



DYNAMIC EVALUATION AND TEST OF ORALS: DIGITAL EFFICACY ON UNIVERSITY UNDERGRADUATES' PERFORMANCE IN SOUTHWEST NIGERIA

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ABSTRACT

This paper presents a study exploring the efficacy of customised software, dynamic evaluation and Test of Orals (TEO) on the performance of university undergraduates in Southwest Nigeria. A multistage sampling procedure was used in selecting 200 students from two public universities in Southwest Nigeria. A quasi-experimental design and descriptive survey-type research design were used to investigate the impact of customised software (Kollit) on 200 students randomly selected for the study. Two hypotheses were raised. The instrument for data collection was the Students' Oral English Proficiency Test (SOEPT). The Cronbach Alfa method was used to establish the reliability coefficient for SOEPT, which was found to be 0.68. A One-Way Analysis of Variance was utilised to test the hypotheses at a 0.05 significance level. The study results indicated a significant increase in academic performance on the part of the students after implementing the customised software. The findings suggested that the customised software could improve the performance and evaluation of students in the Test of Orals. The study concludes by discussing the potential limitations of the study while offering recommendations for future research

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1. INTRODUCTION

The importance of teacher development programmes from a global perspective encompasses a holistic pedagogical design meant for developing a nation's citizenry from diverse perspectives. One of the responsibilities of a functional teacher development programme within the university system, in particular, encapsulates the professional training and retraining of pre-service teachers undergoing teacher-training programmes in tertiary institutions. Furthermore, teacher development usually includes exposing undergraduate teachers to various course contents provided by relevant faculties and academic departments in colleges and universities. Among the prerequisites for students to be certified as professional teachers is the acquisition of communicative proficiency in the oral use of English followed by appropriate means of evaluation, be it formative or summative, as the case may be.

The curriculum for teacher education in faculties of schooling entails training students in the art of communication. In line with the National Policy in Education (NPE), student-teachers are expected to use English for instructional purposes proficiently. In this regard, the course content of Phonetics and Phonology and Speech Work is

designed to enhance the oral competence of teachers. At the same time, general courses help students develop a phonological flare for spoken English as a second language. Fortunately, technology has been perceived to ameliorate challenges of phonological problems linked to Oral English (Adelana, 2022).

The importance of evaluation in ensuring reliable measurement of student-teachers' oral proficiency in English must be considered. Invariably, using a combination of formative and summative evaluation rating scales suggests the importance of assessment as a vital component for determining students' learning outcomes. At a national scale, the evaluation of students takes an intensive dimension, evidenced in the use of examination bodies such as the Joint Admissions Matriculation Board (JAMB), which is saddled with the responsibility of evaluating graduates from all tertiary education in Nigeria.

The Unified Joints and Admissions Matriculation Board initiated the use of Computer-based tests (CBT) in test administration in Nigeria in 2013. However, in the Nigerian context, stakeholders in the educational sector have shown apt concern about the reliability of appropriate evaluation processes for stated objectives of the subject, such as oral English. This gesture emphasises the admission procedure guiding undergraduates' intake into their choice of higher institution (Abubakar & Adebayo, 2014). Furthermore, the CBT for testing oral competence in English follows the Multiple Choice Questions and answer format with answers devoid of a real-time interactive environment between the candidate and simulation quizzes. For decades, the reliable evaluation of teachers' oral competence could be considered misleading based on the absence of appropriate digital measurement of spoken English. Considering the present spate of teacher evaluation in some parts of Nigeria, there is a need to expose these teachers to the basic rudiments of digital instruction and assessment.

The 21st century has witnessed tremendous advancement in digital wares in many facets of human endeavour. These exploits are explicated in the global desire for a better world for all by the year 2030 (UNESCO, 2015). One of the central pillars for the advancement of human life is in the area of education. Furthermore, teacher development can be vital in bridging the gap between various human pursuits and a better life. Also, the use of technology in education must be considered due to the training needs of the 21st-century teacher.

Similarly, almost all phases of teacher training in colleges and universities are being digitalised, including the instruction and evaluation stages. In this regard, the teaching mentioned above and the learning process as teacher development programmes at the behest of governmental and non-governmental organisations in developing countries strive to attain appreciable levels of digital literacy. Towards this end, English language teachers in Nigerian schools confront periodical scrutiny based on their instructional and communicative competencies.

With the emergence of digital technology in the 21st century, education at all levels all over the developing world diverted, to a reasonable extent, from analogue instruction and evaluation of digitally-based teaching and learning. In addition, pre-service teachers were encouraged to rely more on digital learning applications than conventional methods in the learning process. Similarly, teaching and learning oral skills require instructional expertise in digital assessment models for student-teachers. to evaluate student-teachers on the field (Faloye & Obateru, 2021).

At this juncture, it is essential to note that computer-based tests (CBT) are deployed to evaluate students' oral English proficiency during the Unified Tertiary Matriculation Examination and Senior School Certificate Examination in all the states of the Federal Republic of Nigeria (<https://jamb.gov.ng>). However, language education and evaluation experts opine that reliable oral tests would evaluate teachers' and students' competence rather than relying solely on multiple-option tests. In support of Bloom's taxonomy of educational objectives, Joughin (1998) provides six essential perspectives of oral evaluation comprising prominence of interactive and orality means of assessing students' oral proficiency in English. Using these perspectives of oral assessment as a yardstick for measuring the use of CBT for a test of orals, using the written mode to represent the oral mode of instruction and evaluation realistically is termed a pedagogical misnomer in the real sense of the word. Consequently, the spate of teachers' incompetence in certain parts of Nigeria may be assumed to have created the gap that emanated from the inappropriate mode of instruction and evaluation of tests of orals with CBT.

Against the backdrop presented in this study section, the need for well-tested software programmes to be integrated into the Test of Oral CBT examinations becomes necessary for the sake of learners and teachers. Fortunately, many free-source software applications evaluate teachers' oral competence in English. The list of these classes of software is exhaustive. It comprises applications for personal computers (PC), Android, iPhones, and tablets. In addition, applications (free) are usually downloaded from the Play Store to Android phones, for instance. A comprehensive classification of educational software and apps can be found on various digital sites in education. Customised software would be considered adaptive and appropriate for the Nigerian setting due to linguistic peculiarities inherent in the user's speech behaviour. The objectives of this study, which include investigating the instructional and evaluative and ascertaining the attitude of students towards the customised software, lead the study towards finding answers to problems in the realm of students' phobia towards instructional and evaluative processes related to performance in Test of Orals in the Nigerian setting. Furthermore, the need to expose students to real-time



and digital interactive evaluation procedures during assessment in Test of Oral examinations, perhaps, leaves a precipice in the reliability of students' test scores obtained using CBT methods.

The customised software is expected to put various linguistic considerations into its developments, such as speech recognition in terms of accent, idiolect, dialect interferences, and peculiarities. Hence, using customised software instead of conventional CBT is expected to enhance further the reliable evaluation of university undergraduates' use of oral English in an interactive and self-evaluative digital medium.

Literature Review

The significance of developing pre-service oral English skills through proficiency in communicative skills in English must be balanced. Thus, teacher development becomes expedient in formal instruction in teacher development programmes in Nigeria. Owolabi and Nnaji (2013) agree that the English language, among over 250 indigenous Nigerian languages, assumes the status of a foreign language (EFL) second language (ESL), especially as it concerns teacher development programmes. Similarly, the traditional language skills comprising speaking, writing, listening and reading are considered vital for instructional and communicative purposes in the educational context. However, teachers' proficiency in the English language is usually assessed through the productive use of oral communication, which comprises a compelling rendition of segmental and suprasegmental features in English.

Similarly, Gilakjani (2012) notices the phonological importance of segmental English while learners' competence and fluency are hinged on the fluency in pronunciation in the second language. In this regard, Muhammad (2018) opines that oral English is significant in adopting teacher education in Ni. However, teachers' proficiency in the English language is usually assessed through the productive use of oral communication, which comprises a compelling rendition of segmental and suprasegmental features in English. Similarly, Gilakjani (2012) notices the phonological importance of segmental English while learners' competence and fluency are hinged on the fluency in pronunciation in the second language. In this regard, Muhammad (2018) opines that oral English is significant in adopting teacher education in Nigeria.

The 21st-century issues in instruction and evaluation of learners in oral English have taken a shift in evaluative designs. Yu, Han and Yu (2022) opine on the efficacy of software applications in oral English instruction and evaluation. In most cases, the use of artificial intelligence is viewed as the appropriate means of language instruction, bearing in mind global trends in transformations of educational ecology. Similarly, Yong (2020) views customised software programmes as an effective vehicle for supporting learning through evaluation processes in the oral English lesson. Furthermore, the significance of using appropriate digital means in assessing learners' progress in speaking skills is tantamount to attaining stated objectives in oral English. In evaluating speech proficiency in English, speech recognition and fluency applications are usually utilised in second-language learning contexts. However, Umar (2020) notes that Nigerian schools' teaching and evaluating Test of Oral English needed to receive adequate attention regarding digital instruction and appropriate evaluations. Nevertheless, according to Opeifa, Adelana and Atolagbe (2022), the emergence of supportive computer-based technology features in oral English pedagogy in an evolving second language teaching context.

Evaluating a teacher's oral competence is viewed as assessing the spoken word. In agreement with this assertion, Jourghin (1998) established that a test of teachers' oral competence comprises any assessment of student learning executed with the mouth. Similarly, as much as the CBT mode for assessing the Test of Orals is not aimed at delimiting its (CBT) effectiveness, scholars still believe in applying reliable evaluative means to evaluate students orally. Phingsthorn and Weltgen (2022) emphasise the relevance of formative assessment and diagnostics, which "represents a central point for the work as a teacher that oral evaluation could be more inclusive than non-verbal". In 2011, Chen reiterated the immense opportunities software for oral evaluation could provide for second-language users of English regarding the oral production of English sounds. In other words, most teachers and students exhibit positivity about using computer-assisted programmes that could help improve their English oral skills (Hassina, 2012).

Grigorieva, Ismagilova and Solodkova (2016) view computer-based tests and oral examinations as a reliable blend for evaluating teachers' and students' oral competence. Their views further suggest the importance of students' interactive disposition during oral tests. For clarification, the computer-based Test entails students sitting at a computer desk with internet connectivity, processing the streaming of various types of questions. Usually, the students must use the mouse as a pointing device to select the correct options for each question. In developed countries such as China, Yu and Iwashita (2021) confirm that Computer-based testing (CBT) involves displaying tests with computers. These computer-based programmes have been used to evaluate students' English proficiency through tests globally. However, literature on whether oral testing software is integrated into the Test of orals in China is limited. However, Alharbi and Surur (2019) notice that student teachers tend to show a positive attitude toward the conventional application of oral English evaluation procedures to assess students' proficiency in spoken English. The International Teaching Assistant Program (ITAP) is an evaluation program designed in the United States to assess non-native English-speaking teachers.

These programmed evaluation procedures ensure quality teacher instruction by evaluating their oral English proficiency as a prerequisite to university teaching (International et al.). In contrast to evaluating teachers' oral competence in developing countries, Yu, Han., Du, and Yu (2022) buttress the advanced utilisation of the Artificial Intelligence (AI) oral testing method, which far exceeds the CBT. Yu et al. (2022) explain the evaluative potentials of “Artificial intelligence technology in accurately judging students' oral English expression ability and as a useful tool for adjusting and improving students' learning methods”.

The dependence on CBT to test orals in Nigeria's educational context serves the primary purpose of summative evaluation. Underpinned in Examinations directed towards admission into the next educational level, such as UTME and SSCE, as earlier mentioned in this study section. Xiao and Wang (2017) perceive oral evaluation concerning teachers as a scientific and practical oral test designed to bring an instructional and evaluative difference to college oral English teaching. Faloye, Adeoluwa and Adeosun (2021) echo previous scholarly views on the necessity of shifting the evaluation of teachers' oral competence to a more advanced digital level. More so, applying advanced technology in instructing and evaluating teaching personnel with AI is becoming possible, as demonstrated in Asian countries like China. Hence, Nigeria's educational system is expected to be included in the digital benefits of the Fourth Industrial Revolution (4IR).

The review of literature in this study is suggestive of inadequate, for the time being, literature in the area of artificial intelligence as evaluation tools for formative and summative procedures of evaluation. The newness of AI as an emerging educational tool only surfaced in 2020 and is growing daily. Hence, this research aims to contribute relevant literature to assist in minimizing the lacuna in the nexus between AI and academic publishing trends in Universities in Nigeria.

Conceptual Framework

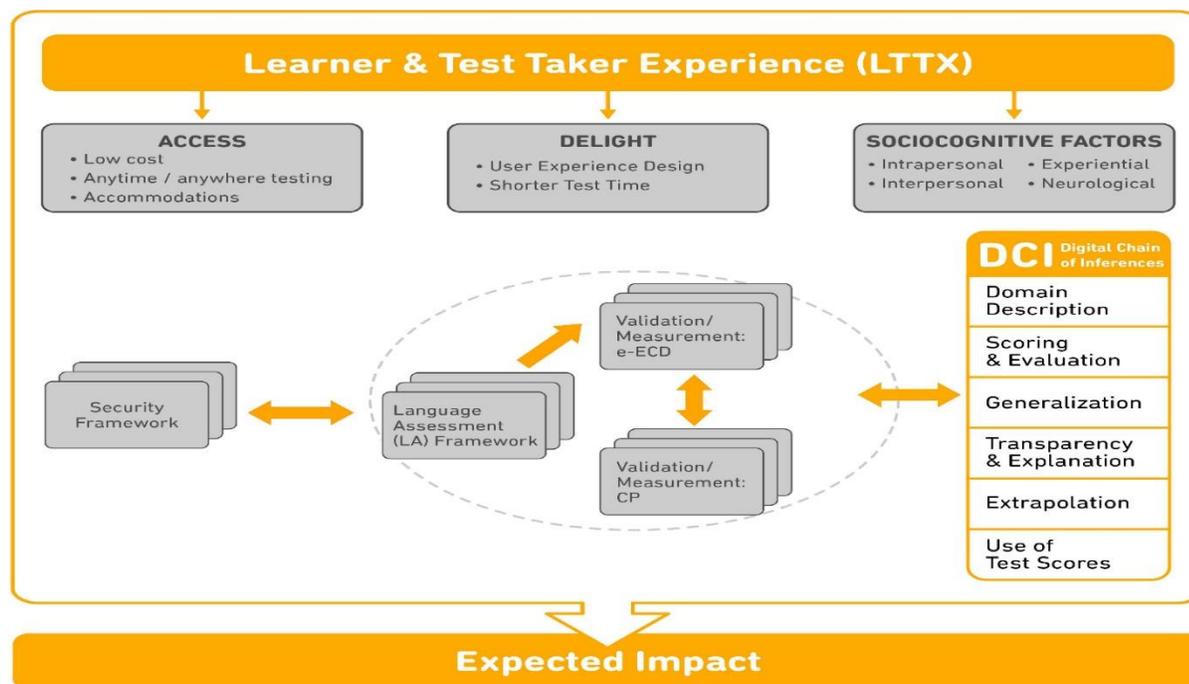


Figure 1: Learner and Test Taker Experience (LTTX).

Source: <https://www.frontiersin.org/articles/10.3389/feduc.2022.857604/full>

The LTTX emphasises the importance of students' experiences during the Test of Orals in English as a second language. The concept foregrounds the nexus between an interactive and engaging evaluation environment by leveraging customised software and dynamic evaluation techniques. This conceptual framework underpins the efficacy of digital evaluation and is expected to positively influence students' performance by providing real-time evaluation and constructive feedback.

The underlying assumption of this study is that a digital interactive environment can significantly impact students' performance in spoken English evaluation. By incorporating customised software, dynamic evaluation, and real-time



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feedback, the research seeks to create an enhanced evaluative experience for students, ultimately leading to improved performance in the Test of Orals.

Hypotheses

The following null hypotheses were formulated and tested at a 0.05 level of significance:

1. There is no significant difference in the pretest mean scores of pre-service English language teachers in the experimental and control groups when exposed to the Test of Orals.
2. There is no significant difference in the post-test mean scores of pre-service English language teachers in the experimental and control groups when exposed to the Test of Orals.

2. METHODOLOGY

The research adopted the quantitative design comprising a quasi-experimental. The research design comprised pre- and post-test observations and treatment with customised software while the control group was exposed to conventional Computer Based Tests (CBT). The descriptive survey research design catered for the data collection on the attitudinal traits of the study samples, while the One-way Anova and Whitney –Mann U test were used in hypotheses testing. The study population consists of 1,055 200-level students studying Language education in public universities in Southwest Nigeria. The sample for the study was selected through a multistage sampling procedure. The initial stage involved selecting two states out of the six in Southwest Nigeria using a simple random sampling technique. Stage two involved a purposive sampling technique to select two- government-funded universities in Southwest Nigeria. The two groups for the study were assigned to the selected public universities. The two public universities were selected based on the following criteria:

- i. Availability of a functional Computer Based Test Centre
- ii. Availability of adequate space for the experimental group
- iii. Access to an adequate power supply

In stage three, 100 students at the 100-level in the Language education department were randomly selected from each of the selected universities into the experimental and control groups. A sample size of 200 students was used for the study.

The research instrument was exposed to face and content validity with the assistance of experts in Tests and Measurement and Language Education. Also, the reliability of the Students' Oral English Proficiency Test (SOEPT) was determined using the test-retest method, which was found to be 0.68.

The research instruments included the Students' Oral English Proficiency Test (SOEPT) and Students' Attitude to Test of Orals Software Questionnaire (SATTTORSQ). The SOEPT comprised a randomised selection of 40 Computer Based Test (CBT) questions on the Test of Orals in English. The questions test students' ability to distinguish between consonants and vowels, intonation patterns and accentuations in isolated and connected speech.

Data retrieved through the research instruments were analysed with descriptive and inferential statistics. The research questions were answered using mean and standard deviation. At the same time, a One-Way Analysis of Variance (ANOVA) and Whitney Mann -U test were utilised to test the hypotheses for distribution at a 0.05 significance level.

Evaluative Package

The package comprises customised software designed to evaluate students in Test of Orals in real time. The instructional package comprises lecture guides serving as an operational manual for the experiment.

The customised software: The software for testing the oral English skills of undergraduates (KOLLIT) is designed to evaluate students in the Test of Orals through real-time interaction and immediate evaluation of test items preloaded on the software. The system requirements include the following:

- Operating System: Windows 10
- Processor: Intel Core i5
- RAM: 8 GB
- Hard Disk Space: 500 MB or more
- Internet Connection: Required for registration and updates
- Microphone: External microphone for recording oral responses
- Speakers or headphones: For audio playback

Evaluation components include User Registration, User Interface Overview and Test Creation packages, Test Administration, Test Scheduling, Test Execution, Test Scoring, Results and Analysis in real-time.

The package consisted of a forty-minute lesson on spoken English comprising the segmental and supra-segmental features of English. The experiment runs for five weeks of instruction with customised software and one week for evaluation.

3. RESULTS

Table 1: A One-Way ANOVA (Analysis of Variance) results for the pretest and post-test scores of students’ performance in Test of Orals

		Sum of Squares	Df	Mean Square	F	Sig.
Pretest scores	Between Groups	27.380	1	27.380	.264	.608
	Within Groups	20558.040	198	103.828		
	Total	20585.420	200			
Posttest scores	Between Groups	29670.480	1	29670.480	133.617	.000
	Within Groups	43967.020	198	222.056		
	Total	73637.500	200			

Table 1 represents the results of a One-Way ANOVA (Analysis of Variance) for experimental and control groups' pretest and post-test scores. There was no significant difference between groups, $F(1, 198) = 0.264, p = .608$. A one-way ANOVA revealed no significant difference between groups for pretest scores, $F(1, 198) = .264, p = .608$. For the post-test scores, the sum of squares between groups is 29670.480 with 1 df, yielding a mean square of 29670.480. The F-value is high at 133.617, and the significance level is less than .001 showing a significant difference. Hence, for the post-test scores, a one-way ANOVA revealed a significant difference between groups, $F(1, 198) = 133.617, p < .001$. This result signifies that the customised software significantly impacted the students' oral proficiency post-test scores.

Table 2: The Mann-Whitney U test on sample distribution of data

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Pretest scores is the same across categories of Groups for experiment.	Independent-Samples Mann-Whitney U Test	.540	Retain the null hypothesis.
2	The distribution of Posttest scores is the same across categories of Groups for experiment.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 2 shows the test results on the distribution of the pretest and post-test scores obtained from the sample distribution across categories of the experimental and control groups. The hypothesis test summary shows that the decision rule for pretest scores (.540) and post-test scores (.000) as asymptotic significances were upheld.

4. DISCUSSION

Interactive digital technology has become increasingly important in education, offering various tools and platforms that can enhance learning experiences and improve the realistic evaluation of students’ learning outcomes in different skill sets in English. This study delved into the effect of a customised software specially designed for real-time evaluation of students' performance in Test of Orals, a section of the Joint Admission Matriculation Boards’(JAMB) English language paper in CBT mode. Conventionally, students are tested for oral proficiency during the Unified Tertiary Matriculation Examination (UTME) using Computer Based Test (CBT) evaluation processes. In this regard, the pretest scores obtained from testing students’ oral English proficiency with CBT revealed an insignificant impact on student's performance in the Test of Orals. This finding corroborates Zheng’s (2022) study, which addresses the limitations and deficiencies of the current oral English CBT test assessment system. The study proposed using information technology methods to analyse and solve these limitations to make the Test of spoken



English more realistic and reflective. The Customised software (KOLLIT) showcased the efficacy of evaluating students' oral proficiency in real time while underpin

ing the instructional benefits of the evaluative process. In this regard, Yu, Han., Du, and Yu (2022) buttress the advanced utilisation of digital tools for oral testing strategies, which buttresses the finding of this study related to students' performance in Test of Oral. Similarly, this study underpins the instructional impact of customised software over CBT, as revealed in the enhanced students' performance in Test of Orals. Consequently, a study by Faloye, Adeoluwa, and Adeosun (2021) underscores similar scholarly views on the necessity of shifting the evaluation of teachers' oral competence to a more advanced digital level.

The emergence of digital wares in education leaves no room for underutilising the vast presence of digital tools, especially for evaluative and instructive purposes, including the standardisation of testing students' oral proficiency in English. The major finding of this study reveals a significant impact on students' performance in Oral Tests in English, being a practical-oriented paper usually approached with phobia, as observed by Faloye, Obateru and Olaniyan (2022) and Ali Khan (2019). The impact of the interactive component of the customised software (KOLLIT) has shown potential efficacy for adapting oral tests to the pedagogical needs of students preparing for the Test of orals in the National examination in Nigeria. With the upsurge of prospective entrants in search of admission into Nigerian universities, especially with the mandatory pass in the English Language, for instance, there is a dire need to gradually make a shift from CBT evaluation to a more digitally interactive and realistic assessment of these students oral proficiency in English.

The implications of the findings encapsulate the potential benefits of using customised software and dynamic evaluation techniques in preparing for and evaluating students in the Test of Orals. Educators and institutions in Southwest Nigeria and beyond can consider adopting similar approaches to improve the effectiveness of customised software such as KOLLIT. Also, emphasising digital oral assessments over CBT evaluations might provide a more comprehensive understanding of students' knowledge and communication skills in English.

Based on the focus of this study, further research could focus on conducting a longitudinal study to explore the long-term effects of using customised software and dynamic evaluation methods on university undergraduates' academic performance and overall learning outcomes. This further study could determine whether any improvements observed during the study are sustained over an extended period. In addition, further studies could examine the potential implications of the study for the broader field of education, such as how similar approaches could be applied to subjects or contexts other than the Test of Orals in the English language. Further research would position the study in a broader context and highlight its relevance beyond the specific context of Southwest Nigeria.

5. CONCLUSION

As educators continue to adapt their instructional practices to the ever-evolving technological landscape, this study calls for a multidimensional approach to investigate further the interplay between technology, teaching methodologies, evaluation and student outcomes. Collaborative efforts across disciplines, such as educational psychology, language testing, computer science, and instructional design, can lead to innovative and comprehensive frameworks that optimise digital evaluation and learning experience in the university paradigm.

In conclusion, the findings of this study underscore the potential of customised software and dynamic evaluation to revolutionise pedagogical and evaluative practices in the digital era. By understanding how educators successfully integrate technology and assessment tools, educational institutions can develop evidence-based guidelines and strategies that empower educators and learners. Integration technology and assessment tools, in turn, foster a learner-centric approach to oral English evaluation, ultimately enhancing the effectiveness and efficiency of digital evaluative experiences. As technology plays an increasingly pivotal role in the 21st-century education paradigm, ongoing research in this domain remains vital, shaping the future landscape of digital evaluation and its impact on student success in Oral English-based examinations.

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Implications

The findings in this study suggest that customised software (KOLLIT) may be utilised in evaluating students' performance in the Test of Orals in real-time. Furthermore, findings suggest that the customised software improves the efficacy of instruction in the spoken English class. Hence, the unbiased evaluation of students' performance during the Unified Tertiary Matriculation Examination (UTME) can be achieved by properly including the software in subsequent national examinations in Nigeria.

7. RECOMMENDATION

Based on the findings of this research, the following recommendations include:

1. that the boards in charge of tertiary admissions integrate the customised software into the Test of Orals examinations;
2. to establish a longitudinal assessment framework by the Joint Admissions Board (JAMB). This requires tracking the progress of students over several academic terms or years and continuously collecting feedback from both students and instructors. The data collected can be used to refine the software, adapt evaluative strategies, and ensure its relevance over time.
3. to gradually integrate the customised software into the assessment framework of JAMB with a view to replacing the CBT over time.

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