# Evidence-Based Teaching Method and its Impact on Rural and Urban Students Academic Performance in Bayelsa State

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#### Abstract

Evidence based teaching method is ranking top most in the discussions of teaching methods in Gen Z classrooms. Students want to and need to acquire practical skills from school to be fit for the job environment. The study was conducted in two schools from each local government in Bayelsa state. Students were selected from senior secondary schools. The data was analyzed with simple percentage and mean values. The study revealed that EBIS can be adopted in both rural and urban area secondary schools in Bayelsa state.

*Key Words:* Evidence-based, Secondary School, Strategy, Academic performance, Urban, Rural, Teaching and Research

# **INTRODUCTION**

The application of appropriate teaching strategy in schools that assist students in achieving optimal learning should be the main focus among teachers in Nigeria and across the globe. In Nigeria, it is time for teachers at all levels to involve pragmatic teaching –learning approach that guarantee critical thinking and optimal learning outcomes in students. This is more so as real development that is the target of the government cannot be achieved unless a sound foundation of critical thinking and independent reasoning are laid for the upcoming generation of students (Jang, 2019; Adetifa, 2021).

Education is meant to bring advancement to mankind, and above all, provide right solutions to emerging natural and artificial problems of man across the globe. Education today has played a highly important role as it has application in all areas and spheres of human endeavor – science, technology and economy (Tade, 2022). Very many instructional strategies have been developed and recommended for use in the teaching and learning process in schools. Some of these are personalized system of instruction, (Kelvin, 2004; Ku and Sulivan, 2002), clubs and games (Afuwape, 2002; Aremu, 2001), a combined strategy of concept mapping and problem solving (Awofala, 2000), self-regulatory and cooperative learning strategies (Ifamuyiwa, 2005; Ojo, 2003) and computer assisted programmes instruction (Etukudo, 2002; Udusoro, 2000). It is evident that these strategies are all learner-centered (Afuwape, 2002; Ifamuyiwa, 2005) and are all in favour of of conceptual, sequential and logical aspects of students' learning process. But none utilizes the power inherent in interactions and interrelationships in the process of learning.

Evidence based Instructional Strategy (EBIS): is the idea that the class practices should be based on the best available scientific evidence rather than personal judgment, traditional social media, trends or other influence. They are often associated with high positive learning outcomes. Evidence based means that at least peer reviewed, high-quality study suggests and supports using that specific method, tool or practice (Oyadonghan & Timi-Johnson, 2025).

This is a hung high quality general classroom instruction (Marthins, 2021). Evidence based teaching/learning strategy in the general classroom should provide systematic, and cumulative instruction in whole-class and targeted small groups. It should cater for the needs of the students and target areas of the identified topic. Such identified group may work together as a team to create planning templates that the group will work with and that will be used to allocate time and topics in the whole class or small group instruction. Taking such collaborative stance allows the team to coordinate EBIT and determine if such instruction is working or not (Arogundade, 2022) EBTLS means using classroom practices based on clear and convincing proof from well-designed research data analysis. The accumulated evidence gathered from scientific studies is use to guide a teacher's decision making on his/her teaching learning interactions in the classroom.

Some studies concluded that urban schools with more teaching and instructional equipment and teachers are likely to benefit more from EBTS than those in the rural schools with less instructional materials and teachers. This study is conducted to determine whether this assumption can be confirmed true or false in Bayelsa state.

#### **Education, Teaching and Teaching Strategies**

The teaching process is a complex system in which particular components interact with each other and influence the final presence and functioning of the whole system. The functioning of such system is by nature difficult to study and to model due to the correlations, competition or other types of interaction between the different elements of the system and between such elements and surroundings. According to Owolabi (2021), the education system if not the most is one of the most complex systems and demanding constant research for improvement. The arduous task faced by the teacher are highly immense and difficult, especially in a dynamically changing society like Nigeria. As according to Patrick (2020), the teacher is a director of events, the architect of student's knowledge, an educator, a person of passion, a mentor and at the same time, a tutor. He/she plays the roles of an advisor, organizer, "translator" of the reality and consequences of students' choices. At the top it all, he/she is a researcher (Otuchikere, 2020; Uzoke, 2021; and Enenche, 2023).

Teacher's competencies are therefore shaped by many factors. In terms of teacher's competencies, three groups emerge as;

Substantive- this has to do with their expert knowledge of the subject matter they teach,

Didactic- that is related to the methodological work-shop; and

Educational- that focus on the manners of teacher's working with his/her students in terms of approaches and communication (Oladejo, 2022).

Teaching has suffered both as a profession in search of community respect and as a force for improving the social capital of Nigeria, because of its failure to adopt the results of empirical research as the major determinant of its price. One the reasons for being so is traceable to scienceaversive culture endemic among education policy makers and teacher facilities. Teachers are coming under fire lately as too many students are failing. Present crops of teachers are not sufficiently trained to teach trending skills and disciplines. These young people are not trained to entering the teaching profession with the right skills. The implication of this is that the set of teachers teaching presently are not skilled-up to the task. Teaching is more important than that of the society's life as the future of the country greatly depends on it.

Education is noted for adopting new ideas, this cannot be done without due regard to assessment and scientific research that are necessary to distinguish effective and ineffective reforms. Over time, a Conesus has developed among empirical researchers about the number of effectiveness issues in education and a lot of attention (Enache, Solomon and Naanen, 2020) is currently directed at means by which the results of the findings can reach fruitions in improved outcomes for students in the classrooms. As according to Onilude (2021) education continues to be impervious to research on effective practices.

Active learning involves engaging students in activities that require them to apply concepts and think critically. This method has been shown to significantly improve retention and understanding of material compared to traditional lecture-based approaches (Prince, 2004). Active learning can take various forms, including group discussions, problem-solving activities, and hands-on projects. There is the need to constantly update the skills of 21st century secondary school teachers that are engaged in teaching the students to embrace modern day active teaching methods that will get the students actively engaged in the teaching-learning process. Thus, the shift from lecture and other teacher dominated methods to those that get the students engaged. Afolabi (2020) confirmed that teachers were not teaching with the appropriate methods that get students very active in the teaching-learning process. He therefore recommended that child-centred methods be employed by most teachers of secondary schools.

Integrative behaviour is characterized by the class teacher's flexibility of purpose, willingness to permit differences in others, giving room for expansion of one's horizon, such a teacher according to Lawal (2020) incorporates other people's experiences and ideas in their bid to take group's decisions. Mostly, such a teacher uses group or discussion methods. Students fully participate in the classroom activities and are opportune to make maximum contribution in the teaching-learning process. More importantly, individual differences that exist in each classroom interaction is adequately taken care of. Students' growth and development are also maximally catered for.

Findings from previous studies revealed that learning out comes of students in classes where the teachers adopted integrative approach earn higher performance than where dominative approach was adopted (King 2019; fish, 2020; and Olatoye, 2022). It was also revealed that dependent-prone students who learnt mathematics in the class where the teacher adopted evidencebased teaching method performed significantly better than their counterparts who learn mathematics in the classroom where the teacher adopted dominative teaching method. There is however a dearth of literature on the extent to which evidence-based method can positively impact secondary students' academic performance in urban and rural secondary schools in Bayesa State, Nigeria. Therefore, this study was set out to investigate the effect of evidence-based teaching on students' academic performance in urban and rural secondary schools in Bayesa State.

Recent studies suggest that the effectiveness of teaching strategies plays a critical role in student's learning and performance. Therefore, teacher-students engagement today is shifting to the involvement of active learning strategies instead of traditional teaching methods. As traditional teaching methods are characterized by vote memorization and didactic instruction. This has proved to be less effective, as learners are not actively engaged, it does not foster deep thinking or encourage students, Critical thinking (Godwin, 2020). Active learning strategy like evidence-based learning on the other hand involve active learning. Formative assessment and above all, collaborative learning with the added advantages of getting learners motivated, active and improved learning outcomes (Fish, 2022).

Among the major characteristics of evidence-based learning are: Active learning: in the course of evidence-based teaching, students are well engaged in different activities that require

their application of different concepts and critical thinking. Thus, their retention and understanding of the materials learnt increases as different from traditional method of teaching that emphasizes memorization. Notable forms of active learning include group discussions, problem-solving activities and hands-on projects.

It also involves formative assessment. Such continuous and formative assessment provide the require feedback and guide instruction. This is very useful and relevant to students' progress as it helps to identify the learning gaps and allows the teacher to adjust appropriately their teaching strategies to suit students' needs and interests (Dickson, 2017). Such formative assessment can be presented in the forms of quizzes, classroom polls and feedback sessions.

Evidence-based instruction also involves collaborative learning. Here, students work together in groups to solve problems complete tasks or in discuss concepts. This is quite different from the traditional setting, where an individual student stands alone. The method is highly useful as it helps students to develop social and communication skills in the process of learning. It also help to enhance students' understanding through peer-to-peer interaction and through their collective problem solving (Redaing, 2021).

This attempt of the government to provide a conducive environment for learning did not yield much positive result. As according Madaule (2021), many years after the intervention, the academic performance of students in public examinations did not show any significant improvement. As, the limited success achieved in the introduction of infrastructure to boost classroom learning environment indicates a crucial missing gap. It should be noted that while facilities and resources are very important in creating conducive learning environment for students, they are not sufficient on their own to enhance students' educational outcomes (Adejare and Olaifa, 2022). In today's 21<sup>st</sup> Century educational setting, emphasis is on the important place of teaching quality and instructional methods that mere infrastructural investments (Hanushek and Woessman, 2015). This is because only good teaching methods and instructional strategies will give right meaning to the available facilities and resources.

The adoption of evidence-based teaching methods has the potential of addressing some of the root causes of poor academic performance in Bayelsa State as observed over the years. Thus, if real focus is sheeted from making infrastructure, facilities and resources but also going a little further by adopting evidence-based teaching methods. The combination of these will encourage more effective learning environment that will foster student engagement, critical thinking and high academic success (Ahuindon, 2022).

#### Evidence Based Instructional Strategy – what is it and why it is important?

The term EBIS is widely used in education. As schools are continually presented with strategies, programmes and approaches that claim to be "research based" or "evidence based". According to Oluwole (2022), there are two types of evidence. The first being research evidence that uses rigorous methods to provide dues to educational practice. While the other is practioner (teacher) generated evidence as teachers come up with such evidence through their daily interaction in the classroom. This comes through their observations, information gathered from formative and summative assessment or from their students' feedback. Effective teachers use quality evidence to establish the levels individual learners have reached in their learning, such assists teachers to determine their starting points for further teaching and learning. This ensures that each student is given learning opportunities at an appropriate level of challenge.

Being evidence-based means sing the methods and principles of science. This is relevant to all aspects of classroom teaching and learning. Evidence based teaching and learning is based on three key areas – on teaching, how can we support teachers? Regarding learning, how can we help students to learn? And assessment, how can we assess students' progress? Therefore, its major emphasis is on providing content resources for teachers, providing information about empirical support pedagogies, using only empirically supported tools for classroom interactions and teaching students effective study methods.

Highly effective teachers at the same time have a repertoire of evidence-based informed teaching strategies and select from these to engage individual students. At the same time set ambitious but realistic learning goals, and target teaching to address individual students learning needs effective teachers in the same vein use evidence to monitor the progress of that individual student makes in their learning over extended periods of time.

Evidence-based instructional strategies EBIS- is the belief that the teaching strategies a teacher adopts and implements in his/her classroom should be based on their effectiveness, which has been previously established by peer-reviewed scientific study. As instructional strategies should not be based on tradition, current trends, or ones won personal judgement. This needs to be involved in a teacher's practice as it has been consistently associated with positive learning outcomes. Forms of EBI that can be involved in the classroom are:

1. Assess prior knowledge: when a teacher is ready to introduce a new topic in the class, how does he/she knows where to begin? A teacher starting from the right content level will help prevent students' boredom.

2. Clear learning goals: students cannot be expected to achieve a learning goal when they don't know what the goals is? Be transparent about what you want your students to achieve from the get- go, so that everyone knows what they are working towards.

3. Show and tell: this involves first talking about the concept or procedure, and them providing usual evidence to support it.

4. Group work: this is also known as peer-to-peer or collaborative learning. Group work that will be productive and have meaning, is more than just assigning group projects. Working as a group is most effective when each student has a task to perform and the group functions as a community of learners.

5. Check for understanding: a teacher asks his/her students not to speak out of turn or interrupt us when we are teaching. This makes teaching easier but does not leave much room for students and teacher's questions and clarifications along the line checking for understanding as you go is crucial to ensure that the students are going on well with the teaching and learning going on in the classroom.

6. Teach strategies: this refers to the teaching not only just teaching the content, but teaching the students who to tackle problems on their own to make them independent learners. And so, they do not just give up a problem come up.

7. Nuture metacognition: metacognition is thinking and thinking. Most serious minded and effective students not only use learning strategies, the go on to take time to reflect on why and how those strategies work for them. This is done by teaching the students the steps require in solving a problem the prior knowledge they bring to the table and to modify their approach when necessary.

8. Provide feedback: to learn and improve on their learning, students need to know how they are performing from time to time share the information with them before their final grade on a project, so that they have time for self-correction and improvement upon their work.

9. Give it time: teachers pressed for time, with the array of knowledge to be imparted within limited number of days. Teachers must not rush but be master of their time, as rushed work is often sloppy work

10. Chart the learning process: both teachers and students can chart new information and key points as a means to visualize the learning process.

#### What is evidence?

Cognitive science principles related to memory and learning like cognitive load theory are supported by a large number of peer-reviewed, randomized control trials. These principles have significant implications for effective classroom teaching practice. A teacher's ability to effectively select the most appropriate and impactful; instructional method is enhanced by the knowledge of how the brain learns and stores information. An understanding of these principles to support effective instructional methods has a real effect on student's rate of learning and retention of information in teacher-student classroom interactions.

Teachers to effectively use-evidence based practice of teaching need to be well verse on how the brain learns in their bid to make informed, real-time decisions in applying the most effective teaching practices. As such the teacher needs a good understanding of learning processes, brain function and the implications for teaching. They need to know why such practices are effective in terms of learnings brain.

#### **Turning Research Evidence into Teaching Action**

Over the last decade, the European Commission (2012) has placed an increased emphasis on supporting the profession of teacher educators by accepting research evidence as the foundation of teacher's classroom teaching (Nwachukwu, 2022). Evidence Based Teaching Learning Strategy (EBIS) simply refers to those instructional approaches that are founded on very strong evidence, derived from high-quality research studies. Regardless of its relevance, to date, EBIS has been primarily researched within the field of health professions, but strongly rooted in teacher education today (Adamson and Wilkson, 2019). This is more so because teacher educator's role is multifaceted and highly demanding. It requires continuous professional decision–making and prompt actions on the part of the teacher in his/her classroom interactions in the teaching learning process (Adenrele, 2020). And so, communicating about and reflecting on research evidence is very important for educator's professional development (Smith and Hunt, 2021) and for the improvement of their teaching skills from time to time (Lerner, Morelock and Pierangelo, 20222).

Teacher educators act as liaisons between academia, schools and education authorities. They are source from different professional backgrounds as well as diverse national, and institutional contexts (Shultz and Smith, 2022). They can be academic staff in higher educational institutions or researchers at universities. Such can also be former teachers who have gained tremendous experience in the course of their teaching. Regardless of their background in their preservice training, teacher educators need to be able to identify and incorporate the best available evidence into their teaching practice to prepare future teachers adequately. It is not an easy task as a result of the fact that today, there are increasingly expansion in research literature and the need for turning research evidence into teaching actions in teacher's classroom teaching learning interactions (Dafwat, 2023).

#### **RESULTS AND METHODS**

This study adopted quasi-experimental design that involved two groups of secondary schools (experimental and control) students. The experimental group were taught using evidence-based instructional strategy, while the control group were taught with traditional methods. Six hundred and forty senior secondary school students were involved in the study. The respondents

were selected through multi sampling techniques. The three senatorial districts were purposively selected. And all the eight local government areas were sampled from the three senatorial districts. Two schools each were selected from each of the local government areas sampled for the study. Making a total of sixteen (16) schools. From each of the sampled schools, a total of twenty (20) SS2 students, ten (10) males and ten (10) females were randomly sampled and were involved as respondents for the study, making a total of three hundred and twenty secondary school students that were respondents for the study. Furthermore, two teachers were sampled from each of the schools involved in the study. Making a total of thirty-two (32) secondary school teachers. And all the principals of the sixteen (16) secondary schools involved in the study were collected through a combination of methods. These include: Distribution of questionnaire, observation of participants, interview of school administrators, principles, teachers and students from urban and rural schools in Bayelsa State, teaching and writing exams with EBTS and methods.

# RESULTS

Significant Impact of Evidence Based Instructional Strategy on Secondary School Students
Academic Performance

SN	Impact of EBIS on Secondary School Students'	SA	A%	SD	D%	Mean
	Academic Performance					
1	In EBIS the strong assists the weak	19	6	3	4	3.25
		59.4	18.8	9.4	12.5	
2	Instead of competition, cooperation is created in	21	5	5	1	3.28
	the process of learning	65.6	15.6	15.6	3.1	
3	Students' critically thinking is encouraged	20	6	4	2	4.00
		62.5	18.8	12.5	6.3	
4	EBIS encourage students' motivation	22	5	3	2	3.47
		68.6	15.6	9.4	6.3	
5	Students' motivation is sustained in process of	18	7	4	3	3.25
	teaching and learning	56.3	21.9	12.5	9.4	
6	Students more free with their mates than in the	20	8	2	2	4.06
	traditional method	62.5	25.0	6.3	6.3	
7	The feedback that students have from EBIS	21	6	3	2	3.44
	encourages their positive adjustment.	65.6	18.8	9.4	6.3	
8	Instructional resources utilisation involve in EBIS	19	4	5	4	3.03
	makes students to be interested the more in school	59.4	12.5	15.6	12.5	
	learning					
9	Active participation of learners encourage their	20	6	3	3	3.97
	positive academic performance	62.5	18.8	9.4	9.4	
10	The shift of focus from the teacher to learners in	22	7	2	1	3.56
	EBIS encourages students' high positive academic	68.6	21.9	6.3	3.4	
	performance					
11	EBIS encourages students' positive attitude to	21	4	5	2	3.38
	their learning	65.6	12.5	15.6	6.3	
12	EBIS encourages positive interactions between	20	6	3	3	3.97
	the teacher and students	62.5	18.8	9.4	9.4	

		1	1	1	1	
13	EBIS makes learning more meaningful to the	19	5	4	4	3.22
	learners	59.4	15.6	12.5	12.5	
14	Students' positive attitude ignited through EBIS	21	6	3	2	3.44
	encourages their positive academic performance	65.6	18.8	9.4	6.3	
15	EBIS improves students' interaction skills which	20	4	4	4	3.88
	in turn have positive significant effect on their	62.5	12.5	12.5	12.5	
	academic achievement					
16	EBIS encourages cooperation that discourages	22	5	3	2	3.47
	classroom tension and competition	68.6	15.6	9.4	6.3	
17	EBIS facilitates effective positive interaction	19	4	4	5	3.16
	among the learners.	59.4	12.5	12.5	15.6	
18	The feedback provided by EBIS encourages	21	6	3	2	3.44
	students' high positive academic achievement	65.6	18.8	9.4	6.3	
19	Positive learning environment is created by EBIS	18	5	4	5	3.13
		56.3	15.6	12.5	15.6	
20	EBIS encourages assessment of the weaknesses	19	7	3	3	3.31
	and strengths of individual student which assist to	59.4	21.9	9.4	9.4	
	work on their areas of weaknesses					
Weighted Average: 3.49 Threshold: 2.50						

In above table on the significant impact of EBIS on secondary school students' academic achievement revealed that the respondents supported the fact that it was significant. Its significant importance is expressed in terms of students going along with their mates and the development of critical thinking with as high as 4.00 mean score as above. Moreover, its ability to encourage positive participation of learners and their positive interaction had 3.97. And none of the items had responses whose mean was below the threshold of 2.50.

# Mean and t-test of Difference between the academic performance of secondary school students in urban and rural areas exposed to EBIS

S/N Variable Category N	Mean S Remar		2 tailed sig.
1 Students in Urban Centre 198	1.67 .57	.181 .302	Not significant
2 Students from Rural Areas 122	1.10 .34		

The academic performance of 198 students from urban Centre compared to 122 from rural areas as presented in the above table. The test which compared the mean of 1.67of urban students and the mean of 1.01 for rural students yielded a t-value of .181 which was found not to be significant. This is because the hypotheses in this study were being tested at 0.05 level of significance. The null hypothesis was therefore not rejected. The result implies that there is actually no significant difference between the academic performances of secondary school students exposed to EBIS in both urban and rural areas.

# Conclusion

The study show that Evidence based teaching methods can be adopted in both rural and urban area schools, it's a matter of the teacher being able to use the available resources to be used and the subject matter.

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