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EXTENT OF QUALITY LEARNING ENVIRONMENT IN CHEMISTRY CLASSES IN SEONDARY SCHOOLS IN EBONYI STATE

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Abstract

The research study investigated the extent of quality learning environment in chemistry classes in secondary schools in Ebonyi State Nigeria. The researcher used 45 secondary schools selected through stratified random sampling technique. SS3 classes were selected from the schools using purposive sampling technique and 900 students were selected through random sampling. The researcher adopted a descriptive survey design. A 23-item, four-point scale structured questionnaire was developed by the researcher to enable him collect data for the study. Mean and standard deviation were used to answer the research questions while t-test was used to test the hypothesis at 0.05 alpha level of significance. Results of data analysis showed that there is high extent of quality learning environment in both urban and rural secondary schools in Ebonyi State. Based on the findings of the study, the researcher recommended that basic chemistry teachers in secondary schools in Ebonyi State should do more to expose to a higher quality learning environment. The government should increase welfare packages for chemistry teachers to serve as incentive to increase quality learning environment. The state government and school authorities should outline the minimum required components of quality learning environment in secondary schools in the state

Introduction

Nigeria public schools have been criticized for having the low qualities of classroom activities, low qualities of the products of our education and low quality impacts on the wider Nigeria society. It has been argued that the pre and post-colonial public school teachers, even though poorly paid and mainly holders of teachers' grade II certificate, were more dedicated, more committed and more effective. Though facilities and materials in our public schools today are grossly inadequate, they were no less good then. The products of our school system today seem similarly far less qualitative than the product of public schools then. The quality of our learning environment appear to have deteriorated.

The authorities of National Youth Service Corps in August, 2012 alerted the authorities of Enugu State University of Science and Technology of lack of academic competence and intelligence of three students of the institution who were called up for the national service, (Onuoha, 2013). Smith and Apple, (2013) stated that many students graduate from the universities but are lacking a coherent body of knowledge or any inkling as to how one sort of information might relate to others. Often the graduates do not know how to think logically, write clearly or speak coherently. Governor Martin Elechi of Ebonyi State, while addressing teachers in the state, expressed worry about the low quality of education in the state despite government's huge investment in the sector, (Agbodo,2013).

Quality learning environment according Smith and Apple (2013) refers to a pedagogy that creates classrooms where students and teachers work productively in an environment clearly focused on learning. This type of pedagogy sets high and explicit expectations and develops positive relationships between teachers and students and among students. In a quality learning environment, both learners and mentors are committed to the learner's success and there is a high degree of trust and respect. According to Alliance for Education (2019), in a quality learning classroom, there is high degree of trust and collaboration. Ogar, (2013) argued that teachers should not just adopt the conventional method of standing in front of the class to teach but should creatively do things differently.

New South Wales (NSW) Department of Education and Training, (2003) advocated for greater attention to be given to pedagogical practices focussing on intellectual quality and emphasised classroom in which there is a strong, positive and supportive learning environment, pedagogy in which teachers link the work of the students to personal, social and cultural contexts, and pedagogy in which the work of the students should have meaning and impact beyond the classroom. Kentucky Department of Education, (2013) outlined learning climate, classroom

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assessment and reflection, instructional knowledge of content as components of effective teaching and learning. Smith and Apple, (2013) enjoined educators to establish a high degree of trust and respect, challenge the students, encourage risk-taking, create a collaborative learning space, set clear and high expectation, as these are some of the principles of quality learning environment.

In quality learning environment according to NSW Department of Education and Training (2013):
Students are provided with explicit criteria for the quality of work they are to produce and those criteria are a regular reference point for the assessment of student work. High explicit quality criteria are identified by detailed and specific statement about the quality or work required by students. The teacher and or students use the criteria to develop and check their own work or the work of others. Annotated exemplar works or models that could be the work of past students or other sources are provided;

Students display sustained interest and attention, focus on work, show enthusiasm for the work and taking the work seriously. High engagement may also be evident when students take the initiative to raise questions, contribute to group tasks and help peers;

High expectations of all students are communicated and conceptual risk taking is encouraged and rewarded. Expectations are high when teachers or students communicate the knowledge and skills that are challenging to them. Students at all levels are expected to try to master challenging work whether the challenge is intellectual, physical or performance based;

There is a strong positive support for learning and mutual respect among teachers and students and others assisting students learning. The classroom is free of negative personal comments or put downs. Classroom high in social support for students learning, encourage all students to try hard and risk failure in a climate of mutual respect. Teachers and students' behaviours, comments and actions encourage and value efforts, participation and the expression of one's views in the pursuit of learning. If disagreement or conflict occurs in the classroom, it is resolved in a constructive way for all concerned. The teachers have the responsibility of setting the tone in the classroom by creating and maintaining a mutually respectful environment

Students demonstrate autonomy and initiative so that minimal attention to the disciplining and regulation of students' behaviour is required. High self-regulation is evident when the lesson proceeds without interruption and when students demonstrate autonomy and initiative in relation to their own behaviour in ways that allow the class to get on with learning. There is virtually no time spent or need for time to be spent on disciplining students' behaviour or regulating students' movement;

Students exercise some direction over the direction of activities related to their learning, and the means and manners by which these activities will be done. Classroom with high student direction see students excising control over one or more of the following aspects of the lesson: choice of activities, time spent on activities, pace of the lesson, criteria by which they will be assessed.

Smith and Apple (2013) outlined the following principles for ensuring a quality learning environment: Establish a high degree of trust and respect 2. Ensure that both learners and mentors are committed to learner's success 3. Get student buy-in very early in the process 4. Challenge the students 5. Set clear and high expectation 6. Encourage risk taking 7. Seek student feedback regularly by using assessment on consistent and timely basis 8. Measure and document progress and growth 9. Create a collaborative learning space 10. Create a balance between structure and flexibility.

Alliance for Education Solutions (2019), listed the characteristics of a high quality learning environment to include: 1. Physical and psychological safety 2. High level of trust and collaboration 3 Solid understanding of the effects of poverty 4. Positive school, family, home and community relations. 5. Need based approaches for all students 6. Engaging and relevant curriculum 7. Student voice and engagement 8. Effective transition. 9. Attention to student attendance and mobility 10. Appropriate behavioural intervention,

According to Effective Learning Environment (2019), the qualities of effective learning environment include: 1. The students ask more questions than the teachers 2. Questions are valued over answers 3. Ideas come from divergent sources 4. A variety of learning models are used 5. Classroom learning empties into a connected environment 6. Learning is personalized by a variety of characteristics 7. Assessment is persistent, authentic,

transparent and never punitive 8. The criteria for success are diverse, transparent and created with students and families 9. Learning habits are constantly modelled 10. There are constant creative opportunities for practice and growth.

Lancashire Grid for Learning (2019), showed the features to look for in an effective learning classroom environment. They include: 1. Objectives are displayed and discussed 2. Keywords are displayed and used in lesson starts and plenary 3. Brainstorming or key questions are used to trigger prior knowledge 4. There is use of statements and questions to highlight key learning points 5. Key literacy and numeracy targets are displayed 6. Visuals are displayed in the classrooms 7. There are prompts and resources to key curricular targets 8. Keywords/technical vocabulary are displayed for variety of curriculum areas 9. Vocabulary referred to and used within teaching 10. Definition of words are discussed with the students 11. There is collection of words or phrases to support key writing forms 12. Positive affirmations are displayed in the classrooms and referred to regularly 13. The teacher actively fosters positive attitudes and behaviours 14. Successes are celebrated

Some of those characteristics exhibited by students when the environment is qualitative according to Kentuky Department of Education, (2018) include: Accepts responsibility for his/ her own learning, actively participates and is authentically engaged, collaborates with team and with other students, exhibits a sense of accomplishment and confidence, takes education risk in class, practices and engages in safe, responsible and ethical use of technology, recognises what proficient work looks like and determines steps necessary to improve his/her work, monitors progress toward reaching learning target, develops and/or uses scoring guides periodically to assess his/her own work or that of peers, uses teacher and peer feedback to improve his or her work, reflect on work and makes adjustment as learning occurs, articulates and understands learning intentions/targets and criteria for success, reads with understanding a variety of texts, applies and requires inquiry skills, poses and responds to meaningful questions, uses appropriate tools and techniques to gather, analyse and interpret information from qualitative and quantitative evidence, works collaboratively to address complex authentic problems which require innovative approaches to solve, communicates knowledge and understanding in a variety of real-world form and for a variety of purposes, demonstrates growth in content knowledge, uses and seeks to expand appropriate content vocabulary, connects ideas across content areas

Whereas there is urgent need to improve the physical environment of the school system, there is greater need for teachers to ensure a more quality learning environment. Quality learning classroom environment is a factor that will help in no small way in transforming the quality of education in the country. There is no empirical data on the extent of quality of learning environment in chemistry classes in secondary schools in Ebonyi State of Nigeria. It is in the light of this that this paper is focused on extent of quality learning environment in chemistry classes in secondary schools in Ebonyi State of Nigeria.

Statement of the Problem
Various documents and texts contain a wealth of information on the features of quality learning environment. In spite of this, the learning environment of chemistry classes in secondary schools in Ebonyi State does not seem to be qualitative.

The extent of quality learning environment in chemistry classes in secondary schools in Ebonyi State is uncertain. This research is therefore designed to ascertain the extent of quality learning environment in chemistry classes in secondary schools in Ebonyi State.

Purpose of the Study
The main purpose of this research is to determine the extent of quality learning environment in chemistry classes in secondary schools in Ebonyi State. Specifically, the research seeks to:
1. Ascertain the extent of quality learning environment in chemistry classes in urban secondary schools in Ebonyi State.
2. Ascertain the extent of quality learning environment in chemistry classes in rural secondary schools in Ebonyi State.

Significance of the Study
The result of this research will be of great importance to the State government, school authorities, chemistry teachers and students. The result would guide the government in monitoring the quality of learning environment in secondary schools in Ebonyi State.

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The findings might guide the school authorities in ensuring that quality learning environment is always maintained in the classes.

The findings of the study would assist chemistry teachers in ensuring that quality learning environment is always maintained in their classes.

Research Questions
To ensure the attainment of the purpose of the study and to guide the researcher in the research work, the following research questions were posed:
1. To what extent is quality learning environment present in chemistry classes in urban secondary schools in Ebonyi State.
2. To what extent is quality learning environment present in chemistry classes in rural secondary schools in Ebonyi State.

Scope of the Study
The research is centred on urban and rural secondary schools in Ebonyi State. It covered the extent of quality learning environment in chemistry classes in secondary schools in Ebonyi State.

Hypothesis
The following null hypothesis has been formulated at 0.05 level of significance to guide the research work:

HO There is no significant difference in the mean responses of science students in urban and rural secondary schools on the extent of quality learning environment in science classes in secondary schools in Ebonyi State.

Methodology

Design of the Study
A descriptive survey design was used for the research. A survey design according to Ali (2006), is a descriptive study which seeks or uses the sample data of an investigation to document, describe and explain what is existent or non-existent of the present status of a phenomenon being investigated. The researcher collected data from a sample of chemistry students in urban and rural secondary schools in Ebonyi State. The responses from these sampled students was collected and used to document, describe and explain the extent of quality learning environment in chemistry classes in these secondary schools in the State. The design is thus quite appropriate for this research work.

Area of the Study
This study covered chemistry classes in urban and rural secondary schools in Ebonyi State of Nigeria. Government secondary schools in the three education zones of Abakaliki, Onueke and Afikpo was covered in the research. It was restricted to senior secondary school chemistry classes. The choice of senior secondary school chemistry classes is predicated on the fact that the students being used for the study are all senior secondary school chemistry students. The students for the study will be drawn from senior secondary class 3.

Population of the Study
The population of this study is made up of all chemistry students in all the government owned secondary schools of Ebonyi State.

Sample and Sampling Techniques
The sample consists of 45 government owned secondary schools selected from the three education zones of the State. The secondary schools were selected using stratified random sampling technique. Stratified random sampling technique was used to ensure that the survey was spread across the secondary schools in the three education zones of the State. 15 secondary schools (10 from rural and 5 from urban schools respectively) were selected from each of the three education zones in the state using simple random (balloting) technique. 20 chemistry students were selected for the study from each of the schools also using simple random sampling technique. A total of 900 senior secondary class three (SS3) students was selected for the study. Purposive sampling was used to select the class (SS3 class) with the highest experiences in chemistry lessons activities.

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Instrument for Data Collection
The instrument for the collection of data for this study is a structured questionnaire developed by the researcher. The instrument is titled Quality Learning Environment Assessment Questionnaire (QLEAQ). The questionnaire is organized into two sections. Section A sought background information of the respondents such as name of school and class of the student. Section B sought information on the quality learning environment in the chemistry classes. The instrument is made up of 23 items.

The instrument is a four-point scale questionnaire developed by the researcher. The response scales for the instrument are as follows: 4= Very High Extent (VHE); 3 = High Extent (HE); 2 = Low Extent (LE) while 1 = Very Low Extent (VLE).

Validation of the Instrument
Two experts from the Department of Science Education from Alex Ekwueme Federal University, Ndufu-Alike Ikwo face validated the instrument. They made corrections and amendments by restructuring some of the items. They also ensured content validity of the instrument by ensuring that the required ingredients of quality learning environment are contained in the instrument.

Reliability of the Instrument
The 23-item instrument was subjected to trial testing by administering it to 30 respondents who were not part of the sample. Cronbach Alpha statistics was used for the computation of reliability coefficient of the instrument and a coefficient of 0.73 was obtained. This means that the instrument is highly consistent.

Methods of Data Collection
The researcher made use of two research assistants in carrying the study. The researcher visited the schools and administered the instrument to the respondents in Abakaliki Education Zones of the state. One research assistant visited and administered the questionnaire to the respondents in Afikpo Education Zone, while one research assistant visited and administered the questionnaire to the respondents in Onueke Education Zone.

Method of Data Analysis
The researchers will use mean and standard deviation in making the analysis of the responses of the chemistry students on each item of the questionnaire and in answering the research questions. The sample mean and the standard deviation of each scaling item was calculated for the chemistry students. The values obtained was interpreted in relation to the scale code. A mean value between 3.50-4.00 was regarded as VHE; a mean value between 2.50-3.49 was regarded as HE while a mean value between 1.50-2.49 was regarded as LE. On the other hand, a mean value between 1.00-1.49 was regarded as VLE. T-test was used to test the hypothesis, at 0.05 alpha level of significance.

Results
The results of data analysis based on the two research questions and the null hypothesis are presented in this chapter. The results are presented in tables according to the individual research questions and hypothesis.

Research Question I
To what extent is quality learning environment present in chemistry classes urban secondary schools in Ebonyi State?

Data collected with respect to the instrument administered to students in urban secondary schools were used to answer this research question. The data were analysed descriptively on individual item basis. Summary of the data analysis is presented in table 1.

Table 1: Extent of quality learning environment in chemistry classes in urban secondary schools in Ebonyi State

S/N	Items	X	SD	Interpretation
1	Objectives of the lessons are displayed and discussed	2.62	0.73	HE
2	Keywords/technical vocabulary of the lessons are displayed and used in lesson starts and at plenary	2.72	0.48	HE
3	Brainstorming or key questions are used to trigger prior knowledge	2.55	0.66	HE
4	Statements and questions are used to highlight key learning points	2.58	0.75	HE

5	Visuals are displayed in the classroom	2.75	0.74	HE
6	Definition of words are discussed with students	2.68	0.65	HE
7	Classroom learnings are connected to the students' environment	2.85	0.47	HE
8	Successes are celebrated	2.50	0.56	HE
9	The students take initiative to raise questions, contribute to group tasks and help peers	2.55	0.58	HE
10	Conceptual risk taking is encouraged and rewarded	2.45	0.58	LE
11	A variety of learning models are used	2.48	0.71	LE
12	Learning is personalized by a variety of criteria	2.47	0.65	LE
13	Assessment is persistent, transparent and never punitive	2.46	0.62	LE
14	Learning habits are constantly modelled	2.56	0.78	HE
15	There are constant and creative opportunities for practice and growth	2.44	0.77	LE
16	There is high level of trust and collaboration	2.67	0.65	HE
17	There are explicit criteria for quality of work required of students	2.49	0.68	LE
18	The classroom is free of negative personal comments and putdown	2.48	0.85	LE
19	All students are encouraged to try hard and risk failure in a climate of mutual respect	2.56	0.71	HE
20	Students demonstrate autonomy and initiative in relation to their own behaviour	2.45	0.55	HE
21	There is minimal attention to disciplinary and regulation of students behaviours	2.65	0.65	HE
22	Students exercise some control over the direction of activities related to their learning	2.48	0.68	LE
23	Students are engaged and display sustained interest and attention	2.54	0.68	HE
	Grand Mean	2.58	0.66	HE

Based on the result of data analysis shown in table 1 above, there is high extent of quality learning environment in items 1,2,3,4,5,6,7,8,9,14,16,19,20,21 and 23 while there is low extent of quality learning environment in items 10,11,12,13,15,17,18 and 22. The grand mean value of 2.58 and standard deviation of 0.66 show that there is high extent of quality learning environment in chemistry classes in secondary schools in Ebonyi State.

Research Question 2
To what extent is quality learning environment present in chemistry classes in rural secondary schools in Ebonyi State?

Data collected with respect to the instrument administered to chemistry students in the rural secondary schools were used to answer the research question. The data were analysed descriptively on individual item basis. Summary of the data analysis is presented in table 2.

Table 2 Extent of quality learning environment in chemistry classes in rural secondary schools in Ebonyi State

S/N	Items	X	SD	Interpretation
1	Objectives of the lessons are displayed and discussed	2.52	0.67	HE
2	Keywords/technical vocabulary of the lessons are displayed and used in lesson starts and at plenary	2.65	0.58	HE
3	Brainstorming or key questions are used to trigger prior knowledge	2.65	0.65	HE
4	Statements and questions are used to highlight key learning points	2.55	0.58	HE
5	Visuals are displayed in the classroom	2.62	0.59	HE
6	Definition of words are discussed with students	2.68	0.56	HE
7	Classroom learnings are connected to the students' environment	2.79	0.53	HE
8	Successes are celebrated	2.51	0.68	HE
9	The students take initiative to raise questions, contribute to group tasks and help peers	2.49	0.59	LE
10	Conceptual risk taking is encouraged and rewarded.	2.45	0.78	LE

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11	A variety of learning models are used	2.55	0.65	LE
12	Learning is personalized by a variety of criteria	2.47	0.66	LE
13	Assessment is persistent, transparent and never punitive	2.48	0.67	LE
14	Learning habits are constantly modelled	2.57	0.77	HE
15	There are constant and creative opportunities for practice and growth	2.52	0.75	HE
16	There is high level of trust and collaboration	2.59	0.62	HE
17	There are explicit criteria for quality of work required of students	2.65	0.65	HE
18	The classroom is free of negative personal comments and putdowns	2.47	0.59	LE
19	All students are encouraged to try hard and risk failure in a climate of mutual respect	2.48	0.65	LE
20	Students demonstrate autonomy and initiative in relation to their own behaviour	2.46	0.75	LE
21	There is minimal attention to disciplinary and regulation of students behaviours	2.61	0.62	HE
22	Students exercise some control over the direction of activities related to their learning	2.44	0.58	LE
23	Students are engaged and display sustained interest and attention	2.45	0.65	LE
	Grand Mean	2.55	0.64	HE

Based on the results presented in table 2 above, there is high extent of quality learning environment in items 1,2,3,4,5,6,7,8,14,15,16,17 and 21 while there is low extent of quality learning environment in items 9,10,11,12,13,18,19,20,22 and 23. The grand mean value of 2.55 and standard deviation of 0.64 show that there is high extent of quality learning environment in chemistry classes in secondary schools of Ebonyi State.

HO: There is no significant difference in the mean responses of chemistry students in the rural and urban secondary schools on the extent of quality learning environment in secondary schools in Ebonyi State.

Table 3: T-test results based on the extent of quality learning environment in chemistry classes in secondary schools in the state.

SN	Variable	No.	$\overline{X}$	SD	DF	T. Cal	T. Crit	Decision
1	Urban Schools	300	2.62	0.73	898	0.48	1.96	Accept
	Rural Schools	600	2.52	0.67				
2	Urban Schools	300	2.72	0.48	898	0.45	1.96	Accept
	Rural Schools	600	2.65	0.58				
3	Urban Schools	300	2.55	0.66	898	0.52	1.96	Accept
	Rural Schools	600	2.65	0.65				
4	Urban Schools	300	2.58	0.75	898	0.15	1.96	Accept
	Rural Schools	600	2.55	0.58				
5	Urban Schools	300	2.75	0.74	898	0.66	1.96	Accept
	Rural Schools	600	2.62	0.59				
6	Urban Schools	300	2.68	0.65	898	0.00	1.96	Accept
	Rural Schools	600	2.68	0.56				
7	Urban Schools	300	2.75	0.47	898	0.27	1.96	Accept
	Rural Schools	600	2.79	0.53				
8	Urban Schools	300	2.50	0.56	898	0.54	1.96	Accept
	Rural Schools	600	2.51	0.68				
9	Urban Schools	300	2.55	0.58	898	0.35	1.96	Accept
	Rural Schools	600	2.49	0.59				
10	Urban Schools	300	2.45	0.58	898	0.00	1.96	Accept
	Rural Schools	600	2.45	0.78				
11	Urban Schools	300	2.48	0.71	898	0.34	1.96	Accept
	Rural Schools	600	2.55	0.65				
12	Urban Schools	300	2.47	0.65	898	0.00	1.96	Accept
	Rural Schools	600	2.47	0.68				
13	Urban Schools	300	2.46	0.62	898	0.10	1.96	Accept
	Rural Schools	600	2.48	0.67				
14	Urban Schools	300	2.56	0.78	898	0.04	1.96	Accept

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	Rural Schools	600	2.57	0.77				
15	Urban Schools	300	2.44	0.77	898	0.35	1.96	Accept
	Rural Schools	600	2.52	0.75				
16	Urban Schools	300	2.67	0.65	898	0.43	1.96	Accept
	Rural Schools	600	2.59	0.62				
17	Urban Schools	300	2.49	0.68	898	0.82	1.96	Accept
	Rural Schools	600	2.65	0.65				
18	Urban Schools	300	2.58	0.85	898	0.51	1.96	Accept
	Rural Schools	600	2.47	0.59				
19	Urban Schools	300	2.56	0.71	898	0.40	1.96	Accept
	Rural Schools	600	2.48	0.65				
20	Urban Schools	300	2.45	0.58	898	0.05	1.96	Accept
	Rural Schools	600	2.46	0.75				
21	Urban Schools	300	2.65	0.65	898	0.21	1.96	Accept
	Rural Schools	600	2.61	0.62				
22	Urban Schools	300	2.48	0.68	898	0.21	1.96	Accept
	Rural Schools	600	2.44	0.58				
23	Urban Schools	300	2.54	0.68	898	0.46	1.96	Accept
	Rural Schools	600	2.45	0.65				
						0.28	1.96	Accept

T. Value

The result of the data analysis in table 4 above showed that the t-calculated were less than t-critical in all the items of the instrument. The grand t- value of 0.28 is also less than 1.96. This shows that HO is accepted, implying that there is no significant difference in the mean responses of chemistry students in the urban and rural secondary schools of Ebonyi State on the extent of quality learning environment in chemistry classes in the state.

Discussion

The researchers discussed the findings of the study based on the two research questions and the hypothesis that guided the study. Results were discussed according to the two variables of the study as follows.
Extent of quality learning environment in chemistry classes in urban secondary schools:

Results of data analysis as shown in table 1 indicate that there is high extent of quality learning environment in chemistry classes in urban secondary schools in Ebonyi State. This means that chemistry students in urban secondary schools of Ebonyi State are exposed to high quality learning environment
Extent of quality learning environment in chemistry classes in rural secondary schools:

Results of data analysis on table 2 indicate also that there is high extent of quality learning in chemistry classes in rural secondary schools in Ebonyi State. This means that chemistry students in rural secondary schools in Ebonyi State are also exposed to high quality learning environment.

The research also explored the extent to which the mean responses of chemistry students in urban and rural secondary schools differ with respect to the extent of quality learning environment in chemistry classes. The result in table 3 indicated that the grand t-value of 0.28 is less than critical value of 1.96. H0 is therefore accepted. This implies that there is no significant difference in the mean responses of chemistry students in urban and rural secondary schools with respect to the extent of the quality of the learning environment. Thus chemistry students in both urban and rural secondary schools in Ebonyi State are similarly exposed to high quality learning environment.

Conclusion

Based on the results obtained on the extent of quality learning environment in chemistry classes in secondary schools in Ebonyi State, the following conclusions were drawn by the researcher:

In Ebonyi State, chemistry students in both urban and rural secondary schools are on the average exposed high quality learning environment. However, there are still: low encouragement of conceptual risk taking, low variation of learning models, low varied personalization of learning, negative comments and putdowns, low encouragement

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for risking failure, low demonstration of autonomy by students in relation to their own learning and low exercise of some control over the direction of their own learning

Recommendations

Based on the findings of the study the researcher recommends as follows:

1. Chemistry teachers in secondary schools in Ebonyi State should do more to expose the students to a higher quality learning environment in the areas that are still low.
2. The government should provide better physical environment in the schools and increase welfare packages to science teachers to serve as incentive to improve on the learning environment.
3. The government of Ebonyi State and school authorities should outline the minimum required components of quality learning environment in the State.
4. Ebonyi State government should ensure that there is greater supervision of teachers including chemistry teachers to ensure that they maintain high quality classroom learning environment.

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