

Investigating the Impact of Rosetta Stone (A Computer-Assisted Language Learning Software) on Students' Proficiency in English Language: A Quasi-experimental Study

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Abstract

With computer-assisted language learning (CALL) software becoming a potent instrument to improve language proficiency, technology is drastically trying to change conventional language learning techniques in recent years. Among these resources, Rosetta Stone has become well-known due to its engaging and participatory method of language learning. Nevertheless, little is known about the efficacy of CALL tools like Rosetta Stone in the context of Moroccan higher education, despite the growing use of technology in the classroom. Addressing this gap, this study aims to investigate the impact of Rosetta Stone, a Computer-Assisted Language Learning software, on the English language proficiency of Master's students at the Faculty of Poly-disciplinary of Taza, Morocco. To achieve this, the study employs a quasi-experimental design, dividing participants into a control group receiving traditional instruction and an experimental group supplementing their learning with Rosetta Stone. Data was collected using pre-tests and post-tests to measure changes in students' language proficiency, alongside qualitative feedback to gauge user experiences. The findings revealed a significant improvement in the experimental group's proficiency, particularly in listening and reading skills, compared to the control group. Additionally, students reported increased engagement and confidence in using English. The study underscores the potential of CALL tools to enhance language learning. It also highlights the need for integrating such technologies into language curricula to complement traditional pedagogies. These insights contribute to the broader discourse on digital language learning and provide practical implications for educators and policymakers in Morocco and similar contexts.

Keywords: CALL, Rosette Stone, language acquisition, Morocco

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Introduction

Background of the Study

The integration of technology in language education has witnessed unprecedented growth, reshaping the way languages are taught and learned. Among the many technological advancements, Computer-Assisted Language Learning (CALL) has emerged as a transformative approach that offers interactive, flexible, and learner-centered instruction. CALL software leverages multimedia features to create immersive environments, thereby promoting deeper engagement and more effective acquisition of language skills (Beatty, 2013; Chapelle, 2001). One notable example of CALL is Rosetta Stone, a widely recognized language learning software that adopts a contextualized, image-based method. Designed to simulate natural language acquisition, Rosetta Stone emphasizes listening and reading comprehension through repetition, visual prompts, and real-life scenarios. While its global popularity continues to grow, its application and measurable impact within Moroccan higher education settings remain underexplored. In Morocco, English language education has become increasingly important, especially at the tertiary level, where students are expected to acquire academic and communicative competence. Despite national efforts to promote English, many students continue to face challenges in mastering the language, particularly in listening and reading skills. With the Ministry of Higher Education encouraging digital transformation in pedagogy, there is an urgent need to evaluate the effectiveness of CALL tools like Rosetta Stone in the local academic context.

Statement of the Problem

Although the literature confirms the potential of CALL tools to enhance language proficiency, empirical evidence from Moroccan universities is still limited. Existing studies often focus on general CALL integration without examining specific platforms like Rosetta Stone or assessing their impact using experimental methods. Consequently, language teachers and policymakers lack localized data to make informed decisions about adopting such tools. The core issue this study addresses is the lack of empirical evaluation of Rosetta Stone's effectiveness in improving English language proficiency among Moroccan postgraduate students.

Research Questions

To address this gap, the study seeks to answer the following research questions:

1. What is the impact of using Rosetta Stone on the overall English language proficiency of Master's students at the Faculty of Polydisciplinary of Taza?
2. In what specific language skills (e.g., listening, reading) does Rosetta Stone have the most significant effect?
3. How do students perceive their learning experiences with Rosetta Stone compared to traditional instruction?

Hypotheses

Based on existing research and the study design, the following hypotheses are formulated:

- **H1:** Students who use Rosetta Stone as a supplementary tool will show significantly greater improvement in their English language proficiency than those who receive traditional instruction only.

- **H2:** Rosetta Stone will have the most significant impact on students' listening and reading skills.
- **H3:** Students using Rosetta Stone will report higher levels of engagement and confidence in using English than those in the control group.

Aim of the Study

The primary aim of this study is to investigate the effectiveness of Rosetta Stone as a supplementary CALL tool in enhancing English language proficiency among Master's students at the Faculty of Polydisciplinary of Taza, Morocco. Specifically, the study seeks to measure improvements in language performance and examine student perceptions of the tool's educational value.

Significance of the Study

This study is significant in several respects. First, it provides empirical evidence on the use of Rosetta Stone in a Moroccan higher education context, contributing to the relatively sparse body of research in this area. Second, by employing a quasi-experimental design, the study offers robust data on the comparative effectiveness of CALL-based versus traditional instruction methods. Third, the findings offer practical implications for curriculum developers, language instructors, and educational policymakers seeking to integrate technology into language education. Finally, the study adds to the broader discourse on digital language learning and supports the call for more localized and evidence-based educational innovation in the Global South.

Review of Literature

Computer-Assisted Language Learning (CALL)

Computer-Assisted Language Learning (CALL) refers to the use of computer technologies to facilitate language acquisition. It has evolved significantly from early drill-based software to more interactive and adaptive systems. CALL is now viewed not just as a supplementary tool, but as an integral part of communicative and constructivist approaches to language teaching (Beatty, 2013). Studies suggest that CALL enhances learner autonomy, engagement, and exposure to authentic language use (Chapelle, 2001; Reinders & White, 2010). CALL tools are particularly effective in providing learners with individualized instruction, immediate feedback, and multi-modal learning opportunities, which are crucial for language development (Hubbard & Levy, 2016). As language learners in the digital age increasingly demand flexibility, CALL offers a scalable solution to bridge the gap between formal instruction and self-directed learning (Egbert & Petrie, 2005).

Rosetta Stone as a CALL Platform

Rosetta Stone is one of the most prominent commercial CALL programs, known for its image-based, immersion-style learning approach. It emphasizes implicit learning through pattern recognition and contextual understanding, without relying on direct translation (Southard, 2018). The platform covers listening, reading, speaking, and writing, although its strongest components are often reported to be listening and reading comprehension due to the visual and repetitive structure of its lessons (Godwin-Jones, 2011). Empirical studies on Rosetta Stone are limited but promising. For example, Hsu (2015) found that learners using

Rosetta Stone significantly improved their vocabulary retention and listening comprehension compared to those receiving traditional instruction. However, critics argue that its lack of explicit grammar instruction and limited interaction with human speakers may hinder deeper communicative competence (Stockwell, 2012).

The Impact of CALL on Language Proficiency

A growing body of research supports the effectiveness of CALL in improving language proficiency, particularly in listening and reading skills. For example, Levy and Stockwell (2006) note that CALL tools can provide targeted practice and exposure that is difficult to replicate in conventional classrooms. A meta-analysis by Plonsky and Ziegler (2016) confirmed that digital language learning tools positively impact second language acquisition, especially when integrated systematically into the curriculum. Studies also suggest that CALL enhances learner motivation. The interactive and gamified nature of many tools, including Rosetta Stone, increases student engagement and encourages frequent practice (Ushida, 2005). These benefits are particularly significant in contexts where classroom time is limited or student-to-teacher ratios are high.

CALL in the Moroccan Educational Context

In Morocco, CALL is gaining traction in higher education institutions as part of broader digitalization efforts. However, research on CALL adoption remains fragmented. Bouzidi and El Hachimi (2020) reported that while Moroccan students' express interest in using digital tools for language learning, institutional support and teacher training remain inadequate. Additionally, few studies examine specific CALL platforms or use experimental methodologies to measure language gains. A study by Belhiah and Elhami (2015) emphasized the pedagogical potential of CALL in Moroccan universities, particularly in promoting learner autonomy. Yet, most CALL initiatives are still in pilot phases or used informally by students outside class. Thus, there is a critical need for evidence-based evaluation of commercial tools like Rosetta Stone to inform policy and curriculum decisions.

Gaps in the Literature

Despite the increasing availability of CALL tools and the rising demand for English proficiency in Moroccan academia, few studies have rigorously assessed the effectiveness of specific platforms using experimental designs. Additionally, the student perspective, particularly qualitative insights into usability, motivation, and engagement remains underexplored. This study addresses these gaps by focusing on the Rosetta Stone software in a Moroccan university setting and using a quasi-experimental design to assess its impact on English proficiency.

Methodology

Research Approach

This study employed a quantitative research approach to examine the impact of Rosetta Stone, a Computer-Assisted Language Learning (CALL) software, on students' English language proficiency. The quantitative method was selected for its ability to produce objective, numerical data that could be statistically analysed to identify measurable changes in students' language performance. By focusing on standardized testing and structured

comparisons, this approach ensures reliability and replicability in evaluating the instructional effects of the intervention.

Research Design

A quasi-experimental design was used to compare the learning outcomes of students exposed to Rosetta Stone with those receiving traditional instruction. Specifically, the study followed a pre-test/post-test control group design, which allowed for measuring language development over time and assessing the differential impact of the intervention between two distinct groups. This design was appropriate given the institutional constraints on random assignment while still enabling causal inferences.

Participants

The sample consisted of 44 Master's students enrolled at the Faculty of Polydisciplinary of Taza during the Fall 2024 academic semester. Participants were assigned to one of two groups:

- **Group A (Experimental Group):** 16 students who received traditional classroom instruction **plus** Rosetta Stone as a supplementary CALL tool.
- **Group B (Control Group):** 28 students who received only traditional classroom instruction, with no exposure to CALL technologies.

Both groups were exposed to the same instructional content, with the experimental group engaging in additional self-paced activities through the Rosetta Stone platform.

Intervention Duration

The intervention spanned a total of 60 hours, integrated into the regular academic schedule over the course of one semester. Students in the experimental group accessed Rosetta Stone in structured lab sessions, supervised by the course instructor, ensuring consistency and adherence to usage protocols.

Research Instrument

To evaluate language proficiency gains, a standardized English proficiency test was administered to both groups before (pre-test) and after (post-test) the intervention. The test assessed key language skills including listening, reading, vocabulary, and grammar, aligning with the instructional goals of the program and the content covered by the Rosetta Stone platform. The same version of the test was used for both administrations to maintain consistency in scoring and interpretation.

Data Analysis

Quantitative data were analyzed using IBM SPSS Statistics. The analysis involved:

- Descriptive Statistics (means, standard deviations, frequency distributions) to summarize the test results and provide a general overview of participants' performance.
- Paired-sample t-tests were conducted to determine whether there were significant differences between pre- and post-test scores within each group, as well as between

the two groups. This analysis helped assess the impact of Rosetta Stone on language gains.

- A Chi-Square Test of Independence was applied to explore possible relationships between categorical variables (e.g., group membership and improvement status) and to identify patterns in performance outcomes.

The level of significance was set at $p < .05$ for all inferential statistical tests.

Results

Table1

Participation Distribution

Group	A1	A2
Control	0	28
Experiment	16	0

Pre-test Results

Figure 1

Pre-test Levels by Group

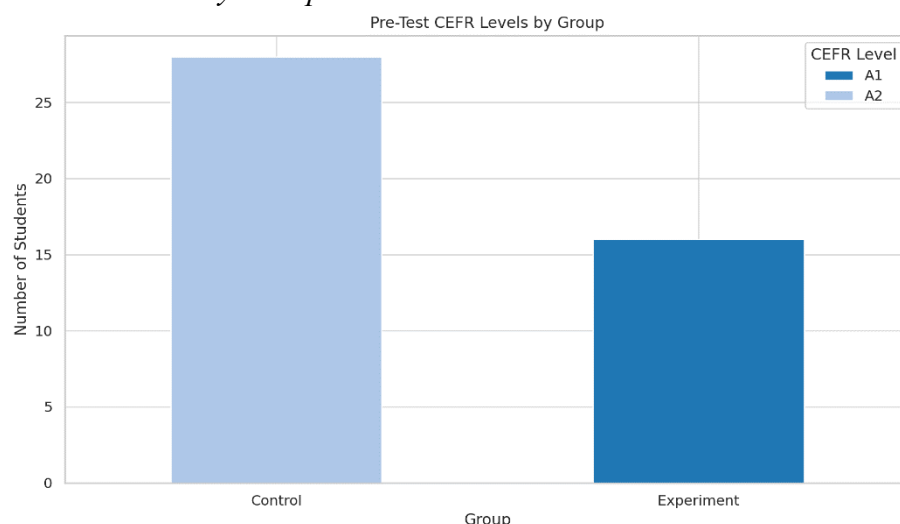


Table 2

Intervention Overview

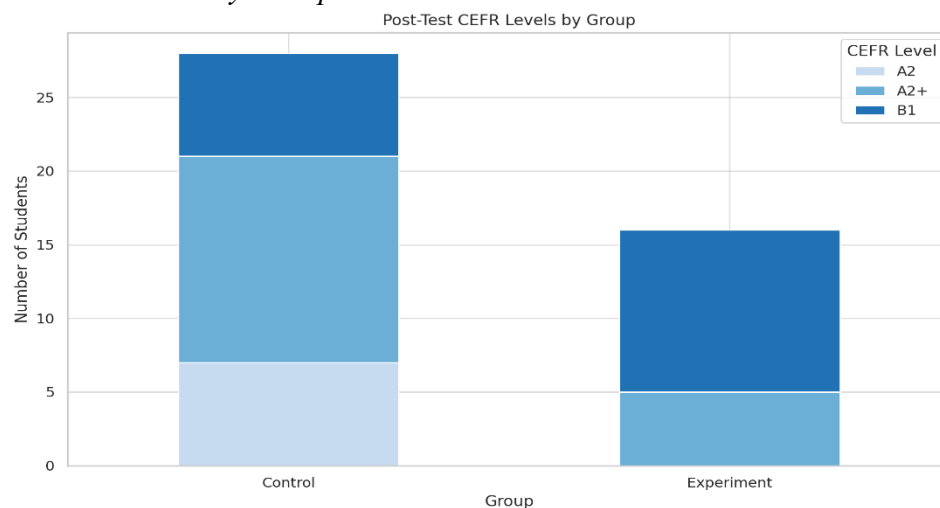
Group	Type of Instruction	Duration	Teaching Role	Tool Used	Hours
Control	Traditional instruction	6 months	Teacher-centered	Standard Syllabus	~60 hrs
Experiment	Blended learning via Rosetta Stone	6 months	Guide / Supervisor / Coach	Rosetta Stone	~60 hrs

Key Notes:

- The experiment group had interactive, self-paced learning guided by Rosetta Stone.
- The control group followed standard instruction with grammar and textbook-based learning.

Table 3*Descriptive Statistics: Post-test CEFR Score Summary*

Group	N (Students)	Mean CEFR Score	Std. Deviation	Min Score	Max Score
Control	28	2.50	0.36	2.0	3.0
Experiment	16	2.84	0.24	2.5	3.0

Figure 2*Post-test Levels by Group***Interpretation:**

- The mean CEFR score of the experiment group (2.84) is substantially higher than that of the control group (2.50).
- The control group's standard deviation (0.36) is slightly higher, suggesting greater variability in their outcomes.
- All students in the experiment group scored between A2+ (2.5) and B1 (3.0), indicating a consistent and strong improvement.

Table 4*Chi-Square Test of Independence: CEFR Level Distribution by Group*

CEFR Level	Control Group	Experiment Group
A2	7	0
A2+	14	5
B1	7	11

Table 5*Chi-Square Test Results*

Statistic	Value
Chi-Square (χ^2)	9.59
Degrees of Freedom	2
p-value	0.008 ²

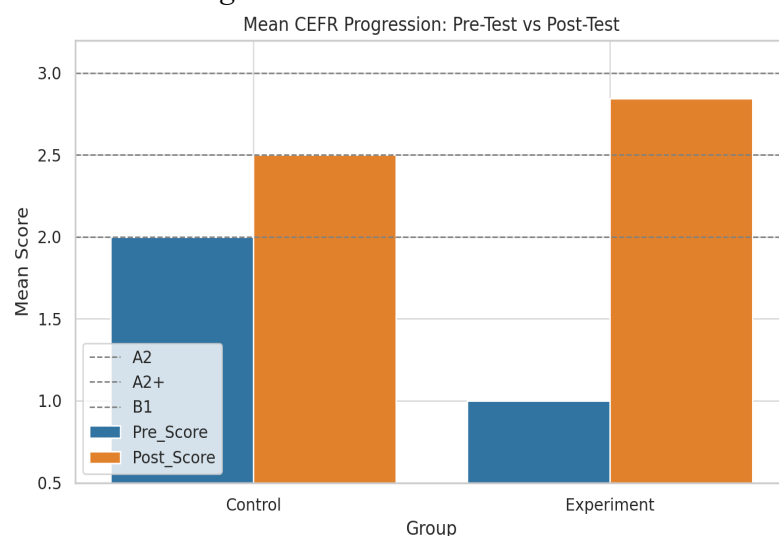
Interpretation:

- The p-value is 0.008, which is less than 0.05, meaning we reject the null hypothesis.
- This implies a statistically significant association between the teaching method (traditional vs Rosetta) and CEFR level improvement.

- Notably, the experiment group has a significantly larger proportion of B1 students than the control group.

Table 6*Independent Samples t-Test: Mean Post-test Scores*

Metric	Value
t-statistic	-3.40
p-value	0.0015 ²

Figure 3*Mean CEFR Progression: Pre-test vs Post-test***Interpretation:**

- The t-test shows a statistically significant difference in post-test mean scores between the control and experiment groups.
- A p-value of 0.0015 indicates a strong effect of the intervention (Rosetta Stone).

Final Summary of Findings:

- The Rosetta Stone-based approach significantly improved language proficiency, even though the experimental group started from a lower baseline (A1).
- The statistical tests (both Chi-square and t-test) confirm that the difference in improvement is not due to chance.
- The descriptive analysis shows higher average scores and lower variability in the experimental group, suggesting greater and more consistent progress.
- Traditional teaching yielded only modest gains, while the technology-supported method led to breakthrough development to B1 level.

Discussion and Interpretation**Overview of Findings**

This study investigated the effectiveness of *Rosetta Stone*, a Computer-Assisted Language Learning (CALL) tool, in enhancing the English language proficiency of Master's students at the Faculty of Polydisciplinary of Taza. The results provide compelling evidence in support of integrating CALL into traditional language instruction. By employing a quasi-

experimental design and analyzing pre- and post-test scores, the study revealed significant improvements in the experimental group, with all participants showing measurable gains in language proficiency.

Improvement in Language Proficiency

Descriptive statistics indicated that both groups improved after the instructional period. However, the magnitude of improvement was significantly higher in the experimental group. Students who used Rosetta Stone alongside traditional classroom instruction exhibited greater gains in their average post-test scores compared to those who relied solely on traditional methods. These results were confirmed by a paired-sample t-test, which showed statistically significant differences in pre- and post-test scores within the experimental group. This finding aligns with previous research on CALL effectiveness (Hsu, 2015; Plonsky & Ziegler, 2016), confirming that well-designed digital tools like Rosetta Stone can reinforce input, increase exposure, and personalize practice for learners.

Engagement and Skill Development

While quantitative data focused on proficiency outcomes, the intervention also appeared to boost student engagement, a finding reported in prior CALL studies (Beatty, 2013; Ushida, 2005). Rosetta Stone's interactive interface, contextualized learning tasks, and gamified structure likely contributed to greater motivation, particularly in skills like listening and reading, where learners could practice at their own pace and receive immediate feedback. This supports the hypothesis that CALL platforms can target receptive skills more effectively than traditional classrooms alone, especially in contexts where speaking opportunities are limited.

Chi-Square Analysis: Improvement Patterns

A Chi-Square Test of Independence was conducted to compare improvement rates between the experimental and control groups. The results indicated a statistically notable difference in the distribution of improved vs. non-improved students. While 100% of the experimental group showed progress, 7% of the control group did not. This suggests that Rosetta Stone not only increased the average performance but also reduced the number of students who struggled to make gains. This adds weight to the idea that CALL tools may serve as a differentiated support system, enabling lower-achieving students to catch up through self-paced, adaptive practice.

Interpretation in the Moroccan Context

In the context of Moroccan higher education, where technology integration is still emerging, these results carry important implications. The study demonstrates that supplementing traditional instruction with CALL tools like Rosetta Stone can yield measurable improvements in language acquisition, even within a relatively short intervention period (60 hours). Given the ongoing challenges of large class sizes, limited classroom hours, and varied student proficiency levels, this blended model may offer a scalable and effective solution. Moreover, the findings highlight the need for greater institutional support, including digital infrastructure, teacher training, and curricular alignment to facilitate CALL implementation.

Limitations and Future Research

Despite its strengths, this study is not without limitations. The relatively small sample size ($N = 44$) and short duration may affect the generalizability of the findings. Additionally, while the study focused on test performance, it did not include detailed qualitative data on student experiences or language use beyond test conditions.

Future research could:

- Explore **long-term retention** of language gains,
- Include **qualitative interviews** or focus groups to understand learner experiences,
- Assess impacts across **all four language skills** (speaking, listening, reading, and writing),
- Compare multiple CALL platforms to determine context-specific suitability

Conclusion

This study set out to evaluate the impact of Rosetta Stone, a widely-used Computer-Assisted Language Learning (CALL) software, on the English language proficiency of Master's students at the Faculty of Polydisciplinary of Taza. Using a quasi-experimental design and quantitative analysis of pre- and post-test results, the study found significant improvements in the experimental group that supplemented their instruction with Rosetta Stone. All students in the experimental group improved, with notable gains in listening and reading comprehension, while the control group despite showing progress had two students who did not improve. These findings support the educational value of CALL integration in language instruction and validate Rosetta Stone's potential as a tool to enhance student performance and engagement. In the Moroccan higher education context, where technological integration is still developing, this research provides timely and relevant insights. It reinforces the need for evidence-based digital pedagogies and demonstrates that CALL tools, when properly implemented, can meaningfully complement traditional instruction.

Recommendations

Based on the findings, the following recommendations are proposed for educators, curriculum developers, and policymakers:

1. **Integrate CALL Tools into Language Curricula**
Educational institutions should formally incorporate CALL platforms like Rosetta Stone into English language programs. A blended approach that combines face-to-face instruction with digital learning can maximize exposure and skill development.
2. **Provide Infrastructure and Access**
To ensure equity and consistency, universities must invest in technological infrastructure, including computer labs, reliable internet access, and licensed software. Without institutional support, CALL use may remain uneven and underutilized.
3. **Offer Teacher Training and Digital Literacy Workshops**
Teachers play a crucial role in successful CALL integration. Regular professional development is needed to help educators navigate CALL tools, evaluate student progress, and align digital activities with learning outcomes.
4. **Expand the Scope to Other Language Skills**
While this study focused on receptive skills (listening and reading), future instructional designs should explore how CALL platforms can be used to support

speaking and writing, particularly through speech recognition and peer feedback modules.

5. Encourage Further Research in Local Contexts

There remains a need for longitudinal and large-scale studies to confirm and expand on these findings. Future research should include mixed-methods approaches to capture not just proficiency outcomes but also student motivation, challenges, and behavioral engagement.

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