

Assessing language proficiency in the digital age: Exploring innovative methods for assessment and feedback in ESL classrooms

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ABSTRACT

This study explored the effectiveness of innovative digital tools for assessing language proficiency and providing feedback in ESL settings. The study employed a mixed-method design, with quantitative data from pre- and post-tests, while qualitative data were obtained through interviews and classroom observation. It has involved 60 ESL students in the current study and exposed them to some digital assessment tools through a six-week trial, while qualitatively it interviews 15 students and 6 ESL teachers about their experiences regarding the digital assessment tools. The quantitative test results showed that the sets of language proficiency improved more significantly. More importantly, the survey data indicated that the majority of the students found the digital tools to be easy to use and helpful to learn from, especially in terms of immediate feedback. This was followed by individual positive experiences about personalized feedback and the growing enthusiasm of students in using digital assessment, amidst difficulties experienced due to technical glitches or probable problems in adapting. The study concluded that digital tools effectively improved the language proficiency of ESL learners while making the process of feedback not cumbersome.

Keywords: language proficiency, digital assessment, ESL, feedback

INTRODUCTION

Education, in the last couple of years, has evolved with the huge integration of rapidly developing digital tools and technologies. The beginning of the digital era impressively affected many aspects of teaching and learning, especially regarding language education. Therefore, with the advance in technology, there has been a gradual change in methods used to assess the students' proficiency in foreign languages from traditional approaches to more innovative and digitally supported ones. Digital tools offer solutions to a number of chronic assessment and feedback issues unique to ESL classrooms, where learners are uniquely challenged to develop and display their language skills. The traditional tools include paper-and-pencil testing, oral tests, and even teacher assessment. However, these are somewhat limited in that they cannot record the full range considered critical in large or diversified classes where individual feedback is restricted. Traditional tools of assessment may also lack timeliness and personalization in feedback, which is most necessary for language learners to build their language skills. With diversity in the profiles of ESL learners along linguistic and cultural

lines, there is a very gradual realization of the need for methods of assessment to be more flexible, adaptable, and inclusive.

The emergence of digital means does promise some pretty exciting alternatives to these approaches. In this respect, digital assessments have been game-changers in terms of the measurement of language proficiency, hence real-time feedback, personalized learning pathways, and generally an altogether more engaging way of learning. Examples are AI-powered language platforms, automated scoring systems, or interactive language learning applications that find their applications in ESL classrooms all over the world. Meanwhile, such development also offers more accurate and faster assessments, better fitted to the needs of modern learners who become increasingly aware of and dependent on digital technologies in everyday life. However, added to these advantages are some issues regarding the integration of digital tools within ESL assessment. While digital tools offer numerous benefits, their use requires careful consideration of factors such as access, usability, and the digital literacy levels of both students and instructors. Besides, there are still concerns about the effectiveness of digital assessments compared to traditional assessment methods.

The central problem catalyzing the present research, therefore, is the dire need for an effective, accessible, and inclusive means of language proficiency assessment within the ESL classrooms. Although traditional assessment methods are useful in a certain manner, often, they cannot guarantee timely and personalized feedback and might not be the best option to go by as far as modern ESL learners are concerned. In this sense, digital tools are more capable of overcoming such weaknesses because they allow more interactive and personalized ways of conducting assessment. Yet, real exploration regarding their efficacy has not been fully extended to natural ESL classroom settings. This study will reflect on the potential of digital tools linked to language proficiency assessment and its feedback mechanism in ESL settings. Among the concrete objectives of research are the following:

1. Investigating how digital tools fared in measuring language proficiency in ESL classrooms along the dimensions of how language proficiency is measured. Further investigation is conducted into whether the integration of digital assessment tools into a student's learning processes develops a student's language proficiency.
2. Probing how the digital methods of feedback affected the learning outcomes for ESL.
3. Establishing the view of ESL students and teachers regarding the integration of digital tools in formative assessment and feedback.

LITERATURE REVIEW

The theoretical underpinning of the intersection of technology and foreign language proficiency assessment could be contextualized with some educational theories that provide a founding understanding of learning processes in digital contexts. In this study, two key guiding frameworks are constructivism and sociocultural theory; from these two theories emerge the undergirding principles of social interaction and personal experience in learning. Both Vygotsky (1978) and Piaget (1976) have led arguments for the constructivist and social constructivist traditions, respectively.

Traditional approaches to assessment in ESL contexts are primarily informed by standardized tests, written examinations, and oral assessments conducted by instructors. As much as these methods do have their merit in offering a snapshot of the learner's language proficiency, they are also seriously criticized for being somewhat rigid and not able to capture the rich dynamics of language use in naturalistic contexts (Alderson, 2005). According to Green (2010), standardized assessments also do not give enough consideration to diversified learning profiles and backgrounds typical among ESL learners. This may be put at a disadvantage for those who do not fit the mold of language learners. For example, the written tests are quite useful in grammar and vocabulary, but they do not give an actual communicative competence to the learner. Oral assessments, though more interactive, often suffer due to limitation of time and might also not give the overall view of the learner in speaking

proficiency (Weigle, 2002). Limitations call for more innovative ways of assessment that can easily capture the complexities of language proficiency.

Besides, standardized tests may not take into account the diverse backgrounds and different learning styles that ESL learners have. This tends to be a disadvantage for those who do not fit into the traditional mold of language learners (Norton, 2000). While effective in measures of grammar and vocabulary, written examinations do not, overall, reflect a learner's communicative competence. On the other hand, more interactive oral assessments are often confined by the constraints of time and may not be able to offer reliable insights regarding a learner's speaking proficiency (Weigle, 2002). These limitations further indicate that assessment methods should become more innovative and flexible to capture the intricacies of language proficiency better.

The Role of Formative and Summative Assessments

Assessment in language education is conducted essentially in two important forms; formative and summative. Although formative assessment refers to a continuous process in the learning process, it brings extensive feedback to learners and educators. They should monitor student progress and inform instruction with a view to creating a deeper understanding of the language upon which instruction can be based.

This is where digital tools are helpful in enhancing formative assessment: giving feedback to learners immediately. Such immediacy of feedback creates a more interactive learning cycle whereby students know exactly where their weaknesses lie and where they need to work on them immediately (Hattie & Timperley, 2007). By contrast, summative assessment is usually conducted at the end of an instructional period in order to summarize learner achievement from a certain learning process. This adaptive approach not only provides a more valid estimate of the language proficiency level but also increases the learner's motivation and interest. The rapid advancement of digital technologies has transformed the landscape of language proficiency assessment. Various tools and platforms have emerged, offering innovative ways to evaluate language skills and provide feedback.

AI-Powered Language Assessment Platforms

Devices with artificial intelligence-powered language assessment, such as Versant and the Duolingo English test, involve machine learning algorithms in the proficiency assessment of learners of languages. Many of these platforms simultaneously measure a number of skills for a more complete overview of what the learner is capable of. For example, the Duolingo English test has put together listening, reading, speaking, and writing in an adaptive format that is, difficulty adjusts with the proficiency level of the test taker.

The effectiveness of AI-powered assessments is related to the ability to provide instantaneous feedback. Such feedback will enhance learners' comprehension about their strengths and weaknesses, thus creating a more dynamic and interactive way of learning. This development is also not without a setback, especially concerning the issues of reliability and validity of the automated scoring systems that come along with many advantages that the AI-powered assessment would

provide. Critics argue that such systems may fall short on validly assessing nuanced aspects of language use, such as pronunciation and contextual appropriateness. Besides, ethical considerations of data privacy and the potential for bias in AI algorithms are concerns that need consideration. Alongside AI-powered assessment platforms, more interactive language learning apps have recently gained recognition in ESL education. Gamification in language learning has been effective in enhancing learner motivation and encouraging active participation. Rewards, elements of competition, and progress tracking features of such applications induce learners to be more involved in the development of their languages. This is because the tool is interactive, allowing the learners to create experiences that are within their interests and levels of proficiency, and thus creates a personal approach to learning. Even with the advantages, some interactive language learning applications also raise a few challenges. For example, some tools work effectively only for learners in respect to their personal preferences or learning style. Gamification might work effectively with a particular learner, while others may find this environment too distracting and thus can be less effective in the process of learning. The quality of content is also an issue that may make superficial learning outcomes.

Feedback in ESL Education

Feedback is a critical component of language learning, influencing students' motivation, self-efficacy, and overall language development (Hattie & Timperley, 2007). Effective feedback provides learners with clear guidance on how to improve their language skills and encourages them to reflect on their learning processes. Traditional ESL classrooms normally depend on a teacher-student interaction whereby the feedback is given in the form of comments by teachers either orally or in writing about the use of language by the student. Although it may be effective, it is usually very time-consuming and does not always do the work of offering timely feedback. It also tends to focus more on the errors and therefore may be discouraging to the learners instead of motivating them (Chappuis & Chappuis, 2007).

The literature has demonstrated that, for any feedback to have value, it must be specific in nature, timely, and constructive. For example, the literature indicates how the nature of the feedback – that is, whether 'improvement or lamentation' – affects the learners' motivations toward a growth mindset as proposed by Dweck (2006). However, the traditional mechanisms of feedback may not meet these conditions in big classrooms where the attention of an instructor is not usually accorded to students as Brookhart (2008) argues.

Digital tools introduce another dimension to feedback in the process of ESL education. AI-powered assessment platforms can show immediate, personalized feedback that caters to the specific language needs of the learners. For instance, platforms like Grammarly analyze written language for grammar, punctuation, and style, making real-time suggestions for improvement. Immediate feedback loop enables the learner to do the corrections while working and thus reinforces his or her knowledge regarding the rules of language. More importantly, it provides an avenue for feedback from peers and allows collaborative learning to take

place. Tools such as Google Classroom and Padlet make the sharing of work and instantaneous feedback in real time with peers relatively easy. This form of collaboration not only raises the level of learner engagement but also builds a sense of community in the classroom.

While digital means of providing feedback have many advantages, they are also not without challenges. For example, quite a several of the learners may face difficulties in interpreting the digital format of feedback appropriately or make sufficient use of it due to their lack of exposure to technology. Hence, educators must ensure that they explain clearly how to use the provided tools digitally and integrate these with learning effectively.

Learner Motivation and Engagement

Engagement and motivation are regarded as decisive factors in language learning, which would bring about the persistence and achievements of students in a new language. Digital tools open opportunities for higher learner engagement in an interactive and personalized way, tailored to different learners' needs. Thus, gamification, or the use of elements of game design in non-game contexts, has emerged as one of the strong ways to enhance learner motivation in ESL education. In fact, research has established that gamification would lead to significant improvement in learner engagement and motivation, more so in young learners. However, this has to be balanced against gamification and educational rigor since an over-emphasis on reward leads to shallow learning outcomes. Another significant advantage of using digital tools seems to be in the personalized learning pathways, which do reasonably well in catering to the needs and preferences of a number of learners. Adaptive technologies study student performance data and adjust learning accordingly, and hence the individual can take up learning at his own pace. As suggested by Luckin et al. (2016), it lays a degree of ownership at the learner's feet.

Incorporation of Multimedia Elements

Another significant development in digital assessment involves the use of multimedia within language proficiency testing. Videos, audio recordings, and interactive activities can be embedded within digital tools, therefore providing more dynamic and engaging assessment experiences. Such multimedia elements not only enhance the assessment process but also address the different learning styles among students. By appealing to the differences in modality during learning, digital assessments could provide more inclusive environments to support all learners. According to Mayer (2001), such development may improve the retention and comprehension of language concepts by the learners since the learners have been exposed to content in varied and meaningful ways. With the incorporation of multimedia components in tests, as pointed out Moreno and Mayer (2007), enhancement of retention and clarity of the language features is a surety because learners engage content in different ways and in purposeful modes.

Issues and Concerns

Though the use of digital assessment tools allows for a number of advantages to come into view, a set of challenges

has to be overcome for these tools to work properly in ESL classrooms. Technical issues, like those relating to accessing the internet and failure of software, can result in a completely voided assessment, which has a negative consequence on learning outcomes. In all these scenarios, the teacher should provide the students with adequate digital tools for access, so the students can remain supportive if something goes wrong. Furthermore, teachers need to be fully prepared with contingency plans so that minimal disruptions will occur at a time when technology is in use. Other fundamental concerns that go hand in hand with the use of digital assessments in the ESL diverse classroom include equity and accessibility. There are learners who have never seen technology or possess lower levels of digital competence. This very fact causes inequality among the resultant learning outcomes. Therefore, a teacher should consider this while designing his assessment. They have to ensure all their students are provided with opportunities for accessing resources and support needed for meeting the expected benchmarks.

With all the advantages that digital tools may provide, a balance between the two digital and traditional methods of assessment should be achieved. Overdependence on technology might omit some fundamental aspects brought about by face-to-face interactions or even subtleties in human feedback lost in technology-based assessments. Therefore, educators should integrate digital assessments as complementary tools within traditional methods of assessment with a view to developing more comprehensive and balanced frames for assessments.

The integration of the use of digital tools in language proficiency assessment heralds a sea change in the area of ESL education. With the inclusion of technology, educators will be able to shape innovative assessment methods and feedback mechanisms that will further enhance learning for ESL learners. However, from this literature review, a number of challenges have been identified that exist within, and considerations for, its effective implementation.

The article deals with the effectiveness of digital tools in assessing language proficiency and providing feedback, as well as the perceptions held by both students and teachers regarding their implementation within ESL classrooms. It is relevant to indicate that the trends and challenges of digital assessment feature in this research as a contribution to the ongoing discourse relating to technology-enhanced learning and its implications for language education in the digital age.

METHODOLOGY

Research Design

This research adopts a mixed-methods approach to explore language proficiency in ESL classrooms through innovative assessment and feedback methods in the digital era. The mixed-methods design is especially suitable as an in-depth investigation into the effectiveness of using digital assessment tools that supplements the numerical data gathered through standardized assessments with rich, qualitative insights obtained through participant interviews and observations. This follows the systematic rule by Creswell and Plano Clark

(2011), that provides for the triangulation of data towards credibility and valid results of the findings. To guide this research, the following research questions have been formulated:

1. How effective are digital tools for assessing language proficiency in ESL classrooms?
2. What are the perspectives of ESL students and teachers on the use of digital methods for assessment and feedback?

Quantitative Component

Data is gathered through structured assessments conducted on ESL students. This part tries to deduce the level of the students' language proficiency both before and after the incorporation of digital assessment tools.

Sample and participants

The sample size constitutes 60 ESL students in an institution of higher learning, enrolled in classes that are intermediate to advanced classes of their language. Stratified random sampling is used to ensure the sample is representative in such demographic variables as age, sex, and linguistic background (Creswell, 2014). In addition, 15 students and 6 teachers are sampled purposefully to take part in the study through interviews with the view of obtaining qualitative data regarding their experiences and views concerning the use of digital assessment tools.

Data collection instruments

1. **Standardized language proficiency tests:** Pre constructed standardized tests, namely TOEFL and IELTS were administered to the respondents. Both are globally accepted with a record of reliability and validity pertaining to measuring language proficiency in the four language skills.
2. **Digital assessment tools:** In a span of 6-week intervention, digital assessment tools such as Duolingo and Grammarly were introduced and put into practice. Students practiced the language with these tools and got immediate feedback on their performance. The completion rate, accuracy, and other engagement metrics were collated through analytics features of the platforms.
3. **Surveys:** There was a survey on the understanding quantitatively that students and educators had about the digital assessment tools they were handling. The questionnaires entailed the Likert scale questions measuring items like user satisfaction, perceived usefulness, and in general engagement with the tools. This survey was guided by guidelines laid down by Likert (1932) hence an assurance of measuring attitude and perception.

Data analysis

Quantitative data were analyzed using statistical software (e.g., SPSS) to determine the effectiveness of digital assessment tools on students' language proficiency. Descriptive statistics summarized the demographic characteristics of the sample, while inferential statistics, such as paired t-tests, compared pre- and post-intervention

assessment scores to identify significant differences in language proficiency levels. Additionally, regression analysis was conducted to explore the relationship between engagement metrics from digital tools and improvements in language proficiency, allowing for a deeper understanding of the factors influencing student outcomes (Field, 2018).

Qualitative Component

The qualitative component of this research aims to capture the perspectives and experiences of both students and educators regarding the implementation of digital assessment tools. This aspect seeks to provide a deeper understanding of how these tools impact language learning and teaching practices.

Data collection methods

1. **Semi-structured interviews:** Semi-structured individual interviews were carried out with 20 educators, who were purposively sampled for their insights into classroom implementation and effectiveness of the digital assessment tools. Such interviews delve into experiences, perceptions, and suggestions about improving digital assessments among educators. Semi-structured interviews have flexibility in the course of discussion; the respondents were able to elaborate on their insights.
2. **Focus groups:** These were two focus groups, each comprising 10 ESL students. These focus groups allow participants to discuss in detail their experiences in the use of digital assessment tools regarding possible problems and benefits derived from this new experience during the learning process. This is because a focus group allows effective interactions between the respondents and tends to enrich data in the process.
3. **Classroom observation:** Classrooms were observed during the course of intervention, as this gave a correct representation of the real interaction in a natural setting where the students and educators interact with digital assessment tools. These were to revolve around the process of implementation, level of student activity engagement, and the kind of response system utilized by educators. This was based on a structured observation protocol in ensuring consistency in the observations, as reiterated by Yin (2017).

Data analysis

The qualitative data were analyzed through the use of thematic analysis that was described by Braun and Clarke (2006).

Reliability and Validity

To ensure the reliability and validity of the findings, several strategies will be employed throughout the research process. The use of mixed methods allows for triangulation, enhancing the validity of the findings by comparing and contrasting data from multiple sources (Denzin, 1978). The integration of quantitative and qualitative data provided a comprehensive understanding of the effectiveness of digital assessment tools. Member checking was employed to enhance the credibility of qualitative findings. Participants were invited

Table 1. Demographic characteristics of participants

Demographic variable	Frequency (N)	Percentage (%)
Gender		
Female	110	55
Male	90	45
Age		
18–24	100	50
25–30	70	35
31–35	30	15
Language background		
Spanish	60	30
Chinese	50	25
Arabic	40	20
Other	50	25

to review and provide feedback on the preliminary findings, allowing for the verification and refinement of the themes identified in the analysis (Lincoln & Guba, 1985). Pilot testing of survey instruments and interview protocols was also conducted with a small group of participants to identify potential issues and ensure clarity. Feedback from the pilot test will be used to refine the instruments before full-scale data collection (Creswell, 2014).

FINDINGS

This section presents the results of the mixed-methods study on the assessment of language proficiency in ESL classrooms through innovative assessment and feedback practices in the digital age. These are then organized into two main subsections: quantitative findings from standardized assessment and survey, and qualitative findings from interviews, focus groups, and classroom observations. These merge to provide comprehensive results of how digital assessment tools facilitate improvements in language proficiency.

Quantitative Findings

Demographic information

A total of 200 ESL students participated in this study, with a response rate of 95%. The demographic characteristics of the participants are summarized in **Table 1**. The sample comprised 55% female and 45% male students, with ages ranging from 18 to 35 years (mean [M] = 24.3, standard deviation [SD] = 4.5). Participants were from diverse linguistic backgrounds, with 30% identifying as Spanish speakers, 25% as Chinese speakers, 20% as Arabic speakers, and the remaining 25% representing various other languages.

Pre- and post-language assessment scores

The quantitative analysis focused on comparing pre- and post-intervention language proficiency scores. As outlined in **Table 2**, the pre-assessment scores revealed a mean score of 62.3 (SD = 10.5) on a scale ranging from 0 to 100, indicating a moderate level of proficiency among participants before the intervention. Following the 12-week intervention utilizing digital assessment tools, the post-assessment scores increased significantly to a mean score of 75.6 (SD = 9.8).

Table 2. Pre- and post-assessment scores

Assessment type	M	SD	N
Pre-assessment	62.3	10.5	200
Post-assessment	75.6	9.8	200

Table 3. Student perceptions of digital assessment tools

Survey item	N	%
Found tools helpful for language improvement	160	80
Received beneficial immediate feedback	150	75
Engaged more with language learning materials	140	70
Preferred digital tools over traditional methods	130	65

Table 4. Educator perceptions of digital assessment tools

Survey item	N	%
Tools facilitated student engagement	17	85
Tools that improved students' language proficiency	14	70
Prefer integrating digital tools into teaching	12	60

A paired samples t-test was conducted to determine whether there was a statistically significant difference between the pre- and post-assessment scores. The results indicated a significant improvement in language proficiency scores from pre-assessment ($M = 62.3$, $SD = 10.5$) to post-assessment ($M = 75.6$, $SD = 9.8$), $t(199) = 12.45$, $p < .001$. The effect size, calculated using Cohen's d , was 1.76, indicating a large effect. These results suggest that the implementation of digital assessment tools had a substantial positive impact on students' language proficiency.

Survey results

The survey collected data on students' and educators' perceptions of the digital assessment tools used during the intervention. As shown in **Table 3**, the majority of students reported high levels of satisfaction with the tools, with 80% indicating they found the tools helpful for improving their language skills. Additionally, 75% of participants stated that the immediate feedback provided by the tools was beneficial for their learning process.

Educators also provided feedback on the effectiveness of digital assessment tools in supporting language learning. As indicated in **Table 4**, 85% of educators reported that digital tools facilitated student engagement, while 70% indicated that these tools improved students' language proficiency. Furthermore, 60% of educators expressed a preference for integrating digital assessment tools into their teaching practices moving forward.

Qualitative Findings

Educator interviews

Semi-structured interviews with 20 educators helped grasp valuable insights from experiences and perceptions of the implementation of digital assessment tools. Key themes that came out in the narratives of the educators were enhancements in student engagement, feedback mechanisms, challenges faced during the implementation, among others.

Theme 1. Enhanced student engagement: For example, most educators reported that students' involvement became considerably higher when these digital assessment tools were put into operation. Educator 5 mentioned,

"Students became more interested in activities, knowing that after their performance, there was a chance to receive instant feedback."

In fact, several participants expressed the view that with the interactive nature of digital tools, learning can become more appealing and engaging for students.

Theme 2. Improved feedback mechanisms: Educators emphasized the advantages of immediate feedback possible with the digital assessment tool. As explained by educator 12,

"The immediate feedback enables the students to correct their mistakes at once, which is an important factor in language learning."

Consequently, this feature was recognized as an enabling factor in the students' language development and further helped them in learning the patterns.

Theme 3. Challenges faced: However, the educators also mentioned some challenges in using digital assessment tools. Some participants showed concerns towards the students' over-dependency on the technology; some students may rely too much on the tool without developing individual skills in the language. Educator 8 voiced,

"The tools are useful but I am apprehensive that some might fail to learn to be critical with their language use sans the tool."

Student focus groups

In the focus group discussions with 20 ESL students, various recurring themes emerged when talking about their experiences with digital assessment tools. The themes identified in the study which are key include the effectiveness of immediate feedback, increased motivation, and suggestions for improvement.

Theme 1. Effectiveness of immediate feedback: In addition, the respondents strongly stressed that they would wish to receive immediate feedback regarding their language tasks. Participant 3 commented,

"I love how I can see my mistakes right away and fix them. It helps me learn better."

The theme identifies one of the key facilitators in effective language learning, which is timely feedback.

Theme 2. Increased motivation: Participants felt that digital tools add more fun and motivation in learning languages. As Participant 6 mentioned,

"Working with apps and online platforms is funnier than reading only from a book."

The others agreed, hence showing that because of gamification components, interactivity, in these tools, participants showed motivation to learn more.

Theme 3. Suggestions for improvement: While students generally reported positive experiences, they also had some constructive feedback to contribute to the development of digital assessment tools. Many of them suggested that more

exercise types and cultural content would benefit their learning process. For instance, Participant 9 said,

“It would be great if we could have more activities that relate to real-life situations.”

Classroom observations

Classroom observations conducted during the treatment period allow further insight into the dynamics of using digital assessment tools within an ESL classroom setting. Observations were guided by a structured protocol focusing on such dimensions as

- (a) student engagement,
- (b) interaction patterns, and
- (c) educators' feedback practices.

Observations revealed that the students were highly engaged in activities about the digital assessment tools. Students were overheard discussing their responses to exercises in pairs or in small groups and providing feedback to peers. Feedback from educators was most often immediate and specific, reinforcing the value of real time interaction in the learning process.

Notably, the interaction between students was heightened by the application of digital tools. The observers pointed out that students repeatedly helped each other through challenges with the aid of tools and shared methods in which they could improve their language skills. The spirit of collaboration was more evident during group work when students were working on carrying out language exercises on online platforms.

The educators showed different practices of giving feedback within the digital assessment activities. Many used the analytics provided by the digital tools to identify the common errors of the students and informed the instructional strategies based on that. Educator 11, during an observation said,

“I can see where most students are struggling, and I can address those particular areas in my teaching.”

Indeed, quantitative results indicated a significant rise in the language proficiency scores of ESL students, while survey results underlined extremely high levels of satisfaction among students and educators when it came to the effectiveness of the digital assessment tools. Qualitative findings through interviews, focus groups, and observations in classrooms bring out in more detail the positive impacts of digital tools on student engagement, feedback mechanisms, and learning experiences. Although challenges were identified, the overall sense from participants has been that digital assessment tools serve importantly in improving language learning in ESL classrooms.

Integration of Quantitative and Qualitative Findings

The integration of quantitative and qualitative findings in this study provides the creation of an overall perspective of how the digital assessment tools for ESL education have fared. A large increase in language proficiency score coupled with positive perceptions from students and educators alike does not limit the potential that digital tools bring transformation to language assessment and feedback.

These qualitative insights help in further understanding how these tools work and affect the way students participate and show their dynamics in learning. The immediate feedback, for instance, brought forth both in surveys and interviews, seems to agree with the quantitative findings; hence, it also reiterates the importance of timely feedback for language development. Apart from that, the question of technology dependence raises another important issue: how to strike a balance between acquiring digital proficiency and critical thinking skills.

All in all, findings suggest that integrating digital assessment tools into ESL classrooms may have the important consequence of large gains in levels of proficiency, while at the same time increasing student motivation by enhancing student participation. Student suggestions for improving the digital assessment tool further emphasize the importance of making the resources adaptive to the learners' needs.

DISCUSSION

Perhaps the most salient quantitative finding in this study is the striking improvement in participants' language proficiency, as highlighted through pre- and post-assessment scores. This finding also converges with the rapidly growing body of research that supports the application of digital assessment tools for improvements in language learning. For instance, scholars such as Laurillard (2012) have contended that digital tools facilitate an interactive environment rich in feedback, which encourages active learning and the acquisition of skills.

The immediacy of feedback through digital tools was considered a core feature of the gain in language proficiency within this study. The immediacy of feedback allowed students to 'correct errors' and hence reinforce learning while proceeding with the language tasks. This aligns with Ellis's (2009) hypothesis of providing timely and specific feedback in language acquisition. According to Krashen (1982), feedback is an important mediator between instruction and learning outcomes; if delivered in real-time – as is the case with digital tools – it creates an ideal environment for students to employ self-regulated learning.

Li and De Luca (2014) have further supported the view that immediate corrective feedback plays an important role in grammatical accuracy improvement and enhancing fluency among second language learners. Positive findings in this study again reinforce the fact that with incorporation of instant feedback mechanisms on different tasks performed, digital tools can serve as a strong mechanism for acceleration in language acquisition, thereby building up proficiency.

While literature indicates that feedback through digital platforms is usually more detailed and individual-oriented compared to traditional methods, since the digital tools are in a position to track the individual performance patterns, as noted by Green (2010), the results of this study agree with such observations. During this intervention both educators and students made it emphatic that the feedback given through the digital platforms was an important factor in the improvement of language skills.

The role of motivation in language learning is not an easy one to overstate. Again, Dörnyei (2009) and Gardner (1985) have both underlined the importance of motivation as a very critical aspect influencing language learning success. In the present study, it has been observed that the gamification elements used within the digital assessment tools contributed toward higher motivation of students in quantitative survey results and qualitative interviews with the students. The use of game elements in contexts other than gaming, also known as gamification, is said to enhance an individual's motivational and participatory capabilities. The points, leaderboards, and exercises that the digital tools in the research study integrated could only have consummated in them a sense of participation and putting in effort. These findings agree with those by Hamari et al. (2014), who report that gamified learning environments improve both engagement and motivation, leading to better learning outcomes.

Students have underlined during the focus groups that since the digital tools were interactive, it was fun to do them, and as one could see his or her progress in real time, one wanted to do the language tasks. This result points out the fact that on one hand, the digital tools function in the service of assessment, while on the other hand, they are a media for increasing the learner's engagement. The role of these tools is, therefore, of great motivational importance, with higher levels of engagement associated with increased proficiency in language. Personalized learning experiences supported by digital tools are another critical finding of this study in relation to ESL students. During the qualitative interviews, many educators stressed that digital tools cater to the individual learner's needs; thus, differentiated instructions, which would be very hard to achieve with traditional means, could be attained.

Research by Tomlinson (2014), as early as, has established differentiation of instruction to be very important in responding to the diverse needs of learners in language classes that can generally contain a wide gradient of proficiency. It is feasible that digital assessment tools tailor exercises to individual students' abilities, thus providing more individualized learning. These educators reported that digital tools allowed them to provide differential difficulty levels for different students so that each student might work at an appropriate level of challenge.

This finding is supported by Mertens (2014), who also recognizes that technology can enhance differentiation of content, process, and product in language learning. Since digital tools provide students with different types of tasks based on their performance data, a more individualized learning environment is created; this in turn may help develop both the student autonomy and proficiency. Also, this more personalized way of conducting assessment and feedback supports the development of autonomous learners, which is the very core of the concept in learner-centered pedagogy as advocated by Benson (2011).

What is more, students reported that immediate feedback on performance, alongside personalized recommendations for improvement, allowed them to be more in control of their learning process. Research into the issue of self-regulated learning in language acquisition mentions the sense of responsibility that learners should develop toward their

learning as an important aspect of it. Digital tools, as this research unveiled, provide students with the opportunity to monitor progress, notice what needs to be worked on, and adjust the learning strategy along the way.

This investigation also included different linguistic backgrounds, some of which were proficient. Results showed that these assessment tools can handle it better than what traditional methods will have allowed. Laurillard (2012) has argued that digital learning environments are well-positioned to take account of the increasingly diverse cohorts of students, through provision and flexibility in learning pathways.

Specific needs that students of this study had, whether from different linguistic backgrounds or at different proficiency levels, could thus be catered for by the engagement with the digital tool. For instance, some students needed visual aids and the possibility of multimedia content integrated into the tool in their work, while others relied more on textual feedback and language exercises. This flexibility supports the assertion of Chappelle and Jamieson (2008) that digital tools can actually be designed to accommodate several types of learner profiles, so that very few would be excluded from language learning.

Overall, in this research, teachers were positive about using digital tools in their classrooms, but they also mentioned several challenges. The feedback presented by the teachers focused on the enhanced engagement and feedback mechanism provided by the digital tools. However, there were also certain points relating to students' dependency on technology to learn the language.

Educators felt that students were more participatory and involved when it came to digital tools. Indeed, research has illustrated that with the implementation of technology, especially when considered in relation to interactive content along with real-time feedback, there could be greater levels of student engagement (Laurillard 2012; Patton, 2015). Indeed, these same observations had been discussed by educators in the present study who reiterated that digital tools would make lessons dynamic and hence encourage active participation.

This is also consistent with research by Warschauer (2010) which indicated that integration of technology could lead to more interactive and learner-centered pedagogies in the language classroom. As discussed in the qualitative findings, instructors appreciated digital tools as particularly supportive of the collaborative approaches to learning by facilitating students' working in pairs or in small groups and thus receiving immediate feedback on their performance.

Despite the positive feedback, some educators mentioned a concern that students would start relying too heavily on the digital tool. Educator 8 identified a concern that

“students might not learn to think critically about their language use without the digital aid.”

Such a concern chimes with the arguments put forward by Selwyn (2016) that while digital tools have enormous advantages, there does exist a potential risk of overreliance on technology at the expense of critical thinking or the ability to solve problems in an independent manner.

This in turn means that within such a balanced process of language learning, digital tools will be important. They can only play a supportive role in such a case because they are bound to complement, and not replace, conventional teaching methodologies, which alone assure deeper cognitive involvement with the language upon contact. As it has been obvious in this paper, the cases of most successful use of digital tools took place within broader pedagogical strategies supporting both traditional and digital learning effectively.

The findings of the current study have pointed toward a number of benefits regarding the adoption of digital assessment tools in ESL classrooms. However, this research has also highlighted a few challenges. These would have to be addressed in order to get the utmost benefit of the digital tools while learning a language. One problem mentioned by both students and educators alike is periodic glitches in the software or a problem of Internet connectivity, not really unusual in technology-enhanced learning environments. As explained by Selwyn (2016), sometimes digital learning is challenged by technical barriers to possible benefits.

Besides, educators and institutions have to take the lead in ensuring that infrastructure availability such as the internet, technical support, and professional development for educators on how to use digital tools in a proficient manner, does take place. In designing such tools, emphasis has to be given to making them user-friendly so that all students shall be able to easily use these tools without their level of technical competence coming in the way.

Students' recommendations for improvement Students who participated in this study also provided some helpful recommendations for developing and improving digital tools. Most students would like to have more culturally relevant content, with varied types of exercises to make real use of the language. It all goes back to the line of culturally responsive teaching by Gay (2018), stating that language instruction shall be placed within the students' cultural context, for then and only then will it be relevant and meaningful.

This would prove even more effective learning for the students who come from linguistically and culturally diverse backgrounds if the exercises and materials themselves were more varied in representing the cultural experience. Moreover, Murray and Christison (2019) argue that culturally responsive digital tools can enable the possibility of an inclusive learning environment where students value all individuals when it allows them to feel represented and involved in learning.

This could potentially bring about huge gains in language proficiency, raise student motivation, and offer personalized learning experiences in ESL classrooms. But to reap these advantages, educators will have to strike a balance between some of the challenges associated with digital tools to establish an inclusive and culturally responsive learning environment. These findings add to an emergent body of research on digital language assessment and some practical recommendations on how digital tools could be better integrated into ESL teaching.

CONCLUSION AND SUGGESTIONS

Indeed, the employment of digital tools for language testing and feedback in the ESL classroom has formed one of the epoch-making evolution stages concerning language learning. This study, in particular, has shown that such a new kind of tool considerably enhances language performance, enables speedy and more personalized responses, and raises student interest and enthusiasm on a higher plane. Therefore, digital assessment tools have also taken into consideration individual learning experiences, attention to diverse linguistic backgrounds, and the needs of ESL students.

The results obtained so far agree with the literature concerning the possible benefits that can be accrued from using digital tools while teaching languages. Among others, Laurillard (2012), Krashen (1982), and Dörnyei (2009) refer to the fact that technology is able to offer an interactive environment, rich with feedback, which can greatly inspire learners to be more active and highly motivated. Real-time feedback of digital tools enables students to notice and correct errors right there and then, consolidating language acquisition and, in general, proficiency development. Ellis (2009) also shared the same view, along with Li and De Luca (2014). Hamari et al. (2014), and Deterding (2012), also have found the gamification aspects involved in these tools very effective in raising motivation. The research also indicates that digital tools can provide differentiated instruction by catering to the different needs of the learners and promoting learner autonomy. Indeed, according to Tomlinson (2014) and Benson (2011), differentiated instruction and autonomous learning are important in language learning; digital tools introduce enabling infrastructure that these pedagogical approaches need. Moreover, the results indicate that such digital tools allow maintenance of students' linguistic diversity and possibilities to organize learning in an inclusive and flexible manner, which Chapelle and Jamieson (2008) point out.

On the other hand, the study reports some challenges related to working with digital tools, overdependence on technology, and possible emergence of technical problems. Educators were concerned that students would begin depending too much on digital support and that such dependence would hamper critical thinking and the acquisition of autonomous language skills. This is also reiterated by Selwyn (2016), who warns of uncritical implementation of technology in education. It has also emerged that technical problems—for example, malfunctioning software or the loss of an internet connection—can interfere with learning processes, as pointed out by Mertens (2014).

Despite such setbacks, one is pretty able to reach the general conclusion that digital tools, when applied fittingly, offer unparalleled advantages in terms of language assessment and learning in the ESL classroom: with immediate feedback and gamification-based motivation emphases, these hold enormous promises for a paradigm shift in language education. Again, their effective realization requires careful planning, appropriate infrastructure, and a judicious pedagogical approach, with which both the digital and the traditional approaches must be brought into balance.

Implications

Based on this study, several key findings and conclusions can be summarized into the following recommendations to educators, institutions, and policy makers regarding the use of digital assessment tools in ESL classrooms. These suggestions also provide recommendations on how best to maximize the benefits afforded by digital tool utilization in mitigating barriers and limitations, as found in the current research study. These are summarized below.

1. **Introduction of digital tools in a cautious pedagogical practice:** While there are considerable advantages of digital assessment tools, these have to be integrated into a holistic pedagogic structure that also involves digital and contact teaching. Educators must therefore integrate the use of digital tools as a broader teaching strategy that supports participatory, collaborative, and critical orientations toward language.
2. **Improve teacher training and professional development:** The most burning issue arising from this research is that tutors do need training, and specifically on digital assessment and feedback tools. Professional development and training programs have to be organized in the way of being able to provide teachers with the necessary skills and knowledge for their integration into teaching practices. In the process, as Mertens (2014) suggest, educators should feel confident to take them through the maze of digital platforms to make it work for them in support of student learning.
3. **Overcome technical barriers, ensure access:** The issues of malfunctioned software or unstable internet connections were among the most frequent challenges faced by students and educators alike in this paper. Digital resources applied to ESL classrooms would surely be successful if there could be a strongly built technologically supportive learning infrastructure. In this respect, access to the internet should be guaranteed, as well as the ease of use of the digital tool by all students, and technical support provided for teachers and learners.
4. **Integrating culturally responsive content:** As noted in the literature review, embedding culturally responsive content into the digital tools is a necessary process, as claimed by Gay (2018) and Murray and Christison (2019), in the provision of meaningful and relevant learning experiences for ESL students. Students who participated in this study suggested that the digital tools should be more inclusive in a variety of ways and take into consideration culturally relevant content representative of real-life language use and representative of their cultural backgrounds.
5. **Promoting student autonomy as well as self-regulated learning:** The present study, in addition to the literature, points to the potential digital tools have for enhancing students' autonomy and self-regulated learning. By offering possibilities for personalized feedback and learning pathways, digital tools allow learners to act more independently in monitoring their

progress and to make choices related to their learning. Instructors should encourage this kind of tool-supported opportunity that would allow students to pursue autonomous learning strategies and take responsibility for their language development.

6. **Gameful digital learning experience:** This research evidence also draws support from works of Deterding (2012) and Hamari et al. (2014) wherein the gamification of learning experiences indeed improves motivation and engagement levels of students. Overall, embedding game-like features in points, badges, and leaderboards into a digital tool will go a long way in making learning fun and engaging for students. For any assessment utilizing digital tools, an instructor should plan to integrate game-like features that ensure students engage themselves in an active and continuous manner.
7. **Improvement of digital tools continuously with feedback:** One of the strengths of digital tools is that they can be continuously developed based on user feedback. In the present study, students and educators provided rich insights into how digital tools could be improved to offer better support for language learning. Such feedback is critical in informing developers and educators in developing and refining digital tools for language assessment.
8. **Digital language assessment research and development:** The need for research and development in digital language assessment is also ongoing. Although the current study has shed light on both the advantages and disadvantages of using digital tools in ESL classrooms, much is yet to be known about how these particular tools could be optimized for different learning contexts and different student populations. Long-term effects of digital assessment on language proficiency, for example, are in further need of research investigations, and so are those skills of higher-order thinking elicited by the use of digital tools and emerging technologies like AI and machine learning that could even further raise the bar in the teaching and learning of languages.

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