Arab World English Journal
INTERNATIONAL PEER REVIEWED JOURNAL ISSN: 2229-9327

Arab World English Journal (AWEJ) Volume 17. Number 2, June 2026 Pp.392-403
DOI: https://dx.doi.org/10.24093/awej/vol17no2.25

Evaluating Rosetta Stone Integration through CALL and PICRAT: A Case Study at EST Fes

Mehdi BELGHMI
Language Centre, Mohammed VI Polytechnic University (UM6P), 43150, Benguerir, Morocco
Corresponding Author: Mehdi.belghmi@UM6P.MA
Salma HABIBALLAH
English Department, Faculty of Letters and Human Sciences, Dhar El Mahraz, Sidi Mohamed Ben Abdellah University, 30000, Fes, Morocco
Email: salma.habiballah@usmba.ac.ma
El Mehdi OUSSELLIM
English Department, Faculty of Letters and Human Sciences Cadi Ayyad, Amerchich, B.P. 3737, 40000 Marrakech, Morocco
Corresponding Author: Osalimmehdi@gmail.com

Received:03/12/2026 Accepted:05/29/2026 Published:06/15/2026

Abstract
The integration of classroom instruction with an immersive online learning experience provides students with the balance needed for optimal learning outcomes. Subsequently, the purpose of this paper is to investigate students' perspectives of online language learning, drawing attention to the difficulties undergraduate logistics students at the Higher School of Technology in Fes, Morocco, encounter when using the Rosetta Stone platform for the fall semester. This quasi-experimental study analyses the effectiveness of the language learning platform from a Computer-Assisted Language Learning (CALL), Substitution, Augmentation, Modification, and Redefinition (SAMR), and Passive, Interactive, Creative, Replacement, Amplification, and Transformation (PICRAT) lens, giving the study a holistic dimension while utilising a one-group quasi-experimental pre-test post-test design. Findings from this study revealed that students generally had positive attitudes toward the platform, particularly towards its motivational aspects. However, results also indicated that the platform had no measurable impact on language performance with only six students advancing by one CEFR (Common European Framework of Reference for Languages) level and one learner advancing by two CEFR levels. This shows that Rosetta Stone cannot replace the instructor's role in monitoring and guidance. Therefore, integrating such platforms into blended approaches appears pivotal to maximise their benefits. this study opens the door to future research on the pedagogical and technological conditions needed to improve the efficiency of digital tools in language learning.

***Keywords*:** Blended learning, Computer-Assisted Language Learning, Educational technology integration framework, Language proficiency progression, Learning Management System, Rosetta Stone

How to cite: Belghmi, M., Habiballah, S. & Oussellim, E. M. (2026). Evaluating Rosetta Stone Integration through CALL and PICRAT: A Case Study at EST Fes. *Arab World English Journal, 17*(2): 392-403. https://dx.doi.org/10.24093/awej/vol17no2.25

Introduction

Rosetta Stone is a language-learning platform founded in early 1992, offering courses in more than 30 languages. The app is unique and revolutionary; it promotes gradual immersion for learners (virtual alienation) while also requiring comprehensive input, avoiding L1 translation. Rosetta Stone accommodates different learning styles; it implements visuals (images, videos, animated figures) for visual learners (audio recordings and authentic native conversations). Finally, special hands-on activities for kinaesthetic learners, who learn by doing, are also available on the platform (Kessler et al., 2025; Marhraoui et al., 2025).

This current paper explores the different processes of online language learning and students' perceptions. It also highlights the challenges faced by third-year logistics students at the Higher School of Technology in Fes, Morocco, as they use Rosetta Stone for a semester. Throughout the study, 3 research questions are targeted:

RQ1: What are students' perceptions and attitudes towards the use of Rosetta Stone?

RQ2: To what extent does the use of Rosetta Stone during the semester influence students' English language proficiency scores?

RQ3: How successful is Rosetta Stone in enhancing students' English level?

Literature review

The literature review provides a theoretical framework encompassing theories and language-learning models that serve as the study's contours, rendering it both theoretical and practical.

Computer-Assisted Language Learning model and Rosetta Stone

Computer-Assisted Language Learning (CALL) in Rosetta Stone takes a distinct perspective on language learning by isolating learners from teachers, forcing them to develop independent, yet constructive learning habits (Prystiananta et al., 2025). Similarly, Rosetta Stone is one of the few platforms designed with learners in mind (Ouahbi, 2026); it has also been developed with a deep understanding of how multimedia can enhance the psychological aspects of language learning (Dandu et al., 2024; Kessler et al., 2025). CALL, as a holistic framework, branches from several disciplines, including but not limited to Psychology, Instructional Technology, Artificial Intelligence, Computational Linguistics, Applied Linguistics, and Second Language Acquisition. This multidisciplinary aspect of CALL paves the way for a developed and independent body of research (Singh, 2015; Syaifudin & Rensburg, 2018). CALL today has shifted from a mere privilege practised by early adopters to the industry standard for online learning research (Kakumanu, 2025; Singh, 2015). CALL morphed into three different, distinct stages; the structural accuracy-based 1980s CALL relied on archaic modes of learning, such as the grammar-translation and drills (repetitive practice), while the 1990s CALL is communication-fluency based, relying on communicative language teaching, knowledge filling, and speed reading, while the current CALL uses Multimedia and the internet while also generating authentic discourse, calling for agency among users. Finally, CALL is built for learner autonomy, where learners acquire language independently of instructors with the help of swift media integration, upon which feedback mechanisms are built to boost interaction and engagement; all packed into a dynamically immersive environment with real-time pronunciation feedback (Singh, 2015).

SAMR and PICRAT Models' Integration in Rosetta Stone: A Case Study

SAMR Model

The SAMR Model proposed by Puentedura (2006) reflects the degree to which technology integration is successful in a given context; hence, harnessing the full technological capabilities of Rosetta Stone in the classroom context for an optimal student experience (Belghmi, Habiballah, et al., 2024; Blundell et al., 2022). Substitution, Augmentation, Modification, and Redefinition (SAMR) Model redefines learning in four different levels. The Substitution level is where the introduction of technology takes place, while Augmentation is about enhancing traditional learning modes with technology, bringing functional and concrete improvement. Modification restructures tasks to leverage the potential Rosetta Stone has to offer. Lastly, Redefinition is about unlocking new modes of learning while going beyond the traditional methods. Substitution, which is the first level in the SAMR model integration, stands for replacing traditional tools and textbooks with technological alternatives such as digital textbooks and manuals. Furthermore, Augmentation takes it a step further by enhancing traditional practices while incorporating technology-fused alternatives, such as the use of interactive media to widen and deepen students' understanding of the language courses. Modification, however, measures the shift in how technology is incorporated into language learning, supported by collaborative online projects or assignments. Finally, Redefinition symbolizes the epitome of technological transformation, calling for new modes of teaching and learning, transcending traditional methods.

PICRAT Model

The PICRAT model comprises six components (Wang, 2023). On the one hand, the model is developed around learner engagement, which is divided into three types: Passive, Interactive, and Creative (PIC). Passive learners, who rely on teachers for knowledge and resources, also consume digital learning content without interaction. The interactive type of learners not only consume knowledge provided by instructors but also participate in knowledge creation and dissemination through online quizzes and activities. Finally, the creative learners transcend the online classroom's boundaries to discover new realms of knowledge and explore uncharted territories; this type of learner harnesses the knowledge shared by the instructor and the learning platform to create original work using the technology at hand. The students launch new projects and collaborate. On the other hand, the remaining category deals with the teacher's use of modern technology in education and branches into three categories: Replacement, Amplification, and Transformation (RAT). Replacement stands for technology taking over traditional teaching methods, introducing virtual aids into the entire teaching-learning experience. It does not interfere with how teachers teach or carry out classes, but rather with what they share with students. Amplification, however, uses technology and integrates it into teaching methods, providing students with ample resources to work with. Finally, transformation, which completely reshapes education and unlocks new modes of teaching such as online collaboration, augmented reality, and flipped classrooms (Wang, 2023).

While a number of studies addressed technology and LMS integration in higher education (Erdem Çavdar & Barin, 2025; Wu et al., 2025), little has been mentioned about students' perceptions of the Rosetta Stone platform, especially in the Moroccan context. This study, henceforth, addresses that gap by examining students' language progression through the app in undergraduate levels at a Moroccan limited-access higher education institution.

Methodology

The current paper analyses the impact of Rosetta Stone on students' knowledge and evaluates knowledge progression during the fall semester of 2024–2025. It uses a one-group quasi-experimental pretest-posttest design, as random assignment was not feasible due to institutional constraints. The study collects quantitative data at two different time frames through the Rosetta Stone platform's testing mechanism, where students take a placement test that evaluates learning outcomes using the Rosetta Stone grading system.

Sampling Strategy

The study follows a full-cohort sampling approach. Furthermore, random assignment was not feasible as access was only granted to one cohort within the institution. While the sample size of 33 participants limits the generalizability of the results, it is consistent with the exploratory nature of the study.

Setting and Timeframe

The study was conducted at the Higher School of Technology in Fes, Morocco. Data collection lasted for a semester during the 2024–2025 academic year. Furthermore, Students attended one session per week throughout the semester. The pretest was administered at the beginning of the semester before any exposure to the platform, and the posttest was administered at the end of the semester after sustained weekly use. Both testing sessions were carried out under standardized conditions on the same platform to preserve measurement consistency.

Participants

Participants in the current study are randomly selected from a pool of options, with each cohort having the same chance and statistical probability of participating in the study. The cohort selected is a group of 33 students in their last year in a three-year logistics program. This sampling procedure was preferred as researchers had direct access to participants while delivering both in-person and online classes to the students during the 2024-2025 fall semester.

Demographics

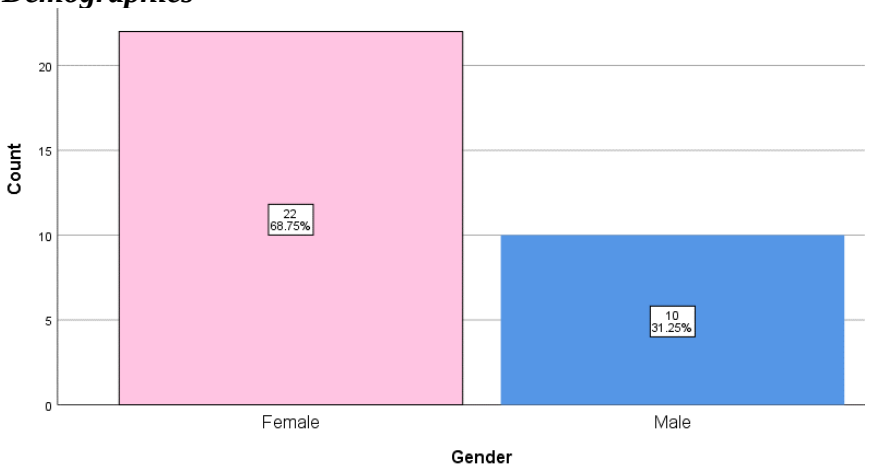


Figure 1. Gender distribution of the participants of the study

The table above shows the respondents by gender. Of the 33 students who participated in the study, 68.8% were female (22 on average), and 31.3% were male (10 in total), indicating a female-majority sample. This distribution is not biased; rather, it mirrors the current gender composition commonly observed in higher-education classrooms within the Moroccan public system, where female students often outnumber their male peers.

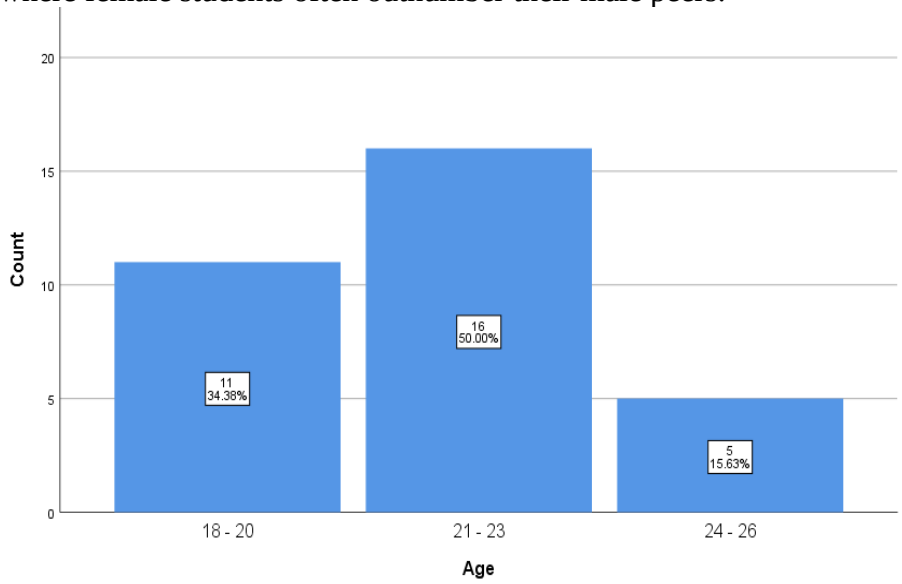


Figure 2. Age distribution of the participants of the study

In terms of age distribution, the sample reflects the diversity found among university students in Morocco. Half of the participants (50%, n = 16) are in the 21 to 23 years old age category, which reflects the expected age of students in their final undergraduate year. An additional 34.38% (n = 11) of students are between 18 and 20 years old, representing students who progressed directly through their studies without interruption. A smaller proportion, 15.63% (n = 5), were aged 24–26, a distribution consistent with students who may have changed disciplines or experienced a delayed academic trajectory. This variability is therefore natural and informative of the broader patterns observed in Moroccan higher education.

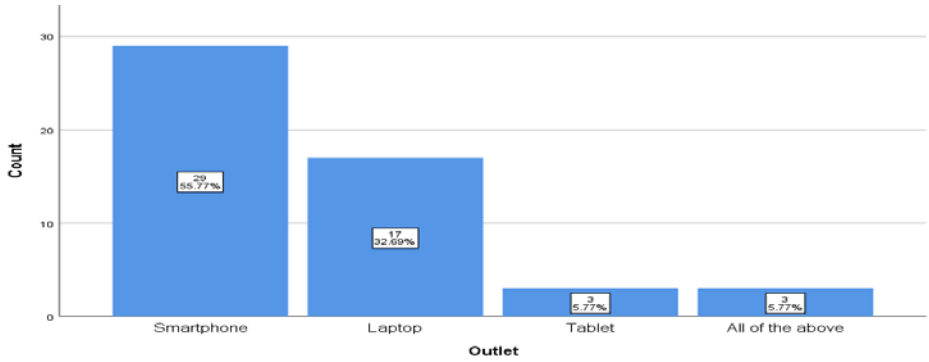


Figure 3. *Preferred outlet distribution among participants of the study*

The data indicate that smartphones are the dominant learning outlet, used by 55.77% (n = 29) of participants. This reliance on mobile devices is associated with trends in Moroccan and worldwide higher education, where smartphones remain the most accessible tool among university students. Laptops are the second most common device (32.69%, n = 17), reflecting their continued importance for academic tasks that require typing, specialised software or preparing presentations. A small number of students reported using tablets (5.77%, n = 3), while a similar percentage indicated access to all three outlets (5.77%, n = 3). Taken together, these results highlight a mobile-first digital environment, with laptop use remaining significant but secondary.

Research Instruments

To achieve triangulation, data were collected using two instruments: a student questionnaire and the Rosetta Stone placement and progress tests. The questionnaire was distributed to students to gather information about their attitudes and perceptions regarding the use of the Rosetta Stone platform. While Students' placement test and progress test results were collected directly from the platform after obtaining informed consent from students to use both the survey data and the Rosetta Stone scores anonymously and confidentially. The interval duration between the placement test and the progress test was three months.

Scale Description

The Rosetta Stone placement test is a computer-adaptive assessment designed to determine a learner's proficiency level prior to instruction and to track progression over time. The test evaluates four core language competencies, listening comprehension, reading comprehension, vocabulary, and grammar, through a combination of multiple-choice items, sentence-completion tasks, and audio-based questions. Item difficulty adapts to the learner's responses, allowing the test to deduce an accurate proficiency estimate. Scores are reported on a scale aligned with the Common European Framework of Reference for Languages (CEFR), ranging from A1 (Beginner) through C2 (Proficient), and are mapped onto Rosetta Stone's internal unit-and-lesson structure to recommend an appropriate starting point in the curriculum.

Validity and Reliability of the Instrument

The Rosetta Stone placement test has been validated by Rosetta Stone through internal psychometric studies and is widely used in academic and corporate language-training contexts, which supports its content and construct validity. In the context of the present study, the internal consistency of the instrument was verified using Cronbach's Alpha (as per the table below), which yielded a value of 0.755 across the 17-item scale, indicating satisfactory reliability. Construct validity within the study sample was further examined through the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (KMO = 0.721) and Bartlett's Test of Sphericity ($\chi^2 = 163.978$, df = 66, $p < .001$), both of which confirmed that the data were suitable for the intended analyses.

Reliability

Table 1. *Cronbach's alpha test results for the instrument's reliability*

Reliability Statistics	
Cronbach's Alpha	N of Items
.755	17

The Cronbach's Alpha value of 0.755 indicates that the 17-item scale demonstrates satisfactory internal consistency. Hence, the instrument is reliable.

Validity

Table 2. *KMO and Bartlett's test for instrument validity*

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.721
Bartlett's Test of Sphericity	Approx. Chi-Square	163.978
	df	66
	Sig.	.000

The KMO value of 0.721 indicates adequate and suitable data for factor analysis and proper sampling adequacy. Moreover, $p < 0.05$ indicates that the validity test is significant. Overall, the variables are correlated enough to proceed with factor analysis.

Procedures

The study was conducted through several but concurrent stages. First, the literature review was drafted to guide the study using theoretical frameworks. Second, the research instruments were prepared and validated using SPSS (Statistical Package for the Social Sciences). Later, the methodology chapter was methodically designed to address the specific Moroccan educational context, taking into account the characteristics of Moroccan students, their learning environment, and their exposure to digital language-learning platforms. Once the data were collected, responses were coded and analysed using SPSS to examine patterns and correlations among the datasets. Finally, the obtained results were interpreted and matched with the research questions and the overall research objectives.

Research Questions

RQ1: What are students' perceptions and attitudes towards the use of Rosetta Stone?
RQ2: To what extent does the use of Rosetta Stone during the semester influence students' English language proficiency scores?
RQ3: How successful is Rosetta Stone in enhancing students' English level?

Ethical Considerations

This study was conducted in compliance with the following ethical considerations:

- Informed consent,
- Anonymity of participants,
- Right to withdraw.

Results

This section presents the findings related to RQ1, which examined students' perceptions and attitudes toward the use of the Rosetta Stone platform in English learning. Four items from the questionnaire directly correlated with perceptions of interest, motivation, skill development, and overall improvement. Descriptive statistics for these items are reported in Table 2.

Perceptions and Attitudes

Table 3. Students' perceptions and attitudes toward the use of the Rosetta Stone platform in English learning

	Mean	N	Std. Deviation
2. Using the Rosetta Stone platform has increased my interest in learning English.	3.52	33	1.253
3. The Rosetta Stone platform helps improve my listening and speaking skills.	3.52	33	1.176
8. Using the Rosetta Stone platform increases my motivation to learn languages, especially English.	3.76	33	1.119
11. The Rosetta Stone platform helps me improve my English skills.	3.45	33	1.175

The table above presents students' perceptions and attitudes toward the use of the Rosetta Stone platform for English learning and addresses RQ1. The average of the four items means is 3.5, which falls between "neutral" and "I agree" on the 5-point Likert scale. This indicates that students have a positive attitude toward the platform. Rosetta Stone, then, has a stronger impact on motivation, while its impact on interest and overall improvement is slightly less pronounced but still positive. The standard deviations (1.1-1.2) indicate that not all students think alike about the platform; some found it beneficial, while others were less enthusiastic.

Justification for averaging Likert items

Averaging the four items is justified on both conceptual and statistical grounds. Conceptually, the items measure a single underlying construct where students' positive perception of Rosetta Stone's contribute to their English learning experience, covering closely related dimensions of interest, motivation, and perceived skill improvement.

Rosetta Stone Performance Impact

Results for this section were obtained after conducting a pre-test vs post-test comparison and a statistically significant paired sample t-test.

Table 4. *Paired Samples Test Results*

		Paired Differences					t	df	Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				One-Sided p	Two-Sided p
					Lower	Upper				
POST-TEST - PRE-TEST		-.182	.950	.165	-.519	.155	-1.099	32	.140	.280

ISSN: 2229-9327

The table shows the paired-samples test results, conducted to compare students' pre-test and post-test scores after using the Rosetta Stone platform for one semester. The p-value (.280) is greater than the conventional significance level of .05, indicating that there is no statistically significant difference between students' scores before and after using the platform. Although the post-test score is slightly lower than the pre-test score, the difference is small and hence not statistically significant.

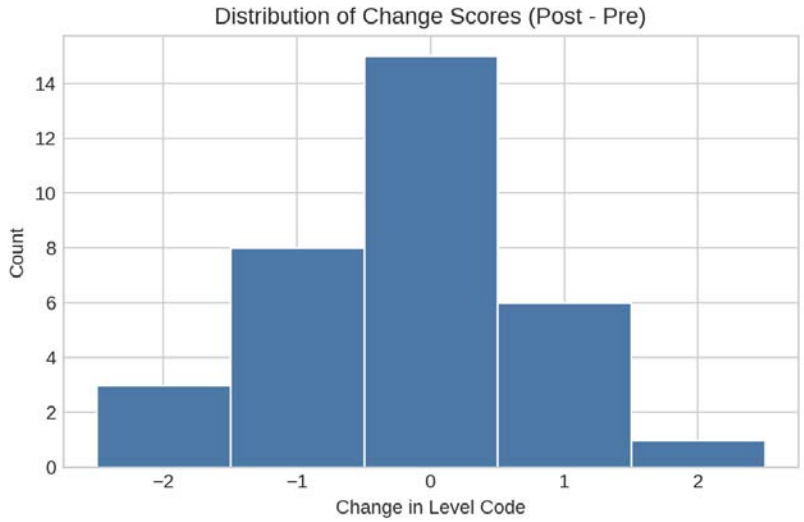


Figure 4. Distribution of change scores across pre-test and post-test stages

The above bar graph represents CEFR change distribution scores across the pre-test and post-test stages. It indicates that seven learners demonstrated improvement over the semester. Of these, six learners advanced by one CEFR level, while one learner moved with a two-level increase. In contrast, fifteen learners showed no change in their CEFR level. A decline is also observed among some participants: eight learners decreased by one CEFR level, and three learners experienced a three-level decrease. Overall, the pattern suggests significant variety in learners' progression, with a minority showing meaningful gains, a large proportion remaining stable, and a smaller group demonstrating declines at varying magnitudes.

Long-Term Learning Outcomes

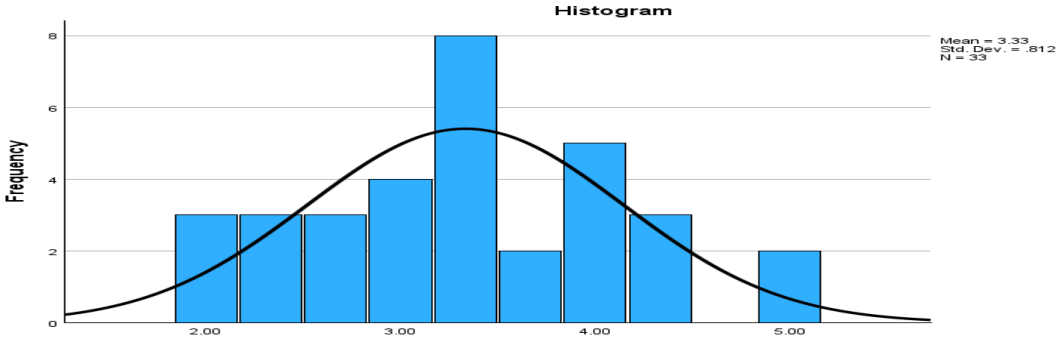


Figure 5. Histogram representing Rosetta stone's role in students' overall improvement, effectiveness, and engagement

The histogram above shows that the data is normally distributed, with the bell curve being slightly skewed to the left. The mean of 3.33 indicates a position relatively above neutral, suggesting a positive response, and the standard deviation of .812 shows that scores are clustered around the mean, with minor variation. Overall, students expressed a positive to neutral stance regarding improvement, effectiveness, and engagement with the Rosetta Stone platform.

Discussion of Findings

Answering RQ1 "What are students' perceptions and attitudes towards the use of Rosetta Stone?", this study revealed that students generally showed moderately positive attitudes toward using Rosetta Stone for English learning, indicating increased motivation and engagement. Recent studies reported similar findings. Babacan (2023) surveyed Geography students' (N=203) perceptions towards technology-assisted English learning and deduced that students had positive attitudes towards how technology impacted their English learning.

However, for RQ2, while the platform increased learners' interest, it proved less effective at improving language skills, with no statistically significant difference observed between the pre-test and post-test. The use of different tools countersupported these findings (Babacan, 2023; Belghmi, El Hilali, et al., 2024). In partial agreement with our findings, Peltola et al.'s (2025) study reported that digital tools were effective in vocabulary development for 86 EFL learners. Although the platform supported vocabulary and listening comprehension practice, its nature may not have fostered meaningful progress without additional classroom support. Students remained sceptical, and some even expressed lower satisfaction with its overall effectiveness in improving their language proficiency. While a meta-analysis of student engagement in online language courses showed that engagement is shaped by self-directed learning, collaboration, and the role of the teacher (Peltola et al., 2025), our study showed that the app helped students' interest peak in digital environments.

Overall, Rosetta Stone is perceived as an effective supplement by students rather than a substitute for traditional language learning methods. This addresses RQ3 by highlighting the need for approaches that combine technology and interactive learning to improve language outcomes.

Conclusion

The objective of this paper is to examine perceptions and highlight the challenges faced by third-year logistics students at the Higher School of Technology in Fes, Morocco, as they used the Rosetta Stone platform for one semester. This study focused on three elements: perceptions and attitudes, the impact of Rosetta Stone performance, and long-term learning outcomes. Findings from this study revealed that students generally had positive attitudes toward the platform, particularly toward its motivational aspects. However, results also indicated that the platform had no measurable impact on language performance. This shows that Rosetta Stone cannot replace the instructor's role in monitoring and guidance. Therefore, integrating such platforms into blended approaches appears pivotal to maximise their benefits.

This paper is limited by its smaller sample size and shorter time frame. To generalise the findings, future studies should consider recruiting a larger, more diverse sample over an extended period. Finally, this study opens the door to future research on the pedagogical and technological conditions needed to improve the efficiency of digital tools in language learning.

Funding: Not Applicable
Acknowledgments: We are grateful to the journal's editorial board and reviewers for their invaluable comments.
Conflicts of Interest: The authors declare no conflicts of interest.
Authenticity: This manuscript is an original work.
Artificial Intelligence Statement: No AI was used in writing this article.

About the authors:

Dr. Mehdi BELGHMI is a Full-time English language instructor at the UM6P language center, Benguerir. The researcher specializes in the intersection of educational technology and pedagogical solutions for mass education challenges. His research explores the potential of E-learning to provide sustainable access to quality and affordable education.
ORCid ID: https://orcid.org/0009-0007-0781-8373

Dr. Salma HABIBALLAH is a PhD holder in applied linguistics. Her research interests include examining the effectiveness of online education as perceived by both teachers and students, as well as discovering the ways different members of educational boards use to enhance their digital learning experiences. ORCid ID: https://orcid.org/0000-0002-4122-7477

El Mehdi OUSSELLIM is a fourth-year PhD student at the Faculty of Letters and Human Sciences, Cadi Ayyad University. He specializes in syntax and is currently conducting research on verbal complementizers within the framework of the Minimalist Program. His research interests include syntax, education and technology, and critical discourse analysis. affordances. The researcher is also keen on doing research in leadership studies and has a special appreciation for virtual leadership. ORCid ID: https://orcid.org/0009-0003-4477-5430

References

Babacan, Ş. (2023). Mobile Assisted Language Learning (Mall): Learning Attitudes of Geography Students Towards Mobile English Language Learning. *International Online Journal of Education & Teaching*, *10*(4). https://doi.org/https://iojet.org/index.php/IOJET/article/view/1974

Belghmi, M., El Hilali, E., & Belfakir, L. (2024). Students' Attitudes Towards E-learning: BA Students at the University of Belgrade as a Case Study. *European Journal of Education and Pedagogy*, *5*(4), 11–17. https://doi.org/https://doi.org/10.24018/ejedu.2024.5.4.851

Belghmi, M., Habiballah, S., & Belfakir, L. (2024). Enhancing Students' Satisfaction through Asynchronous Blended Learning in Higher Education: PhD Students at the University of Sidi Mohamed Ben Abdellah as a Case Study. *International Journal of English Language Studies*, *6*(3), 70–82. https://doi.org/https://doi.org/10.32996/ijels.2024.6.3.10

Blundell, C. N., Mukherjee, M., & Nykvist, S. (2022). A scoping review of the application of the SAMR model in research. *Computers and Education Open*, *3*, 100093. https://doi.org/https://doi.org/10.1016/j.caeo.2022.100093

Dandu, G., Charyulu, G. M., & Kumari, K. L. (2024). AI-driven language learning: The impact of Rosetta Stone on ESL students' speaking proficiency and self-control. *Rupkatha Journal*

on Interdisciplinary Studies in Humanities, *16*(4). https://doi.org/https://doi.org/10.21659/rupkatha.v16n4.09

Erdem Çavdar, Ö., & Barin, M. (2025). Using Moodle as an Online Learning Medium for Academic Writing Skills: Students' Perceptions. *Arab World English Journal (AWEJ) Special Issue on CALL*, (11). https://doi.org/https://dx.doi.org/10.24093/awej/call11.19

Kakumanu, L. (2025). Harnessing AI in CALL: Theories, Pedagogies, and Applications for Adult Language Learning. *CALL: Theories, Pedagogies, and Applications for Adult Language Learning (November 06, 2025). Arab World English Journal (AWEJ) Volume, 16*. https://doi.org/https://dx.doi.org/10.24093/awej/vol16no3.8

Kessler, M., Ferronato, T., Torres Centurion, M. J., Akay, M., & Kim, J. (2025). Mobile-assisted language learning with commercial apps: A focused methodological review of quantitative/mixed methods research and ethics. *Research Methods in Applied Linguistics*, *4*(1). https://doi.org/10.1016/j.rmal.2025.100186

Marhraoui, M., Mhamdi, K., Salhi, M. A., Chniete, I., & Kaddouri, M. (2025). Exploring The Determinants Of Students' Motivation To Use Foreign Language Learning Platform (The Case Of Rosetta Stone). *E-Learning and Smart Engineering Systems (ELSES 2024)*, 726–741. https://doi.org/https://doi.org/10.2991/978-2-38476-408-2_53

Ouahbi, S. (2026). Inclusive Language Learning in the Age of Artificial Intelligence: A Case Analysis of Rosetta Stone. *International Journal of Linguistics and Translation Studies*, *7*(1), 97–110. https://doi.org/https://doi.org/10.36892/ijlts.v7i1.667

Peltola, K., Veermans, M., Routarinne, S., & Jaaksola, S. (2025). Engaging post-compulsory education students in online language courses: a systematic review. *Journal of Computers in Education*, 1–47. https://doi.org/https://doi.org/10.1007/s40692-025-00359-w

Prystiananta, N. C., Noviyanti, A. I., & Udhiyanasari, K. Y. (2025). The Impact of Assistive Technologies in Enhancing English Learning Outcomes for Students with Disabilities: A Meta-Narrative Analysis. *World Journal of English Language*, *15*(2), 296–308. https://doi.org/10.5430/wjel.v15n2p296

Puentedura, R. (2006). *Transformation, technology, and education*. http://hippasus.com/resources/tte/

Singh, M. S. X. P. (2015). The history and the current status of computer assisted language learning. *Journal of English Language Teaching*, *57*(5), 25–35. https://doi.org/https://doi.org/10.66121/03q00607

Syaifudin, M., & Rensburg, H. van. (2018). Considerations for the development of computer-assisted language learning (call) teacher training course: a practical experience from a call course development in Indonesia. *Arab World English Journal (AWEJ)*, (4), 84–108. https://doi.org/https://dx.doi.org/10.24093/awej/call4.7

Wang, L. (2023). Adoption of the PICRAT model to guide the integration of innovative technologies in the teaching of a linguistics course. *Sustainability*, *15*(5), 3886. https://doi.org/https://doi.org/10.3390/su15053886

Wu, M., Norman, H., Hafizah Adnan, N., & Hu, Y. (2025). A Ten-Year Systematic Literature Review of English E-Learning Education (2014–2024). *Arab World English Journal (AWEJ) Volume, 16*. https://doi.org/https://dx.doi.org/10.24093/awej/vol16no4.9