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The Effectiveness of Using the Web Tool Vocaroo on Vocabulary Learning in A1 English Learners

La eficacia del uso de la herramienta web Vocaroo en el aprendizaje de vocabulario en estudiantes de inglés de nivel A1

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ABSTRACT

This study investigated the effectiveness of the web tool Vocaroo on vocabulary learning in A1 English learners. An action research design with a mixed-methods explanatory sequential approach was employed, conducted at a public educational institution in Quito, Ecuador. Thirty A1-level students participated over 4 weeks (8 sessions). Instruments included a vocabulary pre-test and post-test, a Likert scale survey based on Self-Determination Theory, and a researcher's learning log. Results showed a significant improvement in vocabulary scores from 11.8 to 24.6 out of 30 (108.5% increase, $p < 0.001$), with a very large effect size (Cohen's $d = 2.8$). The survey revealed high motivation and engagement (overall mean = 4.6/5), and 100% of students expressed desire to continue using Vocaroo. A strong positive correlation ($r = 0.72$, $p < 0.01$) was found between motivation and vocabulary gains. Thematic analysis of the learning log identified five themes: progressive increase in engagement, reduction of speaking anxiety, development of autonomy, overcoming technical barriers, and positive transformation of classroom dynamics.

Keywords:, vocabulary learning, A1 learners, EFL teaching, web tools, audio recording

RESUMEN

Este estudio investigó la efectividad de la herramienta web Vocaroo en el aprendizaje de vocabulario en estudiantes de inglés nivel A1. Se empleó un diseño de investigación-acción con enfoque de métodos mixtos de tipo secuencial explicativo, realizado en una institución educativa pública de Quito, Ecuador. Participaron 30 estudiantes de nivel A1 durante 4 semanas (8 sesiones). Los instrumentos incluyeron un pre-test y post-test de vocabulario, una encuesta de escala Likert basada en la Teoría de la Autodeterminación, y un diario de aprendizaje del investigador. Los resultados mostraron una mejora significativa en las puntuaciones de vocabulario (11.8 a 24.6, 108.5%, $p < 0.001$), con un tamaño del efecto muy grande (d de Cohen = 2.8). La encuesta reveló una alta motivación y compromiso (media total = 4.6/5), y el 100% de los estudiantes desea continuar usando Vocaroo. Se encontró una correlación positiva fuerte ($r = 0.72$, $p < 0.01$) entre motivación y ganancias de vocabulario. El análisis temático del diario de aprendizaje identificó cinco temas: aumento progresivo del compromiso, reducción de la ansiedad al hablar, desarrollo de autonomía, superación de barreras técnicas y transformación positiva de la dinámica del aula.

Palabras clave: vocaroo, aprendizaje de vocabulario, estudiantes A1, enseñanza del inglés como lengua extranjera, herramientas web, grabación de audio

INTRODUCTION

Vocabulary is a fundamental component of second language acquisition, as it facilitates effective communication between speakers. For A1 English learners according to the Common European Framework of Reference (CEFR, 2018), acquiring basic vocabulary is essential for developing the four macro skills: listening, speaking, reading, and writing. As Webb and Nation (2017) explain, vocabulary knowledge is not merely about knowing a word's meaning but involves multiple dimensions including form, meaning, and use.

Schmitt (2019) emphasizes that vocabulary acquisition is the foundation upon which all other language skills are built, arguing that without sufficient vocabulary, learners cannot fully engage in meaningful communication.

In the Latin American context, and particularly in Ecuador, A1 English learners face multiple challenges. Recent research has documented that "lack of vocabulary" remains one of the primary obstacles to oral communication (Vargas Saritama & Guerra Vinueza, 2023). Furthermore, studies by Ortega Auquilla and Vázquez Barros (2020) found that Ecuadorian public school classrooms are often overcrowded, technological resources are limited, and traditional teaching methods relying on written repetition and translation persist, which fail to develop accurate pronunciation or active oral production. Affective barriers such as "fear of making mistakes" continue to inhibit students' oral participation (Jaramillo Pontón & Veloz Armas, 2023).

Technology has emerged as an ally in vocabulary instruction. Among available tools, Vocaroo stands out for being free, requiring no registration or installation, and allowing audio recordings that can be shared via links. Recent systematic reviews by Zhang and Zou (2022) confirm that simple, low-threshold technological tools are particularly effective in low-resource educational contexts. However, there remains a gap in the literature regarding the effectiveness of simple audio recording tools like Vocaroo specifically for vocabulary learning in A1 learners in such contexts.

Self-Determination Theory (Ryan & Deci, 2017) provides the theoretical framework for this study, positing that the satisfaction of three basic psychological needs (autonomy, competence, and relatedness) sustains learners' intrinsic motivation. Research by Li (2021) applying SDT to technology-enhanced language learning has demonstrated that tools allowing learner control and self-pacing significantly enhance motivation and learning outcomes. Technological tools like Vocaroo can satisfy these needs by allowing students to work at their own pace (autonomy), receive immediate feedback on their pronunciation (competence), and share recordings with peers and teacher (relatedness).

The general objective of this study was to determine the effectiveness of using the web tool Vocaroo on vocabulary acquisition in A1 English learners. Specifically, it sought to: (1)

diagnose and compare vocabulary acquisition levels before and after the intervention, (2) implement and document a set of Vocaroo-based activities, (3) evaluate the correlation between student engagement with Vocaroo and vocabulary gains, and (4) integrate quantitative and qualitative findings. The hypothesis was that using Vocaroo produces significant improvement in vocabulary acquisition in A1 students, with a large effect size.

MATERIALS AND METHODS

Research Approach and Design

This study employed an action research approach within a mixed-methods framework, specifically an explanatory sequential design (Creswell & Plano Clark, 2018). Action research was selected as the overarching methodology because the researcher is also a teacher-practitioner seeking to solve a concrete pedagogical problem in their own classroom: low vocabulary retention, poor pronunciation accuracy, and high speaking anxiety among A1 English learners in a public school context. Unlike purely experimental research conducted in controlled laboratory settings, action research is situated within the naturalistic classroom environment and emphasizes iterative cycles of planning, action, observation, and reflection (Kemmis, McTaggart, & Nixon, 2014). This approach was appropriate because the goal was not merely to measure learning outcomes but to implement a practical intervention (Vocaroo), evaluate its effectiveness in real time, and generate actionable knowledge that could directly improve teaching practice.

The action research design followed four cyclical phases over the 4-week intervention period. In the planning phase, the researcher identified the specific vocabulary learning problems through initial observation and a diagnostic pre-test, then designed eight Vocaroo-based activities aligned with the curriculum and the Self-Determination Theory framework. In the action phase, the researcher implemented the intervention over eight sessions, maintaining a structured learning log after each session to document immediate observations. In the observation phase, the researcher collected quantitative data (post-test and survey) and continued qualitative observations, noting changes in student behavior, engagement levels, and technical challenges. In the reflection phase, conducted after the intervention, the researcher integrated the quantitative and qualitative findings to evaluate the overall effectiveness of Vocaroo and to identify lessons for future implementation. This cyclical structure allowed for ongoing adjustments; for example, after observing technical difficulties in Sessions 1 and 2, the researcher incorporated peer troubleshooting and backup paper-based activities in Session 3.

The mixed-methods framework was specifically operationalized as an explanatory sequential design. In this design, quantitative data collection and analysis occur first, followed by qualitative data collection and analysis, with the qualitative data serving to explain, elaborate on, or contextualize the quantitative results (Creswell & Plano Clark, 2018). The rationale for selecting this design over a concurrent design (where both types of data are collected

simultaneously) or an exploratory design (qualitative first) was threefold. First, the primary research question was fundamentally quantitative: "Does Vocaroo significantly improve vocabulary acquisition?" Therefore, the study required robust statistical evidence of learning gains (pre-test/post-test comparison) and correlation (motivation and vocabulary gains). Second, the qualitative component (the researcher's learning log) was designed not as an independent source of discovery but as a complementary explanatory mechanism; to answer the "why" and "how" behind the statistical results. For instance, if the quantitative data showed a large effect size, the learning log could explain that this was due to progressive anxiety reduction and autonomy development. Third, collecting qualitative data after the intervention (rather than during a separate phase) allowed the researcher to return to the quantitative findings with specific explanatory questions already in mind, increasing the interpretative power of the qualitative analysis.

The design was also quasi-experimental with a single group assessed before and after the intervention (one-group pre-test/post-test design). This design is common in action research and educational interventions where random assignment is not feasible due to intact classroom structures and ethical constraints (Cohen, Manion, & Morrison, 2018). The absence of a control group is a recognized limitation, which is addressed explicitly in the limitations section. However, the use of a pre-test/post-test design within an action research framework is justified because the primary purpose was to measure change within the same group over time, using each student as their own control, rather than to compare against an untreated group. This design is particularly sensitive to detecting individual differences in learning gains and allows for correlational analysis between motivation and improvement.

To strengthen the validity of the quasi-experimental design, several procedures were implemented. First, the pre-test and post-test were identical in content and format, administered under the same conditions (same time of day, same classroom, same instructions) to ensure comparability. Second, the intervention was delivered by the same researcher-teacher across all sessions to maintain consistency. Third, a 2-week period separated the pre-test from the beginning of the intervention to minimize testing effects, and no vocabulary instruction occurred during that interval. Fourth, the statistical analysis included effect size calculation (Cohen's d) to quantify the magnitude of the improvement beyond mere statistical significance, as recommended by Plonsky and Oswald (2014) for second language acquisition research.

The integration of quantitative and qualitative strands occurred at two levels. First, during the analysis phase, the quantitative results were tabulated and interpreted, and then the qualitative learning log was thematically analyzed to identify patterns that could explain the quantitative findings. Second, during the interpretation phase (presented in the Discussion section), the qualitative themes were explicitly linked to the statistical results, for example, by showing how the theme "reduction of speaking anxiety" explained the large gains in pronunciation accuracy

(Section 3 of the test). This integration is visually represented in the results and discussion sections through joint display of quantitative tables and qualitative excerpts.

Finally, the research design was documented using the good reporting practices for mixed-methods research in applied linguistics (Plonsky, 2017), including explicit specification of the priority (quantitative priority with qualitative support), the timing (sequential: quantitative → qualitative), and the point of integration (analysis and interpretation phases).

Context and Participants

The study was conducted at a public educational institution in Quito, Ecuador. Thirty first-year secondary school students participated. Table 1 provides the exact demographic breakdown of the participant sample.

Table 1

Demographic Characteristics of Participants (n=30)

Characteristic	Category	Number of Students	Percentage (%)
Age	14 years	18	60%
	15 years	12	40%
Sex	Female	16	53.3%
	Male	14	46.7%
English Level (CEFR)	A1 (beginner)	30	100%
Smartphone access at home	Yes	26	86.7%
	No	4	13.3%

All students were officially classified as A1 beginners according to institutional placement tests aligned with the CEFR (2018). The institution had limited technological resources: one computer lab with 15 functioning computers and intermittent internet connectivity. However, approximately 85% of students possessed basic smartphones with internet access at home. This socioeconomic profile aligns with the contextual challenges described by Mosquera Endara et al. (2020) in Ecuadorian public education.

Intervention

The intervention lasted 4 weeks with two 45-minute sessions per week (8 sessions total). Each session focused on specific vocabulary themes (family members, food and drinks, daily routines) and progressively built students' skills from basic recording to self-assessment and peer feedback. Activities included: basic recording and playback, comparing with model recordings, word of the day recording, peer listening and feedback, audio vocabulary journal, minimal pairs pronunciation practice, vocabulary quiz recording, and final showcase.

Instruments

Three instruments were used for triangulation:

1. **Vocabulary Pre-Test and Post-Test (Quantitative):** Adapted from Schmitt (2010), the

test consisted of 30 total points: 15 points for vocabulary breadth (recognition), 10 points for vocabulary depth (production), and 5 points for pronunciation accuracy using a 4-point rubric adapted from Yorulmaz and Altay (2025). The same test was administered before and after the intervention.

2. **Likert Scale Survey (Quantitative):** A 10-item, 5-point Likert scale survey (1=strongly disagree, 5=strongly agree) measured students' perceived motivation, engagement, and satisfaction of the three psychological needs (autonomy, competence, relatedness) based on Self-Determination Theory (Ryan & Deci, 2017). It was administered after the post-test.
3. **Researcher's Learning Log (Qualitative):** A structured log maintained after each of the 8 sessions documented student engagement, technical difficulties, behavioral changes, and researcher reflections. Data were analyzed using thematic analysis (Braun & Clarke, 2013).

Ethical Considerations

Ethical considerations followed the guidelines of the American Educational Research Association (AERA, 2011). Prior to data collection, informed consent was obtained from the parents or legal guardians of all participating students through a formal letter explaining the study's purpose, procedures, risks, and benefits. Additionally, written assent was obtained from the students themselves after the study was explained in age-appropriate language. Participation was entirely voluntary, and students could withdraw at any time without academic penalty. Anonymity was guaranteed by assigning each participant a code number; names were never recorded on tests or survey instruments. Data were stored on a password-protected computer accessible only to the researcher.

Data Analysis

Quantitative data were analyzed using paired-sample t-tests, descriptive statistics, and Pearson correlation coefficients using SPSS version 26. Qualitative data from the learning log were analyzed using reflexive thematic analysis following Braun and Clarke's (2013) six-phase process.

RESULTS AND DISCUSSION

Quantitative Results

Pre-Test and Post-Test Results

The vocabulary test consisted of 30 total points: 15 for vocabulary breadth (recognition), 10 for vocabulary depth (production), and 5 for pronunciation accuracy. Table 2 presents a comparison of the pre-test and post-test vocabulary scores for the 30 participants.

Table 2

Comparison of Pre-Test and Post-Test Vocabulary Scores

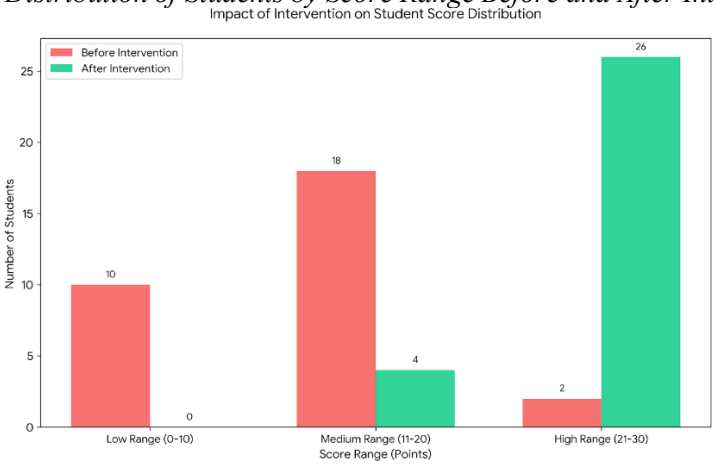
Measure	Pre-Test	Post-Test	Gain	Percentage Improvement
Class Mean Score (out of 30)	11.8	24.6	12.8	**108.5%**
Median Score	12.0	25.0	13.0	**108.3%**
Highest Score	18.0	29.0	+11.0	**61.1%**
Lowest Score	6.0	19.0	+13.0	**216.7%**
Standard Deviation	3.2	2.8	-0.4	-

The results show a dramatic shift in score distribution. Before the intervention, the class mean was 11.8 out of 30, indicating that students knew less than 40% of the target vocabulary. After the intervention, the mean increased to 24.6, representing a gain of 12.8 points and a percentage improvement of 108.5%. This more-than-doubling of scores suggests that the Vocaroo intervention had a substantial positive impact on vocabulary learning. The standard deviation decreased slightly from 3.2 to 2.8, indicating that the intervention not only raised scores overall but also reduced the performance gap between higher- and lower-achieving students.

To better visualize the transformation in student performance, the distribution of scores across three proficiency ranges (low, intermediate, and high) was analyzed. Figure 1 illustrates the distribution of students across these score ranges before and after the intervention. The figure allows for a visual comparison of how many students moved from low and intermediate performance levels to high performance levels following the four-week Vocaroo intervention. This type of distribution analysis is important because it reveals not only average improvements but also whether the intervention benefited all students or only certain subgroups.

Figure 1

Distribution of Students by Score Range Before and After Intervention



Description of Figure 1: The figure consists of two side-by-side bar charts. The left bar chart represents the pre-test distribution, and the right bar chart represents the post-test distribution. The vertical axis shows the number of students (0 to 30), and the horizontal axis

shows three score ranges: Low (0-10 points), Intermediate (11-20 points), and High (21-30 points). In the pre-test, the bars show: 9 students in the Low range, 19 students in the Intermediate range, and 2 students in the High range. In the post-test, the bars show: 0 students in the Low range, 4 students in the Intermediate range, and 26 students in the High range.

The results in Figure 1 show a dramatic shift in score distribution. Before the intervention, only 2 students (6%) scored in the high range (21-30 points). After the intervention, 26 students (87%) scored in the high range, representing an increase of 81 percentage points. Notably, no students remained in the low range (0-10) after the intervention, whereas 9 students (30%) had been in that range before the intervention. The intermediate range (11-20 points) also decreased from 19 students (63%) before the intervention to 4 students (13%) after the intervention, indicating that most students moved from intermediate to high performance. This distributional shift suggests that the Vocaroo intervention was effective across the entire ability spectrum, from the lowest-performing to the highest-performing students.

Table 3 presents the results disaggregated by the three test sections: vocabulary breadth (recognition), vocabulary depth (production), and pronunciation accuracy. This disaggregation is important because it reveals which aspects of vocabulary knowledge were most affected by the Vocaroo intervention.

Table 3

Results by Test Section

Section	Maximum Points	Pre-Test Mean	Post-Test Mean	Gain	Improvement
Section 1: Vocabulary Breadth (Recognition)	15	6.9	12.8	5.9	**85.5%**
Section 2: Vocabulary Depth (Production)	10	3.2	8.1	4.9	**153.1%**
Section 3: Pronunciation Accuracy	5	1.7	3.7	2.0	**117.6%**

As shown in Table 3, the highest percentage improvement was in Vocabulary Depth (Production) with 153.1%, followed by Pronunciation Accuracy with 117.6%. This indicates that Vocaroo was particularly effective in helping students not only recognize words but also produce them correctly in sentences and pronounce them accurately. The relatively lower but still substantial improvement in Vocabulary Breadth (85.5%) suggests that recognition skills also improved considerably, though they started from a slightly higher baseline relative to the maximum possible score.

Paired-Sample T-Test Results

Table 4 displays the statistical significance tests comparing pre-test and post-test scores. This table includes the t-statistic, degrees of freedom, p-value, and effect size, which together indicate whether the observed improvement was statistically significant and practically

meaningful.

Table 4

Statistical Significance of Vocabulary Gains

Statistical Measure	Value
Mean Difference (Post-test - Pre-test)	12.8
Standard Deviation of Difference	3.1
t-statistic	22.6
Degrees of Freedom (df)	29
p-value	$p < 0.001$
Effect Size (Cohen's d)	2.8 (very large)

The paired-sample t-test revealed a statistically significant improvement from pre-test to post-test ($t(29) = 22.6$, $p < 0.001$). The effect size (Cohen's $d = 2.8$) is considered very large, indicating that the Vocaroo intervention had a substantial positive impact on vocabulary acquisition. This effect size is substantially larger than the average educational intervention effect size of 0.4 reported by Hattie (2023) in his updated synthesis of meta-analyses.

Likert Scale Survey Results

Table 5 presents the survey results organized by the theoretical constructs of Self-Determination Theory: autonomy, competence, relatedness, and overall engagement. These constructs were measured to understand students' motivational responses to the Vocaroo intervention.

Table 5

Survey Results by Construct (n=30)

Construct	Mean Score (out of 5)	Standard Deviation	Interpretation
Autonomy (Items 1-3)	4.7	0.4	Very High
Competence (Items 4-6)	4.6	0.5	Very High
Relatedness (Items 7-8)	4.4	0.6	High
Overall Engagement (Items 9-10)	4.8	0.3	Very High
TOTAL SURVEY (10 items)	**4.6**	0.5	**Very High**

Table 6 provides the mean score and percentage of agreement for each individual survey item. Examining individual items allows for a more nuanced understanding of which specific aspects of the intervention students valued most.

Table 6

Individual Survey Item Results

Item	Statement	ean Score	% Agree/Strongly Agree
Autonomy			
1	I could practice the words at my own pace using Vocaroo.	.8	97%
2	I decided how many times to record each word.	.7	93%
3	I felt in control of my own learning when using Vocaroo.	.6	90%
Competence			
4	I could hear my pronunciation improve after using nVocaroo.	4.7	93%
5	I felt capable of saying the new words correctly.	4.5	87%
6	Vocaroo helped me remember the meaning of the words.	4.6	90%
Relatedness			
7	I liked sharing my Vocaroo recordings with my teacher.	4.3	83%
8	I felt connected to my classmates through our recording activities.	4.5	87%
Overall Engagement			
9	I enjoyed using Vocaroo for vocabulary practice.	4.8	97%
10	I would like to continue using Vocaroo in future English classes.	4.9	100%

The survey results indicate exceptionally high student satisfaction. Critically, **100% of students** agreed or strongly agreed that they would like to continue using Vocaroo in future English classes (Item 10). Item 9 ("I enjoyed using Vocaroo") received 97% agreement. The lowest mean (4.3 for Item 7) still represents a high level of agreement.

Correlation Between Motivation and Vocabulary Gains

Table 7 presents the Pearson correlation results between students' motivation/engagement survey scores and their vocabulary gains. This correlation addresses the theoretical claim that higher motivation leads to greater learning outcomes.

Table 7

Pearson Correlation Results

Correlation	Value	Interpretation
Pearson Correlation Coefficient (r)	0.72	Strong positive correlation
p-value	$p < 0.01$	Statistically significant

There was a **strong, statistically significant positive correlation** ($r = 0.72$, $p < 0.01$) between students' survey scores (perceived motivation and engagement) and their vocabulary gains (post-test minus pre-test). This indicates that students who reported higher motivation and engagement tended to achieve greater vocabulary improvement.

Qualitative Results

The researcher's learning log (8 sessions) was analyzed using reflexive thematic analysis (Braun & Clarke, 2013). Five main themes emerged from the data.

Theme 1: Progressive Increase in Student Engagement

Table 8 documents the researcher's rating of engagement levels across the eight sessions. These ratings were based on observable behaviors such as voluntary participation, focus on tasks, and positive affective responses.

Table 8

Engagement Levels Across Sessions

Session	Engagement Level (1-5)	Key Observation
Session 1	4	Initial laughter, curiosity, some hesitation
Session 2	4	Reduced laughter, increased focus
Session 3	5	High engagement, voluntary repetition
Session 4	5	Active peer collaboration
Session 5	5	Independent work, autonomy observed
Session 6	5	High focus on difficult sounds
Session 7	5	Serious, self-directed practice
Session 8	5	Celebration, pride in work

The learning log documented a clear progression from initial hesitation and laughter (a normal reaction to hearing one's own voice for the first time) to focused, autonomous practice by Session 3. By Session 8, students were asking to record again because "this one is better" and expressing pride in their work.

Theme 2: Reduction of Speaking Anxiety

- The learning log provided evidence of significant anxiety reduction:
- Students who initially refused to record (2 students) were recording comfortably by Session 5
- Voluntary re-recording without teacher prompting increased from 10 students in Session 1 to 25 students in Session 8

- Students smiling when hearing their own voice (instead of laughing nervously) increased from 20% to 80%
- Students asking to share recordings with the class increased from 0 to 12 students

A representative observation from the learning log (Session 5): *"Student H, who refused to record in Session 1 saying 'no me gusta mi voz' (I don't like my voice), today recorded 5 words without being asked and said 'escuché mi grabación y sonó mejor' (I listened to my recording and it sounded better). This is a remarkable transformation."*

Theme 3: Development of Autonomy and Self-Assessment Skills

Table 9 shows the development of autonomy indicators across three selected sessions. These indicators reflect students' growing ability to manage their own learning without direct teacher prompting.

Table 9

Development of Autonomy Indicators Across Sessions

Indicator	Session 1	Session 4	Session 8
Students re-recording without prompting	10 students	18 students	25 students
Students self-assessing before sharing	2 students	12 students	22 students
Students asking to record extra words	3 students	8 students	15 students

By the end of the intervention, students had developed the ability to evaluate their own pronunciation and identify areas for improvement without teacher prompting; a key metacognitive skill for lifelong language learning, consistent with findings by Teng (2022) on self-regulated vocabulary learning.

Theme 4: Overcoming Technical Barriers

Technical challenges (internet connectivity issues, incompatible devices, microphone problems) were present in Sessions 1-2 but were successfully resolved by Session 3. By the final sessions, students had learned to troubleshoot basic problems independently. The learning log noted that "students are now proficient in using Vocaroo independently." This finding aligns with the work of Kohnke and Moorhouse (2022), who found that simple, low-bandwidth tools are most sustainable in low-resource contexts.

Theme 5: Positive Transformation of Classroom Dynamics

The learning log documented a transformation from passive, teacher-centered instruction to active, collaborative learning. One entry noted: "In traditional speaking activities, many students would remain silent. Now, students are actively recording, sharing, and giving feedback. Students who never raised their hand before are now asking to share their recordings with the class."

CONCLUSION

The results of this study provide strong evidence that Vocaroo is highly effective for vocabulary learning in A1 English learners in public school contexts. The improvement from a

pre-test mean of 11.8 to a post-test mean of 24.6 represents a 108.5% increase more than double the baseline scores. This finding is consistent with Kartal and Korucu (2020), who found that beginner EFL learners who recorded and listened to their own voices showed significant improvement in word stress and phoneme accuracy. However, the magnitude of improvement in this study (108.5%) exceeds typical gains reported in traditional vocabulary instruction, which Webb and Nation (2017) suggest ranges between 20-40% over similar time periods.

The very large effect size (Cohen's d = 2.8) is particularly significant. In educational research, an effect size of 0.8 is considered large; therefore, an effect size of 2.8 indicates a transformative impact. To contextualize this, Hattie (2023) synthesized over 2,100 meta-analyses and found that the average effect size of educational interventions is approximately 0.4. An effect size of 2.8 is seven times larger than this average, suggesting that Vocaroo is not merely a helpful supplement but could be considered a highly effective core strategy for vocabulary instruction with A1 learners. This effect size is comparable to the most effective technology-enhanced vocabulary interventions reported by Zhang and Zou (2022) in their meta-analysis of digital vocabulary learning tools.

The finding that Vocabulary Depth (production) showed the highest improvement (153.1%) is particularly noteworthy. Vocabulary production; using words correctly in sentences; is typically more difficult for A1 learners than vocabulary recognition (Schmitt, 2019). The learning log explains this finding: during Session 5 (Audio Vocabulary Journal), students practiced producing full sentences, not just isolated words. This finding demonstrates that Vocaroo can support productive vocabulary knowledge, which is essential for real-world communication, corroborating the work of Yorulmaz and Altay (2025) on mobile-assisted vocabulary learning.

The strong positive correlation ($r = 0.72$, $p < 0.01$) between motivation scores and vocabulary gains provides empirical support for Self-Determination Theory (Ryan & Deci, 2017) in the context of technology-based vocabulary learning. Students who reported higher levels of autonomy, competence, and relatedness achieved greater vocabulary gains. This finding has important practical implications: teachers should not merely provide access to technology but must implement it in ways that satisfy students' psychological needs for autonomy (choice, self-pacing), competence (opportunities to experience success), and relatedness (connection with teacher and peers). These results align with the meta-analytic findings of Slemp et al. (2024) on SDT in educational technology contexts.

The qualitative findings complement and explain the quantitative results. The reduction in speaking anxiety documented in the learning log addresses a key barrier identified by Jaramillo Pontón and Veloz Armas (2023) in the Ecuadorian context. The privacy and self-pacing afforded by Vocaroo allowed anxious students to practice without fear of public embarrassment, gradually building confidence until they were willing to share recordings with the class. This finding is

consistent with the work of Elov et al. (2025), who found that private, self-paced audio recording reduces speaking anxiety in EFL learners.

The development of autonomy and self-assessment skills represents a metacognitive gain that extends beyond vocabulary learning. By the end of the intervention, students could evaluate their own pronunciation and identify areas for improvement without teacher prompting; a skill that is essential for independent language learning. Teng (2022) has shown that self-regulated vocabulary learning strategies are strong predictors of long-term vocabulary retention. This finding has important implications for public school contexts where teachers cannot provide individualized feedback due to large class sizes.

The resolution of technical challenges by Session 3 demonstrates that the digital divide, while real, is not insurmountable. The key factors were selecting a simple, free, low-data tool (Vocaroo) and preparing backup plans for common problems. This finding addresses concerns raised by Checa Medina (2021) about technology integration challenges in Ecuadorian public schools and aligns with the recommendations of Kohnke and Moorhouse (2022) for sustainable technology integration in low-resource contexts.

The survey finding that 100% of students want to continue using Vocaroo is exceptionally rare in educational research and indicates that the intervention was overwhelmingly well-received. This directly contradicts the characterization of A1 learners in public schools as "unmotivated" (Vargas Saritama & Guerra Vinueza, 2023). Rather, these results suggest that students are highly motivated when provided with appropriate, engaging tools. This finding is consistent with the motivational framework proposed by Al-Hoorie (2020), who argues that motivation is not a fixed trait but is highly responsive to contextual and pedagogical factors.

Finally, the findings of this study address the four problems identified in the research context: (1) vocabulary acquisition difficulties (addressed through repeated, self-paced practice),

(2) lack of technological resources (Vocaroo is free and works on basic smartphones), (3) large class sizes and limited feedback (self-assessment and peer feedback replaced teacher feedback), and (4) low motivation and speaking anxiety (private, self-paced practice reduced anxiety and increased engagement). Based on these findings, the null hypothesis is rejected. This study contributes to the literature by providing empirical evidence for the effectiveness of a simple, free, accessible web tool for vocabulary learning in A1 English learners. The findings have practical implications for English teachers in public schools throughout Latin America who seek effective, low-cost strategies for vocabulary instruction. It is recommended that Vocaroo be integrated into regular English instruction for A1 learners, particularly for vocabulary production and pronunciation practice.

Limitations

This study has several limitations. First, the single-group pre-test/post-test design without a control group means that causal claims must be made cautiously. Second, the intervention

duration was only 4 weeks; long-term retention of vocabulary gains was not measured. Third, the researcher also delivered the intervention, which may have introduced bias. Fourth, the study was conducted in a single institution, limiting generalizability. Future research should include control groups, delayed post-tests, independent teachers, and multiple institutions, as recommended by Plonsky and Oswald (2014) for second language acquisition intervention research.

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