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Unboxing 'Computer Assisted Language Assessment': Recent Trends and Measurement Tools

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Abstract

Since 2020, there has been a consistent rise in research aimed at finding better alternatives to traditional methods of language learning assessment. In order to introduce technology into the assessment process, several theories were reviewed and put into practice to make 'Computer Assisted Language Assessment' (CALA) both feasible and standardized. The idea behind CALA is to use computers to gauge learners' language skills. However, the challenges associated with the effectiveness of CALA remain unresolved. This paper examines the trends in CALA for basic language learning skills - listening, speaking, reading, and writing (LSRW) and presents the measurement tools in the language learning and teaching pedagogy. Additionally, this paper incorporates quantitative methodology to analyze learners' perceptions of the success of CALA into their classrooms. The findings suggest that issues relating to reliability, and authentication need to be addressed. Furthermore, there is an increasing demand for contextualized assessment tools in the language learning classrooms.

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Introduction

Computer-Assisted Language Assessment, often known as CALA, has garnered more attention in recent years as a result of developments in technology and the ways in which it is used in language learning environments **(**Chapelle and Douglas 62–79). Earlier, the focus of CALA was limited to technology-based performance tests. However, it is now expanded to computer-adaptive tests (Cumming 286-88). These tests are being developed for English as Second Language (ESL) learners in several educational institutions, including higher and senior secondary schools. These tests aim to provide essential training to learners by diagnosing their strengths and weaknesses and suggesting essential remedies (Luoma 113–38). Moreover, learners can be gauged for their performances and improvements. CALA is a dynamic field that is constantly adapting to the changes brought about by advances in computer technology. It can be affirmed that assessment is now an integral part of the language learning curriculum, encompassing measuring work patterns, evaluating instructional methods, and monitoring learners' progress (Aschbacher 275–88).

In many educational settings, Computer-Based Testing (CBT) has proven to be effective in addressing the challenges posed by large classes, saving time and human effort (Messer and Nash 140–58). CBT has also introduced flexibility and frequency to assessment systems, which may draw from a shared or single question bank. Interestingly, feedback can be delivered automatically on a question-by-question basis or for the entire performance. CALA aims to facilitate practice-based activities that traditional assessment patterns cannot replicate by incorporating audio and visual aids (Galaczi 29–51). It also serves to expand knowledge and enhance objectivity and consistency in testing (McGuire 265–76).

Historical Background of Computer Assisted Assessment

A research study (Burkhardt and Pead 133-48) offers a valuable account of the historical evolution of Computer Assisted Language Assessment from 1950 to 2000. During the 1950s, computers were primarily used for games, puzzles, and tests, including compilers that could detect errors, ranging from syntax to style. In the 1960s, developers of learning machines recognized the potential of computers for delivering learning programs, which included a significant emphasis on assessment.

The 1970s saw a rapid increase in the use of multiple-choice testing, leading to a greater demand for automatic marking systems, creating a self-reinforcing cycle. The 1980s witnessed a boom in the creation of learning-supporting software, but a decrease of a focus on evaluation. Integrated learning system, a more advanced version of the learning machines of the 1960s, emerged in the 1990s, while multiple-choice testing continued its rapid expansion. Several technical and educational hurdles remain, but the exponential growth of the internet since then has opened the door to on-demand, online testing, which may one day substitute the conventional 'examination day' design.

The main objective of the developments mentioned above is to enhance the accuracy and scope of scoring systems. As a result, CALA has evolved as a comprehensive concept that measures not only the quantitative information about students' performance over a period of time but also utilizes qualitative data to provide feedback on teaching methods, administrative policies, curriculum design, and the overall instructional system. Scholars such as Brookhart (5-14) have discussed the calculation of numerical data by creating a set of rules to obtain desired information. For example, students' achievements can be evaluated by using multiple-choice questions and assigning two points for each correct answer or deducting half a point for each incorrect answer. In recent decades, CALA has benefited from technological advancements, advances in learning sciences, and measurement techniques.

Computer Based Assessment of a Foreign Language (CBAFL)

Formative assessments are being conducted through CBAFL, which provides feedback to a large group of students. Manual formative assessments have been criticized for being time-consuming and unappealing (Burns et al. 582-91). CBAFL was created so that students could get helpful criticism that would tailor their education to their own needs. In educational settings, CBAFL's key objectives are to tailor instruction to individual students' needs and improve the quality of feedback they get. A significant feature of this system is its ability to analyze text input from students, which is typically a difficult and time-consuming task for teachers. Teachers may use CBAFL to construct and deliver assessments, as well as track students' performance and growth. Scores on practice tests completed by students may be shared with instructors so they can gauge their students' readiness for the end-of-course test, and the responses to questions that students consistently get wrong can be used to tailor their expectations of future tests in the same vein.

Electronic Portfolios

When it comes to recording and analyzing the technical design process, electronic portfolios are invaluable tools. HyperStudio, FolioLive, and bespoke software are just a few examples of the portfolio apps developed by a plethora of organizations. The Open-Source Portfolio Initiative (http://www.osportfolio.org) is an example of the kind of software being produced by academic institutions and researchers. An electronic portfolio serves a valuable purpose in the language classroom. According to a study (Barrett 1111-16), educators and students may benefit from using electronic technology to create electronic portfolios in which they can store and present a variety of artefacts. Additionally, the absence of a time limit in electronic portfolios makes for an engaging setting for both instructor and student comments. Because of this, electronic portfolios provide sufficient benefits over paper ones. In addition, students may use the e-portfolio to reflect on their own language growth and consider ways to enhance their future projects. The instructor's continuous comments further strengthened the e-portfolio's potential as a viable alternative to standardized testing. Keeping an e-portfolio, then, might be seen as the first step in acquiring the self-regulated learning abilities so frequently overlooked in secondary schools but anticipated in higher education.

Computerized Oral Proficiency Instrument (COPI)

The assessment of speaking ability in foreign languages has greatly advanced and now allows for the use of computer-based technologies to implement different modes of assessment. To understand the COPI, it is important to know about SOPI.The examinee is guided through a series of oral presentations using recorded and transcribed directives and an assessment manual. The SOPI has four steps: pre-operational checks, level checks, probes, and de-activation. Each part of the examination offers assignments that test takers may use to show their proficiency in a certain area of speech. These capabilities include question answering, rudimentary navigation, location description, event narration, subject discussion, and role playing in simulated real-world scenarios. When viewed in relation to the SOPI, the COPI is meant to be more adaptable and individual. The first activity in COPI is self-paced, meaning the examinees may decide how challenging it will be for themselves. This means they can choose whether to start with tasks designed for beginners or more advanced learners. Tasks are selected from a large pool of options. Secondly, the pool of tasks contains similar tasks on different topics, giving examinees the opportunity to demonstrate their language skills across a variety of contexts. Thirdly,

examinees can provide feedback on the level of difficulty of each task presented, allowing them to choose tasks at the same, lower, or higher level of challenge as the previous one. The COPI process classifies students into specific categories based on established criteria for speaking, fluency, structure, vocabulary, and listening, although it acknowledges individual differences and strengths and weaknesses.

Computer Based Assessment System for Reading (CBASR)

The CBASR is a computer-based assessment system that can be used in the classroom to evaluate students' reading skills. The system includes screening, progress monitoring, and skill analysis. It generates personalized reading assessments for students in kindergarten through fifth grade using computer adaptive testing. This method is more efficient than traditional testing because it tailors the questions to the test-takers' skill level, building on their previous answers and adjusting future questions accordingly. The CBASR is suitable for all students, including those who may struggle with reading or have an individualized education plan. It can be used as an online platform to administer, score, and display students' knowledge and abilities. The CBASR emphasizes the importance of reading, and its adaptive approach enhances screening, progress monitoring, and skill analysis. It also provides immediate feedback to improve student-learning, and its features include adaptivity, fast assessments, and faster results. Computer-based tests take only 6-10 minutes, whereas traditional methods can take 1-4 hours. The online interface provides faster scoring and result display (Messer & Nash 140-58).

Computer-Based Writing Assessment (CBWA)

Most educational institutions and workplaces now offer the option of writing on a computer, which has led to a need for research on computer-based writing assessments. Teachers are responsible for organizing the assessment activities and ensuring that students have access to the necessary materials, such as laptops, earphones, and a suitable workspace (Di Mauro and Furman 2239-58). Before the assessment, students are given a tutorial to familiarize themselves with the computer program and interface. During the assessment, students use a word processing programme to compose their responses, with access to tools for editing, formatting, and text analysis. The assessment measures students' ability to persuade, explain, or convey their experiences, and is scored based on the development and organization of ideas, language proficiency, and adherence to conventions. The test typically takes 90 to 120 minutes, with 60 minutes allotted for writing two responses. If

students want to become better at writing, they are given constructive criticism and access to supplementary resources.

Objectives:

- To examine the recent trends and measurement tools in computer-assisted language assessment (CALA).
- To compare the effectiveness of CALA tools with traditional language assessment methods and explore the ethical considerations associated with their use.

Methodology and Research Instrument

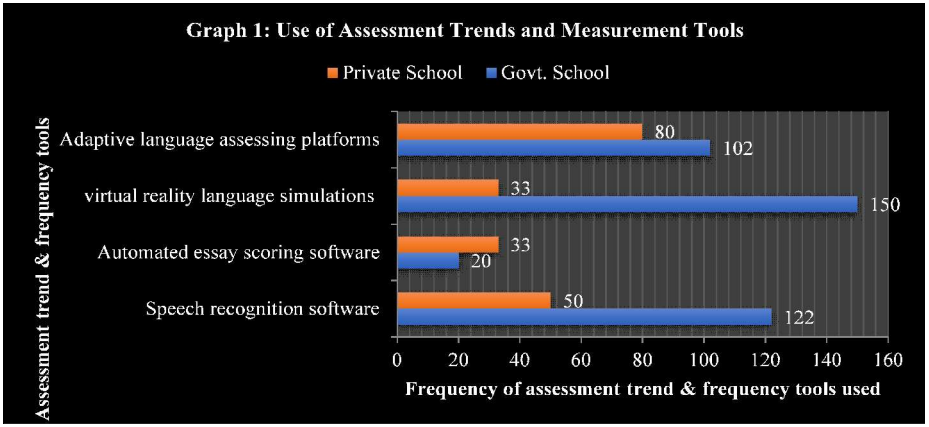
The empirical work utilizes quantitative methodology. Through random sampling, four schools were taken for the study. These included Government and Private schools of Aligarh and Government and Private Schools of Delhi. In total, 600 students participated in the study. Five questions consisting of four options with multiple correct answers were given to the students. The questions were prepared to understand the students' feasibility towards CALA. To analyze the data, the independent analysis was done to understand the peculiarities of the CALA-student related issues. It was distributed to the participants of grade 9. They were guided with a brief explanation of how to attempt the questions. Answering the question took not more than five minutes.

Reliability and Validity of the Instrument

1. To ensure reliability, the questionnaire was administered to a sample group twice with a one-week interval and the results were compared for consistency.
2. To assess validity, the questionnaire was reviewed by two experts of ELT and their feedback was used to make necessary revisions to improve its relevance and accuracy.

Analysis and Results

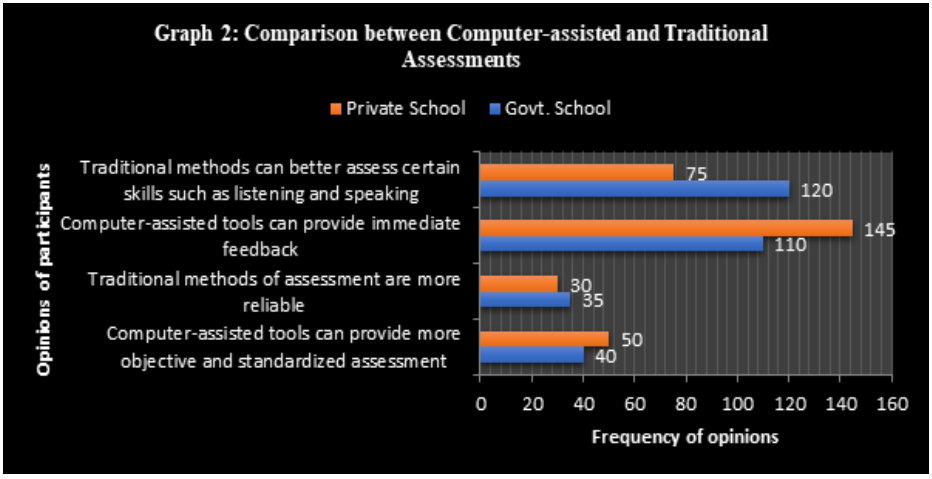
1. What computer-assisted language assessment trends and measurement tools have you used recently?



Findings

The graph above shows the opinions of students from government and private schools on the use of trends and measurement tools. Out of the total participants, 122 students from the government schools and 50 students from private schools stated that they have used speech recognition software. Interestingly, 20 students from the government and 33 students from private schools reported that they had the access to the automated essay scoring software. Further, 150 students from private schools and 33 students from government schools stated that they were exposed to virtual reality simulations for language learning. Additionally, 102 students from government schools and 80 students from private schools claimed that they used adaptive language assessing platforms.

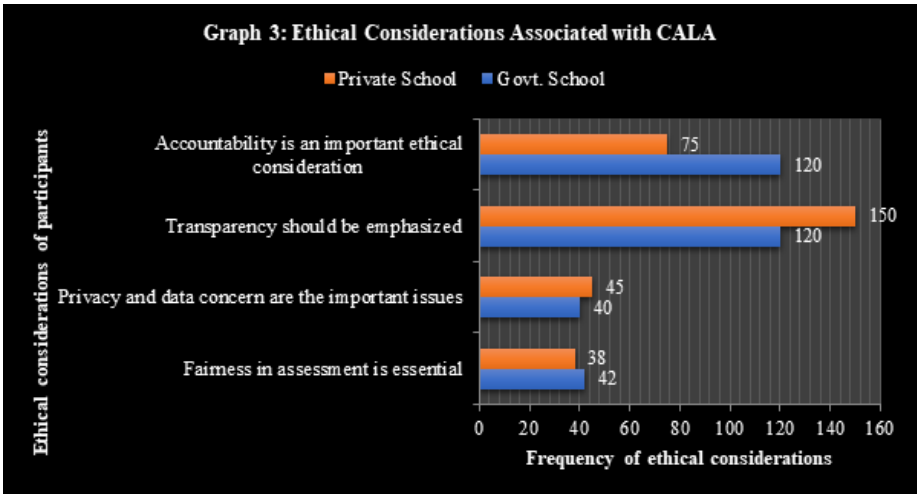
2. How do you compare computer-assisted language assessment tools with traditional assessment methods?



Findings

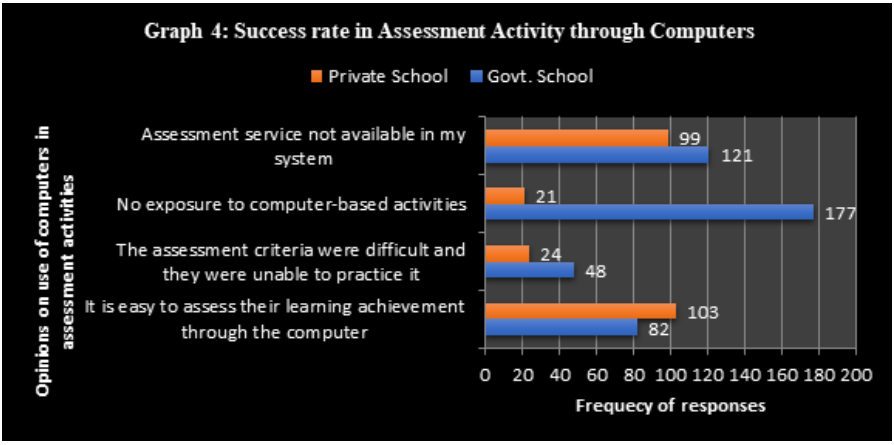
The graph above shows the comparison between computer-assisted and traditional assessments. Out of the total participants, 40 students from government schools and 50 students from private schools stated that the computer-assisted tools can provide more objective and standardized assessment. Interestingly, 35 students from the government and 30 students from private schools reported that traditional methods of assessment are more reliable than the computer ones. Further, 110 students from private schools and 145 students from government schools stated that computer-assisted tools can provide immediate feedback. Additionally, 120 students from government schools and 75 students from private schools claimed that traditional methods can better assess certain skills such as listening and speaking.

3. What are some of the ethical considerations associated with computer-assisted language assessment?



The graph above shows the ethical considerations associated with computer-assisted language assessment. Out of the total participants, 42 students from government and 38 students from private schools stated that fairness in assessment is essential. However, 40 students from the government and 45 students from private schools reported that privacy and data concern are the important issues when it comes to the ethical consideration. Further, 120 students from the government schools and 150 students from private schools emphasized on transparency. Additionally, 120 students from government schools and 75 students from private schools claimed that accountability is an important ethical consideration.

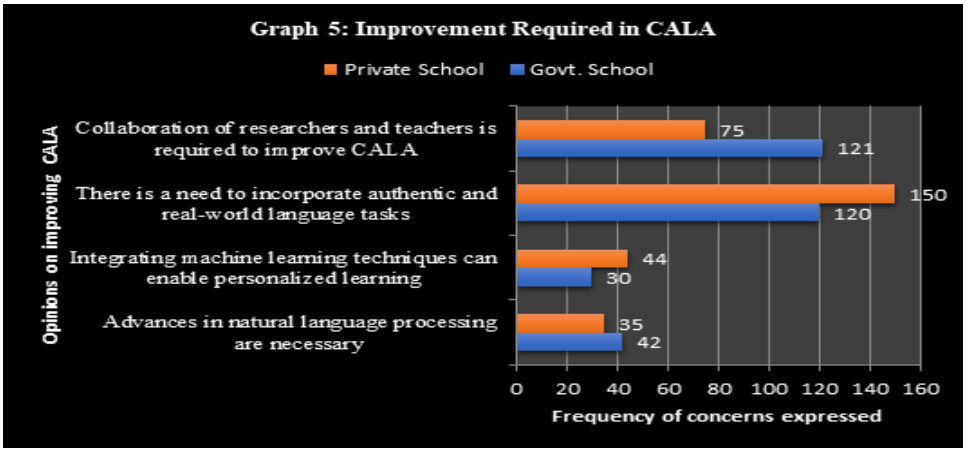
4. How far is computer technology successful in assessing your work?



Findings

The graph above shows the opinions of students from government and private schools on the use of computers in assessing their work. Out of the total participants, 103 students from private schools and 82 students from government schools stated that they found it easy to assess their learning achievement through the computer. Interestingly, a few students from both private (24) and government (48) schools reported that the assessment criteria were difficult and they were unable to practise it. Moreover, 21 students from private schools and 177 students from government schools stated that they did not use computer-based activities. Additionally, 121 students from private schools and 99 students from government schools claimed that the assessments were not available on their computer systems.

5. How can computer-assisted language assessment be improved in the future?



Findings

The graph above shows the opinions of students from government and private schools on the improvement of computer assisted language assessment. Out of the total participants, 42 students from government schools and 35 students from private schools expressed the development of natural language processing. Interestingly, a few students from government (30) and private (44) schools reported that integrating machine learning techniques can enable personalized learning. Moreover, 120 students from government schools and 150 students from private schools stated that there is a need to incorporate authentic and real-world language tasks. Additionally, 121 students from government schools and 75 students from private schools expressed that collaboration should take place between the researchers and teachers to improve the computer assisted language assessment.

Discussion

The findings suggest that there are some differences in the use of trends and measurement tools between government and private schools. For example, private school students appear to have greater exposure to virtual reality simulations for language learning. However, more information is needed to draw about these differences and their implications. Besides, the findings suggest that there are different opinions among students regarding the use of computer-assisted and traditional assessments. While some students believe that computer-assisted tools are more objective, standardized, and provide immediate feedback, others feel that traditional methods are more reliable and better suited to assess certain skills. Hence, further research is needed to explore these differences and to determine the most effective assessment methods for different types of skills and learning objectives.

Most of the students reported that their computer systems did not have the facility for assessments. Before assessing the importance of Computer-Based Assessment (CBA), it is important to understand its role and benefits. CALA has created a new field of testing and has had an impact on second language pedagogy. It includes various mechanisms such as feedback, hyperlinked choices, multiple answer choices, and interactivity to aid in testing. In addition, students have the option of keeping qualitative, quantitative, and progressing material in electronic portfolios and using self-assessment services. High authenticity, instant response, digital record-keeping, and instant objective scoring are only some of the benefits of computer-based testing. Students' development may be seen via online documentation of their performances on formative and task-based examinations. However, this

approach is outdated. In task-based testing, the ability to perform a task and follow directions is a major criterion (Carey 198-99). Students may, for instance, be instructed to begin listening to a digital recording of instructions at a certain moment. The evaluation process might be shifted to a digital game, if it is feasible. Given that assessment is a sequence of interconnected events with multiple contextual purposes, it is clear that computer-based testing and evaluation systems are insufficient.

The influence of video-based listening exams presents another difficulty. In this regard, a ground-breaking research (Wagner 493-513) claims that for educators who see language in four separate components namely, listening, speaking, reading and writing, testing and evaluation would follow. However, in the case of an Integrated Model, intertwined modalities including social aspects and context and paralinguistic features would carry concerns of validity in computer assisted testing. Another major concern is the cognitive process involved in writing a manuscript. The problem is when the language's writing system of the second language differs from the native language. For instance, some of the world languages involve symbols which are based on memorization of motor skills as a complex cognitive skill. Such languages can be encoded in Romans. When the manner of administering the test is altered, it might be difficult to figure out the evaluation process.

Conclusion

Computer Assisted Language Assessment (CALA) in academics is a logical step. Computerized exams claim to improve our capacity to draw reliable conclusions about student performance; however, this claim has to be verified. The matter does not solely depend upon the scoring but also upon other areas of concern such as social context. In Private Schools, all mechanisms of feedback, hyperlinked choices, multiple answer choices and interactivity were used to aid testing criteria. In addition, a Private School of Delhi had already taken the initiative of maintaining the electronic portfolios, which is a great source of self-assessment. It enhances self-regulation, facilitates qualitative, quantitative and progressive documentation. Students in the private sector claimed that the major advantages of using CALA includes high authenticity, immediate response, possibilities for keeping digital record and immediate, objective scoring. They utilized such sources as informative and task-based assessments where performances were often viewed and documented online. Some students saw assessment in language as four separate components namely, listening, speaking, reading and writing. It would be challenging to undertake the assessment process when the mode of test administration changes.

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