemistry across various levels.

The sampling technique adopted for the research was a stratified random sampling procedure. A questionnaire was distributed to the students to collect responses from them. The responses was further presented using tables, frequency and count. The analysis was done using descriptive statistics.

The findings gotten from the research shows that methods of teaching and teacher's attitude play a major role in the academic achievement of students studying chemistry education. It also pointed out that the nature of chemistry curriculum and students' attitude towards chemistry affects the academic performance of undergraduates. Further

findings also revealed that school facilities and instructional materials enhances the performance of undergraduates' academic performance in chemistry education.

## **Conclusion**

The major purpose of this study was to assess the factors affecting students' performance in chemistry in the University of Benin, Benin City, Edo State, Nigeria. The study revealed that the teaching method and the teacher's attitude towards teaching can lead to students' poor performance. It also pointed out that the congested chemistry curriculum which the teachers rush on or often not finished contributes to the poor performance of students.

The study also shows that students' poor attitudes towards learning may eventually lead to a poor academic performance. The study further revealed that inadequate and poor equipped school facilities contributes to the poor academic performance of students. The findings further pointed out that the lack of the use of instructional materials and teaching aid in chemistry leads to a poor performance.

## **Recommendations**

Based on the findings, the following recommendations are made towards improving students' academic performance in chemistry;

- Teachers should employ teaching methods that would attract the interest of students towards chemistry as a course and make learning efficient.
- Emphasis should be placed more on aspects of chemistry that poses difficulty

towards students learning.

- Teachers should try to build positive relationship with students to enhance learning of chemistry.
- Students' should be enlightened on the benefits of positive attitudes towards learning chemistry as a course.
- The school administrators should provide well equipped school facilities and instructional materials that will facilitate teaching and learning of chemistry and other science inclined courses.

### **Suggestion for Further Study**

More research should be done on how the chemistry curriculum affects student's poor performance in chemistry. Further studies can also be carried out among students studying chemistry in other universities and institutions in the country as this study was only limited to chemistry students in the University of Benin, Benin City, Edo State.

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## QUESTIONNAIRE

**DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY  
FACULTY OF EDUCATION  
THE UNIVERSITY OF BENIN, BENIN CITY, NIGERIA  
ASSESSMENT OF THE FACTORS AFFECTING STUDENTS PERFORMANCE  
IN CHEMISTRY IN UNIVERSITY OF BENIN.**

Dear respondents,

The questionnaire is designed to solicit your candid opinion on the factors affecting students' performance in chemistry. Your cooperation in providing honest and straight forward responses to the questions will be appreciated and your opinion will be treated with confidentiality for this research.

### SECTION A:

Instruction; Tick (✓) the column that best expresses your level of response

SA - Strongly agree

A - Agree

SD - Strongly disagree

D- Disagree

### METHODS OF TEACHING AND TEACHER'S ATTITUDE

1. My chemistry teacher uses lecturer method of teaching chemistry Strongly agree  
{ } Agree { } Strongly disagree { } Disagree { }
2. My chemistry gives an in-depth explanation of the course Strongly agree { }  
Agree { } Strongly disagree { } Disagree { }
3. My chemistry lecturer makes learning interesting Strongly agree { } Agree { }  
Strongly disagree { } Disagree { }
4. My chemistry lecturer makes use of teaching aid to enhance learning Strongly  
agree { } Agree { } Strongly disagree { } Disagree { }
5. My chemistry lecturer finishes the curriculum before the start of exams. Strongly

agree { } Agree { } Strongly disagree { } Disagree { }

6. My chemistry lecturer encourages us to ask questions. Strongly agree { } Agree { }  
Strongly disagree { } Disagree { }

#### CHEMISTRY CURRICULUM

7. The overall quality of teaching in chemistry is excellent Strongly agree { } Agree  
{ } Strongly disagree { } Disagree { }
8. The difficulty level of chemistry curriculum is very challenging Strongly agree { }  
Agree { } Strongly disagree { } Disagree { }
9. I prefer organic chemistry to inorganic chemistry. Strongly agree { } Agree { }  
Strongly disagree { } Disagree { }
10. Chemistry calculations are difficult to grab. Strongly agree { } Agree { } Strongly  
disagree { } Disagree { }
11. Chemicals and reagents are not available in the laboratory. Strongly agree { }  
Agree { } Strongly disagree { } Disagree { }
12. Laboratory instructors do not provide enough guidance to aid chemistry  
understanding Strongly agree { } Agree { } Strongly disagree { } Disagree { }
13. Environmental chemistry is the most interesting aspect of chemistry. Strongly  
agree { } Agree { } Strongly disagree { } Disagree { }
14. Chemical kinetics are difficult to grab because of the bulkiness of the course.  
Strongly agree { } Agree { } Strongly disagree { } Disagree { }
15. Practical chemistry are tough Strongly agree { } Agree { } Strongly disagree { }  
Disagree { }

#### SCHOOL FACILITIES

16. The classes are well ventilated and comfortable. Strongly agree { } Agree { }  
Strongly disagree { } Disagree { }
17. We have well equipped laboratories to carry out practical. Strongly agree { }  
Agree { } Strongly disagree { } Disagree { }
18. All courses are made more understandable by practical exercise. Strongly agree { }

Agree { } Strongly disagree { } Disagree { }

19. I have access to the laboratory apparatus in the school during practical classes

Strongly agree { } Agree { } Strongly disagree { } Disagree { }

#### STUDENT'S ATTITUDE

20. I spend 5 to 10 hours studying chemistry. Strongly agree { } Agree { } Strongly disagree { } Disagree { }

21. I feel motivated and interested in studying chemistry. Strongly agree { } Agree { } Strongly disagree { } Disagree { }

22. I manage my time and prioritize my studies moderately well. Strongly agree { } Agree { } Strongly disagree { } Disagree { }

23. I feel very comfortable asking questions in the classes. Strongly agree { } Agree { } Strongly disagree { } Disagree { }

24. I gather more knowledge on chemistry from accessible sources besides the lecturer's note Strongly agree { } Agree { } Strongly disagree { } Disagree { }

25. I participate actively in chemistry practical sessions Strongly agree { } Agree { } Strongly disagree { } Disagree { }

26. I do group reading with my course mates. Strongly agree { } Agree { } Strongly disagree { } Disagree { }

27. I attend private tutorials for all chemistry courses. Strongly agree { } Agree { } Strongly disagree { } Disagree { }

28. I am allowed to use the school library to get chemistry books without restrictions. Strongly agree { } Agree { } Strongly disagree { } Disagree { }