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Implementation of Continuous Assessment in Science Teacher Education in Programmes in Rivers State

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Abstract – This study assessed the level of implementation of continuous assessment in Science Teacher Education programmes in Rivers State Nigeria. The sample consisted of 61 Science education lecturers from two universities and one college of Education (technical) in Rivers State, who were surveyed using descriptive survey research design. The research was guided by three research questions and three hypotheses. The Continuous Assessment Implementation Questionnaire (CASIQ) instrument, developed by the researchers and verified by two lecturers in Science Education and one lecturer in Measurement and Evaluation, was used to collect data. The test-retest approach yielded a reliability coefficient of 0.81 for the instrument. The mean and standard deviation were used to answer research questions, and the t-test was used to assess hypotheses at the 0.05 level of significance. The study's findings revealed a low level of continuous assessment implementation by lecturers in Rivers State's science teacher education programmes. In scientific teacher education programmes, there was no significant difference in the implementation of continuous assessment between university and college of education, senior and junior lecturers, or male and female lecturers. It was recommended that professors employ continuous evaluation in making final decisions about students' academic status and that workshops for lecturers be held to introduce them to the various components of continuous assessment.

Keywords – Continuous Assessment, Science Teacher Education, Implementation and Teacher Education

I. INTRODUCTION

Education which provides quality manpower and materials resources for production of goods and services is often regarded as the bedrock for the development of any nation. As a result, no country can develop unless it invests enough resources in providing high-quality education to its inhabitants. mostly in this era of global civilization and advancement in science and technology. This can be accomplished through reforming the educational system. education as the need arises to address inadequacies and meet the needs of the nation and the aspiration of the people. In Nigeria, one of these reforms is universal basic education, which mandates that every Nigerian get basic education up to Junior Secondary School (FME,2013). Schools and teachers of education can examine the affective, psychomotor, and cognitive domains of their students to determine the success and realisation of all lesson's learning objectives. This is usually represented as students' performance which is used for decision making and determining the academic standing of students. As a result, assessment is a necessary tool for the teacher who is in charge of implementing the school programme. Teachers can also use assessment to provide a true overview of the student's long and short-term requirements, allowing them to prepare for their future (Orubu, 2013).

Teachers' assessments can assist students better to comprehend their potential because they spend the majority of their early lives at school. As a result, concentrating entirely on a single exam for final decision-making, as is frequent in our institutions today, is unproductive. The term "assessment" refers to the process of obtaining data and transforming it into an understandable format to make a valuable evaluation of the quality of an individual, an object, a group, or an event Assessment can be done on an individual student, a learning community, an institution, or the entire educational system. It must be well planned to serve as

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instrument for the realization of the objectives of any lesson. (Danner,2011Educational assessment, according to Ajuonuma (2006), is the procedure of documenting knowledge, abilities, attitudes, and beliefs, generally in quantitative terms. Continuous assessment is a systematic foundation for inferring about a student's learning and development.

According to Muskin (2017), continuous assessment may be defined in a variety of ways on both a conceptual and practical level. It seems most appropriate, then, to characterize continuous assessment along a continuum in which the two operational extremes are the fully streamed conducted at regular intervals over a term for primarily summative purposes, generating grades to combine with the score or scores from a system’s official end-of-year examinations. The second one is unstructured and even spontaneous methods used to identify students’ comprehension of a concept, content, or technique during instruction to make immediate adjustments to instruction and to provide prompt precise feedback to strengthen the learning of students, both personally and collectively. From the above, continuous assessment generally refers to planned, graded to suit the age and experience of the children and is given at suitable intervals during the school year. Appropriate scheduling prevents learners from being overly tested or exhausted by numerous assessments. Continuous assessment is a comprehensive procedure that takes into account the learner's emotional and sensorimotor domains, as well as his or her cognitive ability (Ali, 2016).

Continuous assessment, according to Gore, Abe, and Adodo (2011), is the method of collecting and recording marks at various points during an educational programme thus that they can be combined and totalled at the end to provide a cumulative or final score. As defined by Okonkwo (2002) in Marcus and Joseph (2014), continuous assessment is the process of evaluation where the results from various instruments and techniques like tests, projects, rating scales, checklists, observation, interviews, and other conceivable strategies are used to determine learners' accomplishment in the cognitive, affective, and psychomotor domains from the time they begin learning till the end of it. Valid and reliable school-based assessment involves developing and organizing test data obtained from observation and examination into interpretable form utilising a variety of methods to determine achievement in the cognitive, psychomotor and affective domains which is a holistic evaluation of the individual that makes him useful to the society (Anikweze, 2011). Continuous assessment, according to the Federal Ministry of Education, Science, and Technology (FMEST, 1985), is a framework where a student's final grade in cognitive, affective, and psychomotor domains of behaviour takes into account all of his accomplishments throughout a learning cycle. This type of assessment entails the application of a broad spectrum of evaluation methods to guide and improve the student's learning and performance.

Continuous assessments are typically conducted in the classroom by teachers to determine the level of learning of individual students (and occasionally a class or other grouping) on various parts of the curriculum (Long, Dunne & Mokoena, 2014). The concept and process of continuous assessment, on the contrary, are divided into two parts: summative and formative. Fundamentally, the difference in an assessment’s purpose is generally evident in its form. The ‘summative’ purpose, sometimes additionally known as “assessment of learning”, is essential to determine the level of a student’s cumulative attainment of a set of learning objectives. Tests, quizzes, serious homework assignments, and projects are among the most often implemented strategies for these assessments. These methods serve typically to calculate a grade, or score, at the conclusion of a unit of study (e.g., a chapter, a module, a trimester or a year), which represents the accumulated learning of a particular topic. In its summative guise, continuous assessment can be central to determining a child’s school progress. As a formative tool, it informs feedback, remediation, and/or enrichment targeted to a student, a group of students, or a whole class. It may also help to identify the need for specific professional development objectives for a teacher or group of teachers and inspire related steps (Muskin, 2017). The collecting of data about students' grasp of ideas and other behaviours is at the core of formative assessment. These data are used by teachers in making decisions about the next steps to be adopted for a student or group of students, planning instruction, and the improvement of process and practice. Moreover, data collected at certain planned intervals are useful in the determination of students’ up to date achievement. It also gives an overview of progress through time.

On the other hand, formative assessments otherwise called assessments for learning, serve typically to provide signals concerning the level of attainment of specific learning aims, the results of which serve to inform and stimulate actions. Quizzes and assignments, in addition to a variety of discrete tasks and other checks performed throughout a course, and simple sharp observation may be used to carry out these actions at the classroom, school, and system levels. These are designed mainly to improve the related learning, whether of the students who took the assessment or of other students who will follow them. The reality is, however, that virtually all modes of assessment may serve both purposes. Whereas, the primary goal of using continuous assessment techniques is to inform decision making and professional practice, there is a strong summative component to this formative process. Documentation of students' evolving understandings, abilities, and science dispositions may be amassed over time, providing a wealth of data for documenting student achievement and growth at events such as report cards, science evenings, and parent seminars. For the goals they serve, both forms of assessments are significant and beneficial. When what is valued in science learning is aligned across the continuum of formative to summative assessments, the greatest benefit to students is attained (Long, Dunne & Mokoena, 2014).

A student is evaluated as a whole by utilizing all psychometric tools, including test and non-test procedures. Continuous assessment's cumulative features represent all information received on an individual and aggregated together before concluding. Continuous assessment should ideally be guidance oriented, meaning that the data gathered could be applied to make educational, occupational, and personal-social decisions for the student. Valid, sequential, methodical, continuous, cumulative, and comprehensive information is better for guidance and counselling actions. Continuous assessment, both in theory and practice, offers children and teachers feedback. This type of feedback may be used to help a student improve their performance or adjust the content, context, and teaching methods, among other things (Muskin, 2017; Ali, 2016).

Continuous assessment has a variety of applications in the field of education. Continuous assessment provides educational data that may be used to evaluate learners' strengths and weaknesses, provide students and teachers feedback on what they are learning and teaching, provide a foundation for instruction placement, and inspire and concentrate learners' attention. Furthermore, continuous assessment provides professional development, it builds teachers' assessment skills which he transferred to other areas of the curriculum. Students and teachers are empowered because both of them are part of the assessment process, collaborating and sharing expertise within and across (Oyebola, 2013). Continuous assessment is quite beneficial in resolving the issue of test-to-classroom activity mismatches. Because it is broad, cumulative, methodical, guiding, and diagnostic focused, this form of assessment is thought to be suitable for assessing students' learning. In a nutshell, the obtained findings are more relevant and predictive of the learner's overall ability, emphasising the importance for lecturers to use the results in continuous assessment as a way of detecting students' development and providing academic help as needed.

Continuous assessment data provides fast feedback throughout an inquiry, encouraging students to broaden their thinking, change their investigation, and revise their ideas while the investigation is still in progress. When students and teachers collaborate to develop an approach to "good science," continuous evaluation benefits student learning in an inquiry-based classroom. Working with students in their science investigations can help them see that what they are doing is considered “good science.” Students are also more likely to notice that when making thorough observations, organizing data, and expressing their findings to the group are all legitimate scientific processes, motivating them to work toward specific learning objectives and identifying their growth (Berhe, & Embiza, 2015). However, some lecturers deliberately use continuous assessment as means of selling their textbooks or lecture handouts to the detriment of students who cannot afford payment while allotting marks to only students based on payment. Worst still, some lecturers utilise it as a kind of motivation for course representatives, friends and relatives at variance to their purpose. Consequently, most students are denied access to their continuous assessment scores on purpose. This is in direct conflict with the National University Commission's (NUC) regulations, which stipulate a 30 percent allotment for ongoing assessment.

Continuous assessment can be carried out using different techniques and tools. Muslin (2017), on the other hand, provided the following strategies and tools that may be extremely valuable to teachers at all educational levels who are practising continuous assessment.

Techniques for Continuous Assessment

a) Sitting and Listening Closely. Teachers watch the behaviour of the students
b) at work and listen closely to their conversations. At times, they may ask
c) questions during conversations to clarify details about what students are
d) doing and what they are finding out, but otherwise do not interfere.
e) Purposeful Questioning. Teachers ask open-ended questions that enable
f) students to reflect on, clarify, and explain their thinking and actions and
g) give their point of view during investigations.

h) Sharing New Material/Information. Teachers give students new materials
i) or information to help them move deeper in their inquiry.
j) Sparking Science Conversations. Teachers structure opportunities for
k) whole-class, group, and individual conversations to explore the learning
l) occurring through the inquiry.
m) Student Self-Assessment. Students conduct routine reflection.

Tools for Continuous Assessment

a. Teacher's observation notes
b. Videotape
c. Audiotape
d. Photographs
e. Student science writing
f. Artefacts and products of student science

In Nigeria, the purpose of teacher education is to develop the spirit of inquiry and innovation in teachers, as well as to provide them with the intellectual and professional foundation necessary for their duties and to make them flexible to changing environments (According to FME, 2013). Teacher education is a form of professionalising teachers to produce desirable attitudes, skills, and knowledge that will enable them to be more productive and profitable in their job while also meeting the demands of a specific society anywhere at a specified moment (Ogunyinka, Okeke, and Adedoyin, 2015). It encompasses both pre-service and in-service training and education (in-service or on-the-job). Programmes for science technical teacher education are types of programmes designed for the training and preparation of teachers in various subjects in sciences such as biology, chemistry, physics and mathematics. Programmes for science teacher education are operated by colleges of education and universities.

College education programmes are designed to train competent science teachers capable of conveying basic scientific knowledge and abilities to students in primary and junior secondary school (NCCE, 2012). The Nigerian Certificate in Education (NCE), the country's current minimal teaching certification, is issued to graduates by the National Commission for Colleges of Education (NCCE). The universities offer a bachelor of science in education (B.Sc. (Ed.) or a bachelor of education B.Ed., postgraduate diploma in education (PGDE), Masters and Doctoral degree programmes in education and are under the auspices of the National University Commission (NUC). Faculties/Institutes of Education of Universiti**es** are in charge of teacher education for secondary schools by offering Bachelor of Education degree programmes to both senior secondary school graduates and senior Secondary school teachers who have already completed the National Certificate in Education (NCE).

There are several studies on continuous assessment at the tertiary level of education. Ajuonuma (2008) for instance, surveyed the implementation of continuous assessment in Nigerian universities using a sample of 1,340 respondents and a 24 -item self-report as an instrument. According to the findings of the study, Nigerian university professors only execute eleven of the twenty-four continuous assessment implementation elements. Thirteen were not implemented, including questions created using a table of specifications, student assessments in the affective and psychomotor domains, and establishing and applying accurate assessment instruments in the three domains. Similarly, at Nigerian universities, gender had no impact on the implementation of continuous assessment.

Nhat (2015) conducted an experimental study on the practice of assessment for learning in Vietnamese higher education, employing three lecturers from a single Vietnamese university, as well as classroom observation, semi-structured interviews, and documentation. The research reveals that the three lecturers used assessment for learning practices such as questioning observation, oral feedback, and peer evaluation to some level to improve learning in their classes. Despite the lecturers' considerable efforts, student passivity, hierarchy, face-saving, examination-oriented learning, and respect for harmony and effort were all-important hindrances to their assessment practises in Vietnam.

Osadebe (2015) assessed the extent to which university instructors in Delta State University, Abraka, Nigeria used continuous assessment. The continuous assessment focuses on students' cognitive, affective, and psychomotor behaviour. Using simple random sampling and stratified random sampling techniques, a sample of 200 lecturers was chosen at random. The instrument was a 5-point scaled questionnaire. According to the study's findings, the degree of continuous evaluation practice among university professors is low. Further evidence from the study's findings indicated that there was no significant difference in the practice of continuous evaluation between male and female university instructors, in addition to junior and senior university lecturers.

Kapambwe (2010) investigated the implementation of school-based continuous assessment, concentrating on the move from continuous testing to continuous assessment. The study's findings demonstrated that due to the past influences of the traditional objectives-based assessment, teachers find it difficult to suddenly change to the outcomes-based assessment which is predominated by utilising continuous assessment. However, the lessons learned suggest that continuous assessment is critical to the creation of successful learning environments.

Olufemi (2013) researched lecturers' and students' perceptions of the relevance and quality assurance of continuous assessments at Nigerian universities. Three universities and a degree-granting postsecondary institution in Ondo State were among the study's participants. 240 people were chosen for this research using stratified random sample techniques, comprising 104 lecturers and 136 undergraduates (no less than 300) level. The study's findings revealed that there was no significant difference in lecturers' and students' perceptions of the importance of continuous assessment as a mode of evaluation and a component of students' overall academic achievement at the university.

Pereira & Flores (2017) explored university teachers' perceptions about assessment practices: A Study in Five Portuguese Universities using face-to-face interviews and online open-ended questionnaires in five Portuguese public universities in different fields of knowledge for data collection. The study included 57 lecturers. According to the findings of this research, lecturers appreciated the characteristics of an assessment centred on the learner, as it allows the development of key skills for the professional world. However, due to assessment challenges, they were unable to employ these strategies as effectively as they would have liked. The same happens concerning continuous assessment through feedback. Even when modifications in assessment techniques are mandated by certain universities, teachers are hesitant to utilise them due to these constraints. Berhe and Embiza (2015) used both quantitative and qualitative approaches to investigate the problem and the chances of implementing continuous assessment at Adiga University Ethiopia. The sample included 681 Mekelle and Aksum University students and 119 instructors. The study's findings revealed that instructors were not continuously collecting information about students' progress, that fewer assessments were used in courses, and that few instructors provided any feedback at all. A significant number of teachers and students lacked understanding about continuous evaluation and had a negative attitude toward it. The researchers concluded that instructors should employ a continuous evaluation to track students' progress.

1.2 Statement of the Problem.

How successfully continuous assessment is used in reaching the ultimate decision on academic achievement determines the amount to which a student's entire ability is appropriately measured. As a result, the Federal Government of Nigeria reformed educational assessment at all educational levels, basing it entirely or partially on continuous assessment (FME, 2013). Under this policy, the National University Commission (NUC) allotted 30 percent and 70 percent of the total score of university students to continuous assessment and end-of-semester examinations, respectively, while the national policy on teacher education stipulates that both examination scores and continuous assessment should be used to evaluate students in universities and colleges of education (NPTE, 2014). It is clear from the preceding that lecturers are expected to employ continuous assessment in making academic judgments on students in science teacher education programmes. In contrast, available research demonstrated a low level of application of continuous evaluation in educational faculties, whereas scientific teacher education programmes were not included in any study. There are indications that lecturers in science education rely so much on examination scores in deciding the academic standing of students without considering the various components of continuous assessment. This is a problem that this study is seeking to address.

1.3 Purpose of the Study

This study is carried out to investigate lectures' implementation of continuous assessment in science teacher education programmes in Rivers State. Specifically, the study tends to determine:

1. lecturers' implementation of continuous assessment in science teacher education programmes in Rivers State.
2. university and college of education lecturers' implementation of continuous assessment in science teacher education programmes in Rivers State.
3. Senior and Junior lecturers' implementation of continuous assessment in science teacher education programmes in Rivers State.
4. male and female lecturers' implementation of continuous assessment in science teacher education programmes in Rivers State.

1.4 Research questions

The following questions are developed to guide the study.

1. To what extent do lecturers implement continuous assessment in science teacher education programmes in Rivers State?
2. To what extent do university and college of education lecturers implement continuous assessment in science teacher education programmes in Rivers State?
3. To what extent do senior and junior lecturers implement continuous assessment in science teacher education programmes in Rivers State?
4. To what extent do male and female lecturers implement continuous assessment in science teacher education programmes in Rivers State?

1.5 Hypotheses

The following hypotheses were formulated for the study.

$H0_1$: There is no significant difference between the mean responses of university and college of education lecturers on implementation of continuous assessment in science teacher education programmes in Rivers State.

HO_2: There is no significant between the mean responses of senior and junior lecturers on implementation of continuous assessment in science teacher education programmes in Rivers State.

HO_3: There is no significant difference between the mean response of male and female lecturers on implementation of continuous assessment in science teacher education programmes in Rivers State.

1.6 Significance of the Study

The findings of this study will be of great benefit to the government and other organizations by providing reliable feedback on lecturers' compliance with the existing practice of implementing continuous assessment according to the provisions of the national university commission. Lecturers stand to benefit from training programmes in the recommendations of this study to improve their practice of continuous assessment. Science education undergraduates will be offered the opportunity to be involved in their assessment with different techniques of continuous assessment.

II. Methodology

In this study, a descriptive survey design was used. This study's population and sample comprise 61 lecturers, 48 male and 13 female, from Science Education Departments at three universities and one College of Education (Technical) in Rivers State. The instrument was Implementation of Continuous Assessment Questionnaire (ICASQ) developed by the researcher and rated on a 4-point scale, Very High Extent (VHE), High Extent (HE), Low Extent (LE), Very Low Extent (VLE). The instrument was validated by two lecturers in Science Education and one lecturer in Measurement and Evaluation and the reliability coefficient established using the test-retest method to be 0.81. The researchers delivered the instrument to the lecturers on a personal visit to the schools. The mean and standard deviation were used to answer research questions, and hypotheses were assessed at the 0.05 level of significance using the t-test of analysis. Items having a mean response of 2.5 or more were termed high extent, whereas items with a mean response of less than 2.5 were designated low extent.

III. Results

Research Question 1

To what extent do lecturers implement continuous assessment in science teacher education programmes in Rivers State?

Table 1 . Mean responses of lecturers on the extent of implementation of continuous assessment in science teacher education programmes in Rivers State.

S/N	Item	Mean	SD	Decision
1	Compute and use item analysis, item difficulty, item facility and discrimination indices in assessment	2.32	0.98	LE
2	Develop and use valid assessment instruments for assessing the three domains	2.14	0.78	LE
3	Take attendance before teaching and use it as part of assessment	2.03	0.79	LE
4	Prepare a model answer with a well-made marking scheme before scoring	3.13	0.76	HE
5	Grade, mark and record students' tests and assignments regularly	3.78	1.01	HE
6	Give students scripts after scoring	1.32	0.68	LE
7	Summarize and transform scores into standard scores for uniformity purposes	2.51	0.92	HE
8	Assess students using a wide variety of assessment techniques other than testing	1.81	0.79	LE
9	Plan remedial course based on information got from assessment	1.24	0.82	LE
10	Use CA scores in the final assessment of students	3.45	0.95	HE
11	Identify students' areas of strength and weaknesses and use these to guide them.	2.00	0.85	LE
12	Ensures continuity of records by adequate keeping of records	3.34	0.63	HE
13	Assess students in cognitive domain	3.12	0.76	LE
14	Assess students in affective domain	1..35	0.83	LE
15	Assess students in psychomotor domain	2.20	0.77	LE
		$\overline{X}$ of $\overline{X}$ = 2.46		

From Table 1, lecturers to a low extent compute and use item analysis, item difficulty, item facility and discrimination indices in assessment 2.32, develop and use valid assessment instruments for assessing the three domains 2.14, take attendance before teaching and use it as part of assessment 2.03, give students scripts after scoring 1.32, assess students using a wide variety of assessment techniques other than testing 1.81, plan remedial course based on information got from assessment 1.24, identify students' areas of strength and weaknesses and use it to guide the student and improve teaching 2.00, assess students in affective domain 1.35, assess students in psychomotor domain 2.20. However, lecturers to a very high extent prepare a model answer with a well-made marking scheme before scoring 3.13, grade, mark and record students' test and assignment regularly 3.78, summarize and transform scores into standard scores for uniformity purposes 2.51, use ca scores in the final assessment of students 3.45, ensures continuity of records by adequate keeping of records 3.34, assess students in cognitive domain 3.12.

Research Question 2

To what extent do university and college of education lecturers implement continuous assessment in science teacher education programmes in Rivers State?

Table 2. Mean responses of university and college of education lecturers on the extent of implementation of continuous assessment in science teacher education programmes in Rivers State.

		University			College of education		
S/N	Item	Mean	SD	Decision	Mean	SD	Decision
1	Compute and use item analysis, item difficulty, item facility and discrimination indices in assessment	1.38	0.92	LE	2.13	0.77	LE
2	Develop and use valid assessment instruments for assessing the three domains	2.21	0.83	LE	2.14	0.87	LE
3	Take attendance before teaching and use it as part of assessment	2.31	0.93	LE	2.49	0.91	LE
4	Prepare a model answer with a well-made marking scheme before scoring	3.25	1.10	HE	3.13	I.15	HE
5	Grade, mark and record students' tests and assignments regularly	3.47	1.01	HE	3.56	1.02	HE
6	Give students scripts after scoring	1.34	0.67	LE	1.45	0.67	LE
7	Summarize and transform scores into standard scores for uniformity purposes	2.67	0.84	HE	2.54	0.96	HE
8	Assess students using a variety of assessment techniques other than testing	2.18	0.76	LE	2.01	0.54	LE
9	Plan remedial course based on information got from assessment	2.16	0.93	LE	2.00	0.73	LE
10	Use continuous assessment scores in the final assessment of students	3.76	0.76	HE	4.01	0.85	HE
11	Identify students' areas of strength and weaknesses and use these to guide them	1.89	0.85	LE	1.76	0.97	LE
12	Ensures continuity of records by adequate keeping of records	3.15	0.63	HE	3.48	0.78	HE
13	Assess students in cognitive domain	3.12	0.87	LE	3.00	0.83	HE
14	Assess students in affective domain	2.10	0.76	HE	2.31	0.91	LE
15	Assess students in psychomotor domain	1.89	0.98	LE	1.76	0.76	LE
		$\overline{X}$ of $\overline{X}$ = 2.46			**$\overline{X}$ of $\overline{X}$ = 2.51**		

From Table 2 both university and college of education lecturers to a low extent compute and use item analysis, item difficulty, item facility and discrimination indices in assessment 1.38 and 2.13, develop and use valid assessment instruments for assessing the three domains 2.21 and 2.14, take attendance before teaching and use it as part of assessment 2.31 and 2.49, give students scripts after scoring 1.34 and 1.45, assess students using a variety of assessment techniques other than testing 2.18 and 2.01, plan remedial course based on information got from assessment 2.16 and 2.00, identify students' areas of strength and weaknesses and use it to guide the student 1.89 and 1.76, assess students in affective domain 2.10 and 2.31 assess students in psychomotor domain 1.89 and 1.76. However, both university and college of education lecturers to a high extent prepare a model answer with a well-made marking scheme before scoring3.25 and 3.13, grade, mark and record students' tests and assignments regularly 3.47 and 3.56, summarize and transform scores into standard scores for uniformity purposes 2.67 and 2.56, use continuous assessment scores in the final assessment of students 3.76 and 4.01, ensures continuity of records by adequate keeping of records 3.15 and 3.48, assess students in cognitive domain 3.12 and 3.00

Research Question 3

To what extent do senior and junior lecturers implement continuous assessment in science teacher education programmes in Rivers State

Table 3. Mean responses of senior and junior lecturers on the extent of implementation of continuous assessment in science teacher education curriculum.

		Senior lecturer			Junior lecturer		
S/n	Item	Mean	SD	Decision	Mean	SD	Decision
1	Compute and use item analysis, item difficulty, item facility and discrimination indices in assessment	2.34	1.01	LE	2.24	1.15	LE
2	Develop and use valid assessment instruments for assessing the three domains	2.16	0.97	LE	2.41	0.69	LE
3	Take attendance before teaching and use it as part of assessment	1.98	0.83	LE	1.76	0.87	LE
4	Prepare a model answer with a well-made marking scheme before scoring	2.89	0.76	HE	2.97	0.83	HE
5	Grade, mark and record students' tests and assignments regularly	3.12	1.20	HE	3.65	1.45	HE
6	Give students scripts after scoring	1.05	0.34	LE	1.00	0.87	LE
7	Summarize and transform scores into standard scores for uniformity purposes	2.67	0.67	HE	2.95	0.95	HE
8	Assess students using a wide variety of assessment techniques other than testing	2.13	1.10	LE	2.28	1.09	LE
9	Plan remedial course based on information got from assessment	1.78	0.64	LE	1.21	0.87	LE
10	Use CA scores in the final assessment of students	3.45	0.83	HE	3.65	1.03	HE
11	Identify students' areas of strength and weaknesses and use these to guide them	1.45	0.87	LE	1.42	0.96	LE
12	Ensures continuity of records by adequate keeping of records	2.97	0.75	HE	2. 75	0.84	HE
13	Assess students in cognitive domain	2.98	0.87	HE	3.13	0.97	LE
14	Assess students in affective domain	2.18	0.92	LE	2.01	0.86	HE
15	Assess students in psychomotor domain	2.25	0.87	LE	2.16	0.77	LE
		$\overline{X}$ of $\overline{X}$ = 2.36			**$\overline{X}$ of $\overline{X}$ = 2.35**		

From Table 3, senior and junior lecturers to a low extent compute and use item analysis, item difficulty, item facility and discrimination indices in assessment 2.34 and 2.24, develop and use valid assessment instruments for assessing the three domains 2.16 and 2.41, take attendance before teaching and use it as part of assessment 1.98 and 1.76, give students scripts after scoring

1.05 and 1.00, assess students using a wide variety of assessment techniques other than testing 2.13 and 2.28, plan remedial course based on information got from assessment 1.78 and 1.21, identify students' areas of strength and weaknesses and use it to guide the student and improve teaching 1.45 and 1.42, assess students in affective domain 2.18 and 2.10, assess students in psychomotor domain 2.25 and 2.16. however, both senior and junior lecturers to a high extent prepare a model answer with a well-made marking scheme before scoring 2.89 and 2.97, grade, mark and record students' tests and assignment regularly 3.12 and 3.65, summarize and transform scores into standard scores for uniformity purposes 2.67 and 2.95, use ca scores in the final assessment of students 3.45 and 3.65, ensures continuity of records by adequate keeping of records 2.98 and 3.13

Research Question 4

To what extent do male and female lecturers implement continuous assessment in science teacher education programmes in Rivers State?

Table 4. Mean responses of male and female lecturers on the extent of implementation of continuous assessment in science teacher education programmes in Rivers State.

		Male lecturers			**Female lecturers**		
S/N	**Item**	**Mean**	**SD**	**Decision**	**Mean**	**SD**	**Decision**
1	Compute and use item analysis, item difficulty, item facility and discrimination indices in assessment	2.87	0.87	HE	2.14	0999	LE
2	Develop and use valid assessment instruments for assessing the three domains	2.15	0.86	LE	2.00	0.76	LE
3	Take attendance before teaching and use it as part of assessment	2.11	0.88	LE	2.10	0.93	LE
4	Prepare a model answer with a well-made marking scheme before scoring	2.98	0.67	HE	3.10	0.77	HE
5	Grade, mark and record students' tests and assignments regularly	3.25	1.11	HE	3.49	0.99	HE
6	Give students scripts after scoring	0.94	0.91	LE	0.91	0.91	LE
7	Summarize and transform scores into standard scores for uniformity purposes	2.56	0.86	HE	2.89	0.79	HE
8	Assess students using a wide variety of assessment techniques other than testing	1.45	0.92	LE	1.22	0.88	LE
9	Plan remedial course based on information got from assessment	2.16	0.76	LE	2.00	0.94	LE
10	Use CA scores in the final assessment of students	3.78	1.10	HE	4.00	0.98	HE
11	Identify students' areas of strength and weaknesses and use these to guide them	1.32	0.76	LE	1.24	0.55	LE
12	Ensures continuity of records by adequate keeping of records	2.87	0.88	HE	2.99	0.76	HE
13	Assess students in cognitive domain	2.99	0.67	HE	3.23	0.82	HE
14	Assess students in affective domain	2.17	0.93	LE	2.13	0.87	LE
15	Assess students in psychomotor domain	2.11	0.85	LE	2.00	0.77	LE
		$\overline{X}$ of $\overline{X}$ = 2.38			**$\overline{X}$ of $\overline{X}$ = 2.36**		

From Table 4 male and female lecturers to a low extent develop and use valid assessment instruments for assessing the three domains 2.15 and 2.00, take attendance before teaching and use it as part of assessments 2.11 and 2.10, give students scripts after scoring 0.94 and 0.91, assess students using a wide variety of assessment techniques other than testing 1.45 and 1.22, plan remedial course based on information got from assessment 2.16 and 2.00, identify students' areas of strength and weaknesses and use it to guide the student and improve teaching 1.32 and 1.34, assess students in affective domain 2.17 and 2.13, assess students in psychomotor domain 2.11 and 2.00. However, both senior and junior lecturers to a high extent prepare a model answer with a well-made marking scheme before scoring 2.98 and 3.10, grade, mark and record students' tests and assignments regularly 3.25 and 3.49, summarize and transform scores into standard scores for uniformity purposes 2.56 and 2.89, use ca scores in the final assessment of students 3.45 and 3.65, ensures continuity of records by adequate keeping of records 2.99 and 2.00. Male lecturers to a high extent compute and use item analysis, item difficulty, item facility and discrimination indices in assessment 2.87 while female lecturers to a low extent use item analysis, item difficulty, item facility and discrimination indices in assessment 2.14.

Hypothesis 1

$H0_1$: There is no significant difference between the mean responses of university and college of education lecturers on implementation of continuous assessment in science teacher education programmes in Rivers State

Table 5. t-test analysis of mean responses of university and college of education lecturers' responses to implementation of continuous assessment in science teacher education programmes in Rivers State.

Institution	N	$\overline{X}$	SD	df	t-cal	t-crit	Decision
University	52	2.46	0.73				
				59	0.321	1.960	Accepted
College of Education	9	2.51	0.75				

From Table 5, the calculated value of t-cal. = 0.321is less than the table or critical value (p=.05). Therefore, the null hypothesis which states that there is no significant between the mean responses of senior and junior lecturers on implementation of continuous assessment in science teacher education programmes in Rivers State is accepted. This implies that there is no significant between university and college of education lecturers' responses to implementation of continuous assessment in science teacher education programmes in Rivers State.

Hypothesis 2

HO_2: There is no significant between the mean responses of senior and junior lecturers on implementation of continuous assessment in science teacher education programmes in Rivers State.

Table 6. t-test analysis of mean responses of senior and junior lecturers on implementation of continuous assessment in science teacher education programmes in Rivers State**.**

Status of Lecturer	N	$\overline{X}$	SD	df	t-cal	t-crit	Decision
Senior	22	2.36	0.65				
				59	0.547	1.960	Accepted
Junior	39	2.35	1.01				

From Table 6, the calculated value of t-cal. = 0.547 is less than the table or critical value at p=.05. Therefore, the hypothesis which states that there is no significance between the mean responses of senior and junior lecturers on implementation of continuous assessment in science teacher education programmes in Rivers State is accepted. This implies that there is no significant between senior and junior lecturers' implementation of continuous assessment in science teacher education programmes in Rivers State.

Hypothesis 3

HO_3: There is no significant difference between the mean responses of male and female lecturers on implementation of continuous assessment in science teacher education programmes in Rivers State.

Table 7. t-test analysis of mean responses of male and female lecturers on implementation of continuous assessment in science teacher education programmes in Rivers State.

Gender	N	$\overline{X}$	SD	df	t-cal	t-crit	Decision
Male	48	2.38	0.65				
				59	0.059	1.960	Accepted
Female	13	2.36	1.01				

From Table 7, the calculated value of t-cal. = 0.059 is less than the table or critical value at p =.05. Therefore, the hypothesis which states that there is no significant difference between the mean responses of male and female lecturers on implementation of continuous assessment in science teacher education programmes in Rivers State is accepted. This implies that there is no significant difference between male and female lecturers' implementation of continuous assessment in science teacher education programmes in Rivers State.

IV. Discussion of Results

The findings of this study indicated that in Rivers State tertiary institutions, there is a very low degree of application of continuous assessment in science teacher education programmes (Table 1). Lecturers to a very low extent compute and use item analysis, item difficulty, item facility and discrimination indices, develop and use valid assessment instruments for assessing the three domains, take attendance before teaching and use it as part of assessment, give students scripts after scoring, assess students using a variety of assessment techniques other than testing, plan remedial course based on information got from assessment, and identify students' areas of strength and weaknesses and use it to guide the student and improve teaching in continuous assessment in science teacher education in Rivers State. However, lecturers to a high extent prepare model answers with a well-made marking scheme before scoring, grading, marking and recording students' tests and assignments regularly, summarize and transform scores into standard scores for uniformity purposes, use continuous assessment scores in the final assessment of students, and ensures continuity of records by adequate keeping of records in continuous assessment in science teacher education in Rivers State.

The findings of this study support those of Osadebe (2015), who reported a low prevalence of continuous assessment practice among university professors when examining the extent to which continuous assessment was conducted by university lecturers at Delta State University, Abraka, Nigeria. These results further agree with the finding of Ajuonuma (2008) who found that, out of the twenty-four continuous assessment implementation items, Nigerian University lecturers implemented only eleven. Thirteen were not implemented, some of which include; setting questions using a table of specifications, assessment of students in affective and psychomotor domains, and developing and using valid instruments for assessment in the three domains. The discovery of a low level of implementation of continuous assessment in science teacher education programmes confirms the noncompliance of science lecturers to the provisions of the national policy on teacher education which provides for the assessment of students at all levels of education to be based on whole or part on continuous assessment (Federal Ministry of Education, 2013). This is contradictory to the achievement of teacher education goals, which include the development of highly conscientious and efficient classroom instructors at all levels of the educational system.

There was no substantial difference in the application of continuous assessment in science teacher education between university and college of education lecturers in Rivers State, according to the study's results (Table 5). Continuous assessment is used in science teacher education to a lesser extent by university and college instructors. This suggests that both institutions may be experiencing the same or comparable issues when it comes to conducting continuous evaluation. In science teacher education, there was no substantial variation in the adoption of continuous assessment between senior and younger professors (Table 6). In scientific teacher education programmes, both senior and junior lecturers employ continuous assessment to a lesser level. These results are in line with Osadebe's (2015) findings at Delta State University Abaraka, where he observed no significant differences in the practice of continuous assessment between younger and senior teachers. The study's findings also found that in Rivers State, there was no significant difference in the adoption of continuous assessment in science teacher education between male and female lecturers (Table 7). The findings confirm Osadebe's (2015) observation that there is no significant variation in lecturers' application of continuous evaluation depending on gender. This shows that the lack of continual assessment in science teacher education is a problem that affects both men and women.

V. CONCLUSION

The study found a poor degree of application of continuous assessment by lecturers in science teacher education programmes in Rivers State. Also, there was no significant difference in the application of continuous assessment in science teacher education programmes between university and college of education, senior and younger lecturers, male and female lecturers, or male and female lecturers in Rivers State.

VI. RECOMMENDATION.

1. Lecturers should endeavour to use the results from continuous assessment to identify students' progress.
2. Adequate funds should be provided to faculties of education in universities and colleges of education.
3. Conferences, seminars and training should be organized for lecturers to expose them to the various components of continuous assessment.
4. University and college of education lecturers should be encouraged to practice continuous assessment in line with the educational policy for university education.

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