Technology Mediated Vocabulary Assessment in Second Language Teaching

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Abstract—*This study explores the concept of technology-mediated vocabulary assessment in second language instruction, concentrating on how technological tools and resources might improve the assessment process and give useful feedback to students. With the introduction of digital platforms, software programs, and online resources, educators now have access to a wide range of innovative techniques for evaluating students' vocabulary knowledge and skills. This study examines the different facets of technology-mediated vocabulary evaluation, including online tests such as the Expressive One-Word Picture Vocabulary Test (EOWPVT), The British Picture Vocabulary Scale (BPVS), Peabody Picture Vocabulary Test (PPVT) and Test of Word Knowledge (TOWK). Moreover, vocabulary applications, digital flashcards, corpus tools, natural language processing (NLP), and online dictionaries. These systems provide dynamic, individualized learning experiences, instant feedback, and the capacity to monitor students' development over time. The incorporation of technology in vocabulary assessment not only improves learner engagement and motivation, but also gives teachers insight into their students' lexical knowledge, helps them to spot their areas of weakness, and allows them to modify their lesson. While acknowledging the advantages of technology-mediated vocabulary assessment, it is vital to make sure that these tools are applied in a way that is in line with instructional objectives and delivers reliable and accurate assessment results. The purpose of the study's conclusion is to highlight the importance of using technology in second language assessment in order to maximize vocabulary learning and foster successful language learning.*

Keywords— **Vocabulary, Assessment, Technology, Tools**

I. INTRODUCTION

In the context of teaching second languages, technology-mediated vocabulary assessment refers to the use of online tools, platforms, and applications to evaluate students' vocabulary growth. It involves using technology to produce dynamic, interesting, and tailored assessment experiences that meet the various needs of language learners (Sung & Chang, 2021). Vocabulary assessment in the teaching of second languages is made easier by the use of digital tools and platforms, which include a wide range of educational resources. These tools include interactive websites, computer-based tests, virtual reality modeling, language learning apps, online quizzes, and more. It gives students immersive, interactive assessment experiences that are rich in technology (Zou et al., 2020). Individual needs and interests of learners are taken into account while creating a personalized assessment method. Technology-mediated vocabulary assessment provides possibilities for flexible evaluations, immediate feedback, and personalized learning pathways based on students' performance and progress (Hu et al., 2018). The complexity of vocabulary implies complex assessment. One test is not enough to determine the vocabulary level because of the multiple facets of vocabulary. Different points need to be resolved when dealing with vocabulary assessment (Dujardin &Auphan & Bailloud & Ecalle & Magnan, 2021).This study aims to identify effective teachnology mediated vocabulary assessment tools that can be practically applied in the ESL classrooms.

II. VOCABULARY LEARNING AND TEACHING

Vocabulary learning is central to language acquisition, whether the language is first, second, or foreign (Decarrico, 2000). A vital part of language ability is vocabulary, which allows people to express themselves clearly and accurately. Language acquisition and growth depend significantly on both learning and teaching vocabulary. Vocabulary learning and teaching is a collaborative process, where both teachers and learners actively engage in the exploration of words (Carter & McCarthy, (2006). Vocabulary is the key that unlocks the doors to effective communication in a new language (Nations, 2001). Learning vocabulary is an essential aspect of learning a second language (L2). It is essential for the growth of language proficiency as a whole as well as specialized abilities like speaking, listening, reading, and writing (Nation, 2013). Learning new terms and their definitions requires active engagement on the part of the learner. Exposure to a range of real-world language materials is the first step to effective vocabulary learning. Learning in context, where students come across words in their natural surroundings, aids in the development of a better comprehension of word usage and distinctions. Even though learners master all grammatical areas in the language, the communication stops when they do not know the necessary word (Farjamani et Assadi, 2013). To enable

effective vocabulary training, educators must use a variety of strategies and techniques during the dynamic process of teaching vocabulary. By giving students relevant and interesting circumstances, exposing them to rich language input, and encouraging active engagement, teachers can create a learning environment that is conducive to vocabulary learning. Teaching vocabulary is like planting seeds; with nurturing and cultivation, it grows into a blossoming language proficiency (Schmitt, 2008). It is suggested that teaching vocabulary should not only consist of teaching specific words but also intend at equipping learners with strategies necessary to expand their vocabulary knowledge (Hulstjin, 1993, cited in Morin & Goebel, 2001). Teaching vocabulary involves creating meaningful and memorable encounters with words, building lasting connections in learners' minds (Hiebert & Kamil,2005). Contextualized learning, word analysis, and active involvement are all components of effective vocabulary learning and teaching methodologies. Contextualized learning provides the scaffolding learners need to make vocabulary meaningful and memorable (Brown, 2007). Learners can improve their vocabulary acquisition by applying techniques including in-depth reading, utilizing context clues, making word connections, and using flashcards or vocabulary applications. According to (Stockwell,2007), incorporating technology in vocabulary learning amplifies engagement and enhances learner autonomy. Moreover, the use of pre-teaching crucial vocabulary, explicit instruction, encouraging the meaningful use of words through discussions and writing exercises, and integrating vocabulary development across many subject areas are some of the strategies used by teachers.

III. How to assess vocabulary

The assessment of a language's vocabulary is a crucial since it reveals the word knowledge and linguistic skills of the learners. By conducting an effective vocabulary evaluation, teachers may determine the extent of students' vocabulary acquisition, pinpoint areas that need work, and then modify their instruction accordingly. Vocabulary assessment plays a vital role in the language education process where the educators assess students' individual performances, knowledge and improvement regarding a particular subject area with the use of different types of tests. According to (Airisian & Russel 2008 as cited in Cahyo 2022), the goal of vocabulary assessment should be to assess a student's word knowledge on both a receptive (understanding) and productive (use) level. It should take into account how well students can understand words in context, use them correctly, and determine meanings. Vocabulary assessment can be categorized into formative and summative approaches. Formative assessments are used to identify areas for progress, provide continuous feedback, and guide instructional decisions. Quizzes on vocabulary, class discussions, and instructor observations are a few examples of such methods of assessment. Summative assessments, which are completed at the end of a unit or course, assess students' overall vocabulary proficiency and may include extensive vocabulary assessments or assignments (Mcalpine, 2002). Different teaching strategies include vocabulary Quizzes, Vocabulary journals, Vocabulary tests, contextualized assessments, vocabulary projects, collocation assessments, self-assessment and reflection and technology mediated assessments. Most testers agree that there is a place for measuring both knowledge and use in second language assessment. Another dichotomy in the vocabulary literature is whether to test high frequency words or more specialized technical vocabulary (Coombe, 2015). For classroom assessment, Mihai (2010) categorized it according to intention, purpose, interpretation, and administration. Therefore, one more category of assessment may be added to those modes (oral or written). The method of assessment varies depending on the subjects and purposes of the assessment. Language testing is different from testing in other content areas as language teachers have more alternatives to make (Brown & Hudson, 1998). Brown and Hudson (ibid) identified three basic assessment types: (a) selected-response which includes true-false, matching, and multiple-choice assessments, (b) constructed response which includes fill-in, short answer, and performance assessments, and (c) personal-response which includes at least conference, portfolio, and self- and peer assessments. Fundamental principles for evaluating and designing second language assessment include validity, reliability, practicality, equivalency, authenticity, and washback (Tran, 2012).

IV. TECHNOLOGY MEDIATED LANGUAGE ASSESSMENT

Technology Mediated Language Assessment (TMLA) has largely influenced the field of Language Assessment at present (Sadeghi & Douglas, 2023). Large scale and high stakes tests are aided with the technology in many ways (Ockey & Neiris, 2021). For example, test administrators and examinees have been connected remotely through online platforms and video mediated technology (Ockey & Neiris, 2021). Also interlocutors and human administrators can be replaced by technology (Ockey & Neiris, 2021). These technologies provide several benefits for assessment such as increasing the engagement of the test takers, recording learner's strategies, easy to implement in the classroom, and providing adaptive tools (Dujardin et al., 2021). According to Chua & Don, (2013); Kucirkova et al., (2017 as mentioned in Dujardin et al., 2021) use of multimodal items provide the attractive aspect for the test, so it improves the test takers engagement and motivation in the task. Also Singleton (2001, as mentioned in Dujardin et al., 2021) technology mediated assessment involves different facets of engagement rather than traditional paper

and pencil test. Also sufficient guidance for the test takers is provided by the interactive nature of the computer based tools (Dujardin et al., 2021). So according to Protopapas & Skaloumbakas (2007, as mentioned in Dujardin et al., 2021) this autonomy impact on increasing the test takers' level of engagement. Jeong (2014, as stated in Dujardin et al., 2021) computer based tools enable to record multiple measures which provide opportunity to track the behavior of the test takers. According to Gill et al. (2015 as mentioned in Dujardin et al., 2021) practitioners can identify the different strategies of the test takers by using simultaneous interpretation of correct answers and response times. Also computer based tools are easier to implement (Dujardin et al., 2021) and according Schatz & Browndyke (2002, as stated in Dujardin et al., 2021) test scores can be computed and recorded automatically. Moreover it enables the specific evaluation in collective sessions (Dujardin et al., 2021). Based on the success and failure of responding to the initial items computer will propose different items and study how apps can be adapted to individuals (Dujardin et al., 2021). So according to Tseng et al. (2006, as stated in Dujardin et al., 2021) adaptive testing enhances the accurate evaluation than traditional testing. Moreover Tseng et al. (2006, as stated in Dujardin et al., 2021) state that greater discrimination among the performance levels of the test takers will be provided by adaptive testing. Also these features are applicable in developing a detailed and accurate profile of learners in terms of language skills such as reading and vocabulary (Dujardin et al., 2021).

V. METHODOLOGY

The systematic review was conducted in three phases. First, the researchers conducted a thorough search for research articles on technology-mediated vocabulary assessment tools. Second, they selected relevant studies based on a set of criteria. Finally, they conducted an in-depth review of the most relevant studies.

Here is a more detailed explanation of each phase:

- Phase 1: Search for research articles: The researchers used a variety of databases to search for research articles on technology-mediated vocabulary assessment tools. They used keywords such as "vocabulary assessment," "technology," and "computer-assisted language learning."
- Phase 2: Select relevant studies: The researchers used a set of criteria to select relevant studies. These criteria included the following:
  - The study must have used a technology-mediated vocabulary assessment tool.
  - The study must have reported the results of the assessment tool.
- Phase 3: Conduct an in-depth review: The researchers conducted an in-depth review of the most relevant studies. This involved reading the studies carefully and summarizing the findings.

VI. UTILIZING TECHNOLOGY MEDIATED TOOLS FOR ASSESING VOCABULARY IN ESL CLASSROOM

Vocabulary assessment requires a range of tests to assess different vocabulary dimensions such as depth, size and fluency based on various cognitive parameters such as oral or written, receptive or productive and also assessing general words or specific words (Dujardin et al., 2021). There are several existing computer-based tools to specifically assess the breadth and depth of the vocabulary (Dujardin et al., 2021). Some computer-based tools to assess the breadth of vocabulary and the significance of them are discussed below.

- *Expressive One-Word Picture Vocabulary Test (EOWPVT)*

The One-Word Picture Vocabulary Test (EOWPVT) measures receptive vocabulary in both adults and children. It is a one-on-one test that assesses a person's comprehension of the meaning of words by using visuals. The EOWPVT is frequently used to evaluate language development, spot language errors, and monitor progress over time in educational and professional settings (Martin and Brownell, 2016). This test includes 190 stimuli which are applied individually, in groups of people with 2 to 80 years of age, organized and articulated at an ascending level of difficulty that is, starting with the easiest concepts. The evaluation should be interrupted when there are six consecutive errors. (Silva et al., 2021). This helps researchers and professionals to get expressive vocabulary of spoken language in which the subject must name with only one word, objects, actions, or concepts using colorful illustrations (Silva et al., 2021). This test is composed of short verbal stimuli (e.g., what is he doing?), spoken aloud by the examiner and test takers are required to provide short verbal responses (e.g., swimming) by the subject promoting rapid application. It lasts about 20 minutes (Silva et al., 2021).

- *Peabody Picture Vocabulary Test (PPVT)*

The Peabody Picture Vocabulary Test (PPVT) is one of the most common vocabulary tests in use today. The PPVT is a hands-on test that evaluates a person's comprehension of word meaning by using visuals. The PPVT is commonly used to evaluate language development, spot language errors, and track advancement over time. This test is used to measure receptive vocabulary of an individual or how well a person understands spoken English (Eigsti, 2021). Examinees see a page on an easel with four color pictures. The examiner says a word for each item, and the examinee responds by selecting one picture out of four which demonstrates that word's meaning (Eigsti, 2021). The test requires no reading, writing, or expressive verbal language as the examinee points out the relevant item and it can be used with nonreaders and those are not fluent verbal abilities (Eigsti, 2021). The test is individually

administered and untimed (Eigst, 2021). In total, the PPVT contains 228 items, divided into 19 "sets" of 12 items each; an examinee completes all items within a set (Eigsti, 2021).

3)The British Picture Vocabulary Scale (BPVS)

A standardized examination of receptive vocabulary for both children and adults is the British Picture Vocabulary Scale (BPVS). It is comparable to the EOWPVT, but it utilizes British English words and images. The BPVS is also commonly utilized in clinical and educational contexts. There are 176 items in this, which are organized in descending difficulty. Every item displays an image, and the examiner says something. Then, the kid or adult is asked to indicate the image that most accurately depicts the word's definition. It takes 20 to 30 minutes to administer the test (Dunne & Dunne, 2007). This is an evaluation of a child's or adult's performance in comparison to that of others the same age and gender. A mean of 100 and a standard deviation of 15 are used to express the standard score. A kid or adult who receives a score of 100 is considered to be performing at the age and gender-appropriate level. A child or adult is performing within the usual range if their score falls between 85 and 115 on the scale. An adult or child may have a language delay if their standard score is lower than 85 (Secord &Wiig & Semel, 2004). It has been identified to be a valid and dependable indicator of receptive vocabulary. The test has been demonstrated to be reliable over time and to correspond with other measures of language proficiency (Martin & Brownell 2005).

VII. ISSUES AND RECOMMENDATIONS

The test method which simply means 'how we measure?' has a direct relationship with 'what we measure?' which describes the construct or ability of the test (Sadeghi & Douglas, 2023). Using different methods to measure the same test construct will result in different performances which demonstrate various levels of ability (Sadeghi & Douglas, 2023). Differences in performances are impacted by gender, age, cultural background, the interaction between the test taker and interlocutor and the linguistic proficiency of the test taker (Sadeghi & Douglas, 2023). So when computer medium is added to these prevailing complexities and even a slight difference in the method of delivering the test can impact on the changes of the performances (Sadeghi & Douglas, 2023). Although the current pandemic forced assessments to move towards technology mediated assessments, the issues such as fairness, security, ethics, practicality and authenticity and washback of the technology mediated assessments should be considered (Sadeghi & Douglas, 2023). Also validity and fairness issues are tend to exist in the regions which technologically disadvantaged (Sadeghi & Douglas, 2023). Technology mediated language testing programs require fixed mechanisms to update software, hardware and the employees need to gain the technological knowledge (Chapelle & Voss, 2018).

Here are some practical approaches for using existing technology-mediated vocabulary assessment tools in ESL classrooms:

- Choose the right tool for the type of assessment. There are many different technology-mediated vocabulary assessment tools available, so it is important to choose one that is appropriate for your needs. Consider the level of your students, the type of vocabulary you want to assess, and the features of the tool.
- Use the tool in conjunction with other assessment methods. Technology-mediated vocabulary assessment tools should not be used as the sole method of assessment. Instead, they should be used in conjunction with other methods, such as oral interviews, written tests, and student self-assessment.
- Integrate the tool into your lessons. Don't just use the tool at the end of a unit or lesson. Instead, integrate it into your lessons so that students can use it to track their progress and get feedback on their learning.
- Provide students with support. Not all students will be familiar with using technology-mediated vocabulary assessment tools. Be sure to provide them with support so that they can use the tool effectively.
- Use the results to inform your instruction. The results of technology-mediated vocabulary assessment tools can be used to inform your instruction. Identify the areas where your students need more support and adjust your lessons accordingly.

VII. CONCLUSION

At present, language learning, teaching and assessment procedures are tend to incorporate existing computer based tools. There are various computer based tools to assess vocabulary based on different dimensions and cognitive parameters. Technology mediated vocabulary assessment involves several benefits and provides different facets for a test than traditional forms of test. The computer based tools increase the engagement of the examinees, enable easy implementation, record scores automatically and identify the different strategies of the test takers. Also there are issues and limitations which can affect the aspects such as fairness, practicality, implementation and maintenance of the computer based vocabulary assessment procedures. So the researchers always focus eventually on how the existing tools can be adapted according to minimize the issues and challenges of the Technology Mediated Vocabulary assessment. Despite these challenges, Technology Mediated Vocabulary Assessment holds the potential to completely transform the assessment of second language vocabulary. And it is used as a method for assessing second language vocabulary and is likely to expand as technology develops.

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