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PERFORMANCE-BASED ASSESSMENT AS A BETTER ALTERNATIVE TO TRADITIONAL WRITTEN EXAMINATIONS IN ANIMAL SCIENCE EDUCATION IN NIGERIAN HIGHER INSTITUTIONS

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Abstract

Assessment practices in Animal Science education should measure not only students' theoretical knowledge but also their ability to demonstrate practical competencies required in professional practice. However, assessment in many Nigerian higher institutions remains heavily dependent on traditional written examinations, which primarily evaluate cognitive achievement and provide limited evidence of graduates' workplace readiness. This paper examines performance-based assessment as a more effective alternative for evaluating Animal Science students. Drawing on contemporary literature and competency-based education principles, the paper compares traditional written examinations with performance-based assessment, highlighting their respective strengths and limitations. It argues that performance-based assessment offers a more authentic, valid, reliable, and comprehensive evaluation by integrating the cognitive, psychomotor, and affective domains of learning. The paper discusses the benefits of performance-based assessment, including improved practical competence, enhanced graduate employability, active and lifelong learning, fairer assessment, and stronger alignment with the National Universities Commission's Core Curriculum and Minimum Academic Standards (CCMAS). It also outlines practical strategies for implementation, such as laboratory practicals, farm-based assessments, project work, portfolios, industrial attachment, oral presentations, observation checklists, and standardized assessment rubrics. Furthermore, the paper identifies key implementation challenges, including inadequate facilities, large class sizes, limited funding, insufficient lecturer training, increased workload, and concerns regarding assessment reliability. It concludes that while written examinations remain valuable for assessing theoretical knowledge, they should complement rather than dominate assessment practices. A balanced assessment system that prioritizes performance-based approaches will better prepare Animal Science graduates with the practical competencies, professional skills, and workplace readiness required to contribute effectively to Nigeria's livestock industry and broader agricultural development.

Keywords: Performance-based assessment; traditional written examinations; Animal Science education; competency-based education; practical competence; graduate employability; higher education; Nigeria.

1.0 Introduction

Higher education is increasingly expected to produce graduates who possess not only sound theoretical knowledge but also the practical competencies required for effective workplace performance. This expectation is particularly important in professional disciplines such as Animal Science, where graduates are expected to demonstrate competence in livestock production, animal nutrition, breeding, health management, farm management, and agribusiness. Consequently, assessment practices should evaluate students' ability to apply knowledge and perform practical tasks rather than merely measure their ability to recall information during written examinations (Mulder, 2017; Pellegrino (2020). Animal Science plays a significant role in food security, employment generation, poverty reduction, and national economic development. To contribute meaningfully to the livestock sector, graduates should possess practical competencies in livestock handling, feed formulation, disease control, breeding management, farm record keeping, housing design, and biosecurity implementation (National Universities Commission [NUC], 2022; Food and Agriculture Organization [FAO], 2023). Recognizing this need, the National Universities Commission introduced the Core Curriculum and Minimum Academic Standards (CCMAS), which emphasize outcome-based education and the acquisition of practical competencies alongside theoretical knowledge.

Despite these expectations, assessment in many Nigerian tertiary institutions still relies heavily on traditional written examinations. Although such examinations are useful for assessing theoretical understanding, they provide limited evidence of students' practical competence and workplace readiness. Consequently, many graduates perform well academically but encounter difficulties when required to carry out practical livestock management tasks in professional settings. This situation has increased calls for assessment methods that better reflect the practical nature of Animal Science. Performance-based assessment has emerged as a suitable alternative because it evaluates students through practical demonstrations, laboratory activities, farm projects, simulations, field experiences, and other authentic tasks. Unlike traditional examinations that mainly assess cognitive achievement, performance-based assessment integrates the cognitive, psychomotor, and affective domains of learning, thereby providing a more comprehensive evaluation of students' competencies (Gervais, 2016; Stiggins, Arter, Chappuis, & Chappuis, 2018).

Assessment should produce valid, reliable, objective, and useful evidence of students' achievement of learning outcomes. Since Animal Science is practice-oriented, assessment methods should reflect workplace realities rather than depend predominantly on written examinations. It is therefore the position of this paper that performance-based assessment provides a better alternative to traditional written examinations because it promotes meaningful learning, enhances graduate employability, and improves the quality of Animal Science education.

2.0 Concept of Performance-Based Assessment

Performance-based assessment is an approach to educational evaluation in which learners demonstrate their knowledge, practical skills, and professional competencies by performing authentic tasks that reflect real-life workplace situations. Unlike traditional written examinations that emphasize the recall of memorized information, performance-based assessment focuses on learners' ability to apply knowledge, solve problems, and perform occupational tasks effectively (Popham, 2017) Performance-based assessment is closely linked to competency-based education because it provides direct evidence that students have mastered the competencies required for professional practice. According to Gervais (2016), competency is best demonstrated through actual performance rather than written responses. Similarly, Nitko and Brookhart (2022) note that performance-based assessment involves practical activities such as

laboratory exercises, projects, portfolios, presentations, fieldwork, simulations, and workplace experiences that allow lecturers to evaluate students' ability to transfer classroom knowledge to real-life situations.

In Animal Science, performance-based assessment may require students to demonstrate livestock handling, feed formulation, disease diagnosis, vaccination procedures, farm record keeping, breeding management, and biosecurity practices. Assessment is based on clearly defined performance standards and rubrics, enabling lecturers to evaluate students according to predetermined criteria rather than subjective judgment. One of the major characteristics of performance-based assessment is authenticity. Students are assessed using tasks that closely resemble those they are likely to perform in professional practice. For example, instead of writing an essay on poultry vaccination, students may be required to demonstrate the vaccination procedure under supervision. Such practical activities provide more credible evidence of competence than written examinations alone (Popham, 2017).

Another important feature is continuous assessment. Students are evaluated throughout the learning process using laboratory practicals, farm projects, case studies, presentations, industrial attachment reports, and portfolios. This approach enables lecturers to monitor learning progress, provide constructive feedback, and make informed decisions regarding students' competence (Miller, Linn, & Gronlund, 2021). Performance-based assessment promotes validity because it measures the competencies expected in professional practice. The use of standardized rubrics, multiple observations, and clearly defined performance criteria also improves reliability, objectivity, and fairness in assessment (Mulder, 2017). Consequently, performance-based assessment provides a more comprehensive evaluation of students' cognitive, psychomotor, and affective learning outcomes than traditional written examinations. Therefore, performance-based assessment is increasingly recognized as an essential component of competency-based education because it certifies students on the basis of demonstrated competence rather than theoretical knowledge alone, making it particularly suitable for the assessment of Animal Science students.

3.0 Traditional Written Examinations in Animal Science

Traditional written examinations have remained the predominant method of assessing students' academic achievement in higher education for several decades. These examinations typically consist of essay questions, short-answer questions, objective tests, and multiple-choice items designed to measure students' knowledge and understanding of course content. In Animal Science programmes, written examinations commonly assess areas such as animal nutrition, breeding, genetics, physiology, anatomy, livestock management, pasture production, animal health, and farm economics. The widespread use of written examinations is largely attributed to their administrative convenience. They enable institutions to assess large numbers of students simultaneously, facilitate standardized marking procedures, and generate numerical scores that can easily be used for grading and certification. Written examinations are also relatively cost-effective because they require fewer resources than practical assessment activities. Consequently, many tertiary institutions continue to allocate a substantial proportion of students' final grades to written examinations while assigning relatively less weight to practical work.

Despite these advantages, written examinations have important educational strengths. They effectively assess cognitive learning outcomes such as knowledge, comprehension, application, analysis, and interpretation of scientific concepts. They also encourage students to study extensively, organize ideas logically, and communicate their understanding in a structured manner. When properly designed, written examinations can measure higher-order cognitive skills, including critical thinking, problem-solving, and decision-making. However, the effectiveness of written examinations depends largely on the nature of

the learning outcomes being assessed. Animal Science is a practice-oriented discipline that requires graduates to demonstrate technical competence, manual skills, communication abilities, professional judgment, and ethical responsibility. These competencies cannot be adequately evaluated through written responses alone because they involve observable performance and the practical application of knowledge. Although written examinations remain valuable for assessing theoretical understanding and cognitive achievement, they provide only indirect evidence of students' readiness for professional practice. Consequently, excessive reliance on written examinations may produce graduates who possess sound theoretical knowledge but lack the practical competencies required in the livestock industry.

4.0 Limitations of Traditional Written Examinations in Animal Science

Despite their continued use in higher education, traditional written examinations have several limitations that reduce their effectiveness in assessing students' competence in Animal Science. The major weakness of this assessment method is its emphasis on the cognitive domain of learning while giving limited attention to the psychomotor and affective domains. Yet Animal Science graduates are expected to demonstrate practical competencies such as livestock handling, animal restraint, vaccination, feed formulation, housing management, disease diagnosis, farm record keeping, and biosecurity implementation. These skills cannot be adequately assessed through written examinations alone (Mulder, 2017). Another limitation is the emphasis on memorization rather than the practical application of knowledge. Students often prepare for examinations by memorizing lecture notes, textbook definitions, and previous examination questions. Although this approach may improve examination performance, it does not necessarily develop the technical skills required in professional practice. As a result, some graduates obtain excellent academic grades but experience difficulties when carrying out routine livestock management activities after graduation.

Traditional written examinations also provide only a snapshot of students' performance at a specific point in time. Factors such as examination anxiety, illness, fatigue, or emotional stress may influence students' performance and produce results that do not accurately reflect their actual competence. In contrast, performance-based assessment evaluates students continuously through multiple assessment activities, thereby providing more dependable evidence of learning and skill acquisition. Furthermore, written examinations offer limited opportunities for meaningful feedback. In many cases, students receive only numerical scores or letter grades without adequate information about their strengths, weaknesses, or areas requiring improvement. Consequently, opportunities for reflection and continuous skill development are limited. Performance-based assessment, however, provides regular formative feedback that enables students to improve their competence throughout the learning process (Ugodulunwa, 2020).

Another important limitation is that written examinations rarely replicate authentic workplace situations. In professional practice, Animal Science graduates are expected to solve production problems, manage livestock enterprises, communicate effectively with farmers and other stakeholders, interpret farm records, and make sound management decisions. These competencies are better evaluated through authentic assessment tasks than through written examinations alone (Nitko & Brookhart, 2022).

Finally, excessive dependence on written examinations may encourage students to focus on passing examinations rather than developing practical competence. Such an assessment culture places greater emphasis on certificate acquisition than on skill development and contributes to the persistent mismatch between graduate qualifications and labour market expectations, particularly within Nigeria's agricultural sector. Based on these limitations, this paper argues that although written examinations remain important for assessing theoretical knowledge, they should no longer serve as the principal method of assessment in Animal Science. Instead, they should complement performance-based assessment, which provides

more authentic, valid, reliable, and comprehensive evidence of students' professional competence and readiness for the workplace.

5.0 Why Performance-Based Assessment is a Better Alternative to Traditional Written Examinations in Animal Science

The primary goal of assessment in education is not merely to assign grades but to determine the extent to which learners have achieved the intended learning outcomes. In professional disciplines such as Animal Science, assessment should establish whether students possess the knowledge, practical skills, attitudes, and professional competencies required to function effectively in the livestock industry. However, traditional written examinations have been criticized for focusing predominantly on students' ability to recall information rather than their ability to perform practical tasks. As the livestock industry becomes increasingly technology-driven and competency-oriented, there is a growing consensus among educators and employers that performance-based assessment offers a more effective means of evaluating students' readiness for professional practice (Gervais, 2016; Nitko & Brookhart, 2022). Consequently, this paper argues that performance-based assessment is a better alternative to traditional written examinations because it provides a more authentic, valid, reliable, and comprehensive evaluation of students' competencies in Animal Science.

5.1 Promotes Authentic Learning and Assessment

One of the greatest strengths of performance-based assessment is its ability to promote authentic learning. Authentic assessment requires students to perform tasks that closely resemble those they are likely to encounter in their future careers. Rather than merely describing livestock management procedures in writing, students are required to demonstrate the practical application of their knowledge under realistic conditions. For example, Animal Science students may be assessed on their ability to vaccinate poultry, formulate balanced feed rations, identify common livestock diseases, restrain animals safely, maintain farm records, or implement biosecurity measures. This approach provides lecturers with direct evidence of students' competence rather than relying on assumptions based on written responses. Authentic assessment also bridges the gap between classroom instruction and workplace expectations by ensuring that learning activities reflect real-life professional responsibilities. According to **Mueller (2018)**, authentic assessment promotes meaningful learning by engaging students in realistic tasks that require the application of knowledge, skills, and professional judgment. Consequently, graduates become better prepared to meet the demands of the livestock industry immediately after graduation.

5.2 Measures Practical Competence More Effectively

Animal Science is a practical discipline that combines scientific knowledge with technical skills. Although theoretical understanding is essential, effective livestock production depends on the ability to apply knowledge in real-life situations. Traditional written examinations assess what students know but provide limited evidence of what they can actually do. In contrast, performance-based assessment requires students to demonstrate competence through practical activities, laboratory exercises, farm projects, industrial attachment, and other authentic tasks that reflect workplace expectations (Gervais, 2016; Wiggins, 2017). Using standardized rubrics and clearly defined performance criteria, lecturers directly evaluate students' practical performance, thereby generating more valid and reliable evidence of competence than written examinations alone (Darling-Hammond et al., 2020). For example, a student who successfully performs artificial insemination, formulates balanced feed, or diagnoses common poultry diseases demonstrates stronger evidence of professional competence than one who merely recalls

theoretical concepts. Consequently, performance-based assessment ensures that certification reflects demonstrable skills required for effective practice in the livestock industry (National Universities Commission [NUC], 2022; Food and Agriculture Organization [FAO], 2023).

5.3 Enhances the Validity and Reliability of Assessment

The quality of any assessment depends largely on its validity and reliability. Validity refers to the extent to which an assessment measures what it is intended to measure, while reliability refers to the consistency of assessment results across different situations and assessors. Performance-based assessment enhances validity because assessment tasks closely correspond with the competencies required in professional Animal Science practice. Students are evaluated on real-world tasks such as livestock handling, disease diagnosis, feed preparation, breeding management, and farm supervision rather than on isolated theoretical concepts. Consequently, assessment outcomes provide more meaningful evidence of students' occupational competence (Mulder, 2017). Similarly, the use of detailed assessment rubrics, performance checklists, standardized criteria, and multiple assessors improves scoring consistency and minimizes subjectivity. When properly designed and implemented, performance-based assessment can achieve high levels of inter-rater reliability because all assessors evaluate students using the same clearly defined performance standards.

5.4 Encourages Active and Lifelong Learning

Performance-based assessment transforms students from passive recipients of information into active participants in the learning process. Since students know that they will be required to demonstrate practical competence, they become more engaged during lectures, laboratory practicals, farm demonstrations, industrial attachment, and field exercises. They also develop greater confidence through repeated practice and become more willing to explore innovative solutions to practical production problems (Stiggins et al., 2018). Furthermore, performance-based assessment promotes reflective learning by providing continuous feedback on students' strengths and areas requiring improvement. This ongoing cycle of practice, feedback, reflection, and improvement encourages self-directed learning, continuous skill development, and lifelong professional growth (Nitko & Brookhart, 2022). Gervais (2016) argues that competency-based assessment emphasizes the demonstration of mastery rather than the accumulation of examination scores, thereby motivating learners to pursue continuous improvement throughout their professional careers. Similarly, UNESCO (2021) emphasizes that learner-centred assessment supports lifelong learning by developing learners' capacity for reflection, adaptability, and continuous improvement.

5.5 Improves Graduate Employability

One of the major criticisms of higher education in many developing countries is the apparent mismatch between graduates' qualifications and labour market expectations. Employers increasingly seek graduates who possess demonstrable competencies rather than impressive academic transcripts alone. Within the livestock industry, employers expect Animal Science graduates to solve production problems, manage livestock effectively, operate farm equipment, maintain production records, communicate with farmers, and implement disease prevention strategies. Performance-based assessment contributes significantly to graduate employability because it ensures that students acquire these workplace competencies before graduation. Through practical assessment activities, students develop confidence, technical expertise, teamwork, communication skills, and professional responsibility that enhance their competitiveness in the labour market. According to Ntumnyuy, Nfon, and Cheny (2025), competency-oriented assessment

strengthens the alignment between higher education and industry expectations by emphasizing measurable workplace performance rather than examination achievement alone.

5.6 Promotes Fair and Comprehensive Assessment

Another important advantage of performance-based assessment is that it provides multiple opportunities for students to demonstrate learning. Traditional written examinations usually evaluate students during a single examination period, making performance susceptible to factors such as anxiety, illness, emotional stress, or temporary memory failure. Performance-based assessment, on the other hand, collects evidence over an extended period through laboratory exercises, practical demonstrations, fieldwork, projects, portfolios, seminars, and industrial attachments. This continuous approach provides a more comprehensive picture of students' overall competence because assessment is based on repeated observations rather than a single examination. It also accommodates different learning styles by allowing students to demonstrate competence through practical performance instead of relying exclusively on written communication. Consequently, assessment decisions become more equitable, objective, and representative of students' actual abilities (Sokhanvar, Salehi, & Sokhanvar, 2024).

5.7 Supports Quality Assurance in Higher Education

Quality assurance in higher education requires assessment systems that accurately determine whether graduates possess the competencies expected by professional bodies, employers, and society. Performance-based assessment contributes to quality assurance by ensuring that certification reflects demonstrated competence rather than examination performance alone. It also provides valuable information for curriculum review, instructional improvement, programme evaluation, and accreditation. In Nigeria, regulatory agencies such as the National Universities Commission (NUC) have emphasized outcome-based education and graduate employability within the Core Curriculum and Minimum Academic Standards (CCMAS). Performance-based assessment aligns closely with these objectives because it focuses on measurable learning outcomes and workplace competence. Institutions that adopt performance-based assessment are therefore better positioned to produce graduates who meet national and international standards of professional practice (NUC, 2022).

6.0 Performance-Based Assessment Strategies in Animal Science

Performance-based assessment employs a variety of evaluation methods that enable students to demonstrate their competencies through authentic tasks rather than merely responding to written examination questions. Since Animal Science is a practical and competency-oriented discipline, no single assessment method is sufficient to evaluate all the knowledge, skills, attitudes, and professional behaviours expected of graduates. Therefore, lecturers should employ a combination of performance-based assessment strategies to obtain valid, reliable, objective, and comprehensive evidence of students' achievement of the intended learning outcomes (Gervais, 2016).

6.1 Practical Demonstrations

Practical demonstration is one of the most effective performance-based assessment strategies in Animal Science because it allows students to perform specific tasks under the direct observation of lecturers.

Students may be required to demonstrate livestock handling techniques, administer vaccines, formulate balanced feed rations, identify animal diseases, conduct pregnancy diagnosis, or implement biosecurity measures. During these activities, lecturers evaluate students using standardized assessment rubrics that clearly define the expected performance criteria for each task. This approach provides direct evidence of students' competence while bridging the gap between classroom instruction and professional practice (Pellegrino, 2020).

6.2 Laboratory Practical Assessment

Laboratory practical assessment forms an essential component of Animal Science education because many scientific concepts are best understood through experimentation and practical application. Students should demonstrate competence in feed analysis, semen evaluation, microbiological investigations, nutritional analysis, disease diagnosis, and laboratory safety procedures. Evaluation should focus not only on the accuracy of laboratory results but also on students' ability to follow standard procedures, use laboratory equipment appropriately, interpret findings correctly, and observe safety regulations. This approach enables lecturers to assess both students' technical competence and their ability to apply scientific principles under controlled conditions.

6.3 Farm-Based Assessment

University teaching farms provide authentic learning environments where students can demonstrate practical competencies under actual farm production conditions. Farm-based assessment may involve livestock management, feeding operations, breeding programmes, housing maintenance, sanitation, pasture management, and farm record keeping. Continuous observation of students during farm practicals enables lecturers to evaluate technical competence, decision-making ability, teamwork, leadership, and professional responsibility more accurately than written examinations alone. Such assessments expose students to the realities of livestock production while strengthening their practical experience.

6.4 Project-Based Assessment

Project-based assessment encourages students to investigate practical problems and develop innovative solutions through independent learning. Students may be assigned projects such as establishing a poultry enterprise, designing livestock housing systems, formulating animal feed, conducting production experiments, or evaluating farm profitability. Through these activities, students develop research skills, creativity, communication skills, critical thinking, and problem-solving abilities. Project-based assessment also enables students to integrate knowledge from different areas of Animal Science while developing practical solutions to real agricultural challenges (Mulder, 2017).

6.5 Portfolio Assessment

Portfolio assessment involves the systematic collection of students’ work over a specified period to demonstrate their learning progress, achievements, and professional development. In Animal Science, portfolios may include laboratory reports, farm practical records, project reports, reflective journals, photographs of practical activities, fieldwork reports, industrial attachment reports, and certificates of practical training. Because portfolios document learning across different contexts, they provide comprehensive evidence of students' competencies rather than relying on a single examination. Portfolio assessment also promotes reflective practice, self-assessment, and lifelong learning by encouraging students to monitor, evaluate, and improve their own performance (Boud, Ajjawi, Dawson, & Tai, 2018).

6.6 Industrial Attachment and Workplace Assessment

Industrial attachment, internship, or the Students' Industrial Work Experience Scheme (SIWES) provides students with opportunities to apply classroom knowledge on commercial farms, veterinary clinics, hatcheries, feed mills, research institutes, and other agricultural establishments. Assessment during industrial attachment should involve collaboration between institutional supervisors and workplace mentors to ensure fair and objective evaluation. Students should be assessed on technical competence, punctuality, communication skills, teamwork, initiative, ethical conduct, problem-solving ability, and professional attitude. Workplace assessment strengthens the authenticity and validity of educational evaluation because it measures students' performance in real work environments.

6.7 Oral Presentations and Case Studies

Effective communication is an important competency for Animal Science graduates who are expected to interact with farmers, extension agents, veterinarians, policymakers, and agribusiness managers. Consequently, assessment should include oral presentations, seminars, case studies, and problem-solving exercises that evaluate students' communication skills, analytical ability, and professional judgment. Students may be required to analyse disease outbreaks, recommend feeding programmes, develop breeding strategies, or propose solutions to farm management challenges. These activities provide valuable evidence of higher-order thinking, decision-making ability, and professional competence that are often difficult to measure through written examinations alone (Darling-Hammond et al., 2020; Panadero et al., 2019).

6.8 Observation Checklists

Observation checklists are valuable tools for assessing students' performance during practical activities in Animal Science. They enable lecturers to observe students while carrying out specific tasks and determine whether the required competencies have been demonstrated. Observation checklists may be used to evaluate livestock handling, vaccination techniques, feed preparation, equipment operation, sanitation practices, disease control procedures, and compliance with safety regulations. Since every student is evaluated using the same performance criteria, observation checklists improve objectivity, consistency, and reliability while providing immediate feedback for improving practical competence (Mulder, 2017).

6.9 Use of Assessment Rubrics

Assessment rubrics are indispensable in performance-based assessment because they provide detailed descriptions of the expected standards for each performance level. Rubrics guide lecturers in evaluating students fairly and consistently while informing students of the criteria upon which their performance will be judged. Properly developed rubrics enhance transparency, validity, reliability, and objectivity by ensuring that all students are assessed using the same clearly defined standards. They also provide meaningful feedback regarding students' strengths and areas requiring improvement, thereby supporting continuous learning and professional development. According to Andrade (2019), standardized rubrics are fundamental to maintaining quality, fairness, and consistency in competency-based assessment systems.

7.0 Challenges of Implementing Performance-Based Assessment in Animal Science

Despite its numerous advantages, implementing performance-based assessment in Nigerian tertiary institutions is associated with several challenges that may hinder its effective adoption.

a. Inadequacy of practical facilities and infrastructure: Many institutions lack functional laboratories, teaching farms, livestock, farm equipment, instructional materials, and modern agricultural technologies needed for effective practical assessment. Without these essential resources, lecturers find it difficult to organize authentic learning and assessment activities (National Universities Commission [NUC], 2022).

b. Large class size in many agricultural programmes: Increasing student enrolment places considerable pressure on available facilities and academic staff. Assessing individual students during practical activities becomes time-consuming and labour-intensive, making continuous performance-based assessment difficult to implement effectively.

c. Limited funding: Performance-based assessment requires substantial financial investment for the procurement of livestock, feed, laboratory consumables, farm equipment, protective clothing, and the maintenance of teaching farms. Additional resources are needed for field trips and practical demonstrations. Consequently, many institutions continue to depend largely on written examinations because they are less costly to administer.

d. Limited training of lecturers in competency-based assessment: Although many lecturers possess adequate subject knowledge, some have limited expertise in developing assessment rubrics, using observation checklists, conducting performance-based evaluation, and ensuring reliable scoring. Without continuous professional development, assessment practices may become inconsistent and subjective.

e. Time-intensiveness: Unlike written examinations, which allow many students to be assessed simultaneously, practical assessment requires direct observation, detailed scoring, and individualized feedback. This increases lecturers' workload and may reduce the frequency of practical assessment activities.

f. Objectivity and reliability: Differences in assessors' judgments may affect scoring consistency, particularly when clearly defined assessment criteria are lacking. The absence of standardized rubrics and observation checklists may introduce assessor bias and reduce the credibility of assessment results. Therefore, institutions should establish quality assurance mechanisms that promote consistency, fairness, and reliability across departments and programmes.

8.0 Conclusion

Assessment is fundamental to the teaching and learning process because it determines the extent to which students have achieved the intended learning outcomes. In Animal Science, where graduates are expected to demonstrate practical competence and professional skills, assessment should extend beyond measuring theoretical knowledge to evaluating actual performance. Although written examinations remain useful for assessing cognitive achievement, they are insufficient for measuring the practical competencies required for effective livestock production and management. Performance-based assessment provides a more authentic and comprehensive approach by requiring students to demonstrate competence through practical activities such as laboratory work, farm practicals, projects, industrial attachment, portfolios, and other workplace-related tasks. It generates more valid and reliable evidence of learning while promoting critical thinking, problem-solving, collaboration, and continuous improvement. This paper therefore concludes that performance-based assessment is a more appropriate approach to evaluating Animal Science students than excessive reliance on traditional written examinations. However, written examinations should not be eliminated but used alongside performance-based assessment in a balanced

assessment system. Such an approach will ensure that graduates are assessed not only on what they know but also on what they can competently do, thereby enhancing graduate quality, employability, and the development of Nigeria's livestock industry.

9.0 Recommendations

Based on the discussions presented in this paper, the following recommendations are proposed to improve the assessment of Animal Science students in Nigerian tertiary institutions.

1. Performance-based assessment should constitute a major component of student evaluation in Animal Science, while written examinations should complement the assessment of theoretical knowledge.

2. Universities should strengthen practical training by investing in modern teaching farms, laboratories, livestock units, farm machinery, digital technologies, and other instructional resources that support authentic assessment.

3. Lecturers should receive regular training in competency-based education, performance-based assessment, rubric development, observation checklist design, and educational measurement to improve the validity, reliability, objectivity, and fairness of assessment practices.

4. Standardized assessment rubrics and observation checklists should be developed for assessing practical competencies in Animal Science to ensure consistency and objectivity across institutions.

5. Industrial attachment and field experiences should contribute substantially to students' final assessment through close collaboration between institutional supervisors and workplace mentors.

6. Regulatory agencies, including the National Universities Commission and relevant professional agricultural bodies, should develop national guidelines for competency-based assessment in Animal Science programmes.

7. Government should increase funding for agricultural education to improve practical facilities, maintain teaching farms, procure modern equipment, and support innovative assessment practices.

8. Assessment should be continuous and multidimensional by combining practical demonstrations, laboratory practicals, farm-based activities, projects, portfolios, oral presentations, industrial attachment, and written examinations to provide comprehensive evidence of students' competencies.

The implementation of these recommendations would improve the quality of Animal Science graduates by ensuring that certification reflects demonstrated competence rather than examination performance alone. It would also enhance graduate employability, strengthen confidence in higher education qualifications, and contribute to the sustainable development of Nigeria's livestock industry.

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