Revista Médica ELECTRÓNICA
Rev Méd Electrón
v. 47. 2025
ISSN: 1684-1824
Artículo de investigación

Methodological strategy to improve English in university students of health sciences

Estrategia metodológica para perfeccionar el inglés en estudiantes universitarios en ciencias de la salud

Daniel Augusto Moreira-Cáceres[1*] https://orcid.org/0009-0008-3591-7667

[1] Universidad de Guayaquil. Guayaquil, Ecuador.

[*] Corresponding author: daniel.moreirac@ug.edu.ec

ABSTRACT

Introduction: This methodological strategy is a set of approaches, techniques, and resources designed to improve language skills effectively and contextually in a specific field of study. However, it must be adapted to the needs, possibilities, and characteristics of the students from both socio-economic and cultural perspectives.

Objective: To evaluate the impact of a linguistic competence development and enhancement program in English for health sciences students.

Methods: A representative sample of university health students (n=250) from the University of Guayaquil was studied. Students underwent a methodological strategy for six months, measuring their performance using the Common European Framework of Reference for language levels (A1-C1) with level-based assessment criteria.

Results: There is evidence of an increase in Common European Framework of Reference for language levels (2 to 3 points), a satisfactory performance in reading and understanding of scientific articles (5.5 to 8.2 points; +2.7 points), and an improvement in confidence and fluency in oral communication (4.8 to 7.6 average points; +2.8 points).

Conclusions: The implementation of a specialized English training program for health sciences students can have a positive impact on their linguistic skills, improving their ability to read scientific sources, communicate in clinical settings, and advance in Common European Framework of Reference for language levels. However, future research could refine the applied methods and explore complementary strategies to optimize English learning in academic and professional environments.

Key words: methodological strategy, improvement, English, university students, health.

RESUMEN

Introducción: Esta estrategia metodológica es un conjunto de enfoques, técnicas y recursos diseñados para mejorar las habilidades en el idioma de manera efectiva y contextualizada a un campo de estudio determinado, pero la misma tiene que ser adaptada a las necesidades, posibilidades y características del alumnado, tanto desde el punto de vista socioeconómico como cultural.

Objetivo: Evaluar el impacto de un programa de desarrollo y perfeccionamiento de competencias lingüísticas en inglés para estudiantes de ciencias de la salud.

Métodos: Se estudia una muestra representativa de estudiantes universitarios de la salud (n = 250) de la Universidad de Guayaquil. Los estudiantes fueron sometidos a una estrategia metodológica durante seis meses, midiendo su rendimiento mediante el Marco Común Europeo de Referencia (A1-C1), con criterios de evaluación por niveles.

Resultados: Se evidencia un incremento en niveles Marco Común Europeo de Referencia (2 a 3 puntos), un desempeño en lectura y comprensión de artículos científicos satisfactorio (5,5 a 8,2 puntos; +2,7 puntos), y una mejora en la confianza y fluidez en comunicación oral (4,8 a 7,6 puntos promedio; +2,8 puntos).

Conclusiones: La implementación de un programa de formación en inglés especializado para estudiantes de ciencias de la salud puede tener un impacto positivo en sus competencias lingüísticas, mejorando su capacidad para leer fuentes científicas, comunicarse en contextos clínicos y avanzar en los niveles del Marco Común Europeo de Referencia. Sin embargo, futuras investigaciones podrán refinar los métodos empleados y explorar estrategias complementarias para optimizar el aprendizaje del inglés en entornos académicos y profesionales.

Palabras clave: estrategia metodológica, perfeccionamiento, inglés, universitarios, salud.

Recibed: 2025/03/09.

Acepted: 2025/05/02.

INTRODUCTION

The mastery of the English language has become an essential skill for healthcare professionals because of the increasing globalization of medical knowledge and the predominance of English in scientific literature[1,2]. The ability to comprehend scientific articles, to communicate effectively in international clinical settings, and to accurately use technical terminology is crucial to ensuring optimal professional performance[3]. However, in many non-English-speaking countries, health science students face significant barriers in learning English[4], which limits their access to up-to-date information and reduces their opportunities for training and international collaboration. This is partly because many intervention programs fail to consider numerous significantly influential variables, such as different multiple intelligences and the varying psychological states of each student, as well as the differing effects that various teaching-learning models may have on them.[5-7]

Several studies have highlighted the importance of English in the education and professional performance of healthcare workers. English for Specific Purposes (ESP) instruction must be tailored to students' needs and focused on the language used in professional contexts[8]. In the field of medical sciences, Rodríguez, et al.[9]. emphasize that the comprehension and production of academic texts in English are critical skills for professional development and continuous updating in the medical field. Likewise, Martínez Quintana[10] points out that effective foreign language learning requires significant exposure to the language in relevant communicative contexts.

Despite the profuse evidence on the relevance of English in the training of healthcare professionals, academic programs often provide limited or generalized language instruction[11], lacking a clear focus on the specific challenges faced by medical science students. This gap in education underscores the need for specialized programs that address students' real needs and provide them with linguistic tools applicable to their future professional performance.[12]

For university students in the healthcare field, proficiency in English not only enhances their access to updated information but also increases their academic and professional opportunities[13], a competitive advantage that can be optimized through new technologies[14,15], as well as the effective use of contemporary teaching strategies, methods, paradigms, and models[16-18], in alignment with new educational perspectives aimed at promoting health as a science[19,20], However, many students struggle with language learning due to the lack of methodologies tailored to their specific needs.

METHODS

Participants

From the total student population meeting the inclusion criteria described below, a representative sample of 250 students from various health science-related programs was selected using an unrestricted random sampling method (N=710). All participants were enrolled at the University of Guayaquil, Republic of Ecuador (Confidence level:

95%; Margin of error: 5%). The implementation period of the research spanned from August 2024 to February 2025 (including the preliminary research report design phase).

The inclusion criteria for classifying the study population included:

a) Being a student in programs such as Medicine, Nursing, Dentistry, Pharmacy, Physiotherapy, Biotechnology, among others, directly related to health sciences at the University of Guayaquil, preferably in intermediate or advanced years of study (second year or higher), as they already have exposure to technical terminology; b) Having at least an A2 level according to the Common European Framework of Reference for Languages (CEFR) to ensure a minimum foundation for improving their skills in clinical contexts; c) Having had or currently having exposure to scientific articles, books, or studies in English as part of their academic training; d) Being motivated to enhance their English proficiency in medical terminology, patient communication, and reading scientific literature; e) Committing to complete the study sessions or training program within the established period; f) If the training includes digital tools, participants must have access to the internet and appropriate electronic devices; g) Signing the informed consent form.

Main components of the strategy

1. Initial diagnosis of linguistic competencies:

- Administer a diagnostic test (e.g. CEFR or similar) to assess English proficiency levels (A1-C1).
- Identify students' strengths, weaknesses, and specific needs related to medical terminology and communication skills in healthcare settings.

2. Context-based learning approach:

- Medical Terminology Workshops: Interactive sessions focusing on technical terms and their practical use (case analysis, medical reports, and diagnoses).
- Clinical Role-Plays: Simulations of clinical scenarios such as medical consultations, case presentations, or ethical discussions in English.
- Scientific Article Reading: Incorporation of indexed journal articles in English to develop critical reading skills and expand technical vocabulary.
- Project-Based Learning (PBL):
- Design group projects such as research on diseases, clinical cases, or short essays, including oral and written presentations in English.

3. Integration of digital technologies:

- Interactive Applications: Use tools such as Duolingo, Quizlet, or LingQ to reinforce technical vocabulary.
- Educational Platforms: Introduce resources like PubMed or ResearchGate for reading and analyzing medical literature.
- Telepractice: Connect students with international students or English-speaking professionals to develop intercultural communication skills.

4. Communicative and Collaborative Approach:

- Incorporate group discussions on bioethics, technological advancements, or global health issues, promoting active language use.
- Implement flipped classroom techniques, requiring students to prepare and deliver presentations in English on specific topics, reinforcing oral expression.

5. Partial language immersion:

- Implement an "English-only day" in class once a week, where all interactions and materials are in English.
- Invite international guest speakers or organize seminars in English on relevant health science topics.

6. Continuous evaluation and feedback:

- Use specific rubrics to assess reading, writing, listening, and speaking skills.
- Provide individualized feedback sessions to identify progress and areas for improvement.
- Implementation Timeline.

The strategy will be implemented over an academic semester with weekly activities:

Month 1: Diagnostic assessment and basic terminology workshops.

Months 2-3: Practical activities (role-plays, critical readings).

Month 4: Development and presentation of group projects.

Month 5: Partial immersion practices (seminars and simulations).

Month 6: Final evaluation, feedback, and future recommendations.

Success indicators:

- Improvement in CEFR levels by at least one level (e.g., A2 to B1, B1 to B2).
- Enhanced performance in reading and comprehension of scientific articles in English.
- Increased confidence and fluency in oral communication in clinical contexts.

This methodological strategy aims not only to refine students' English proficiency but also to prepare them for efficient performance in globalized healthcare environments related to their field of specialization.

Instruments

English Diagnostic Test According to CEFR (A1-C1)[23]

Purpose of the Test: This test is designed to assess candidates' English proficiency levels according to the Common European Framework of Reference for Languages (CEFR), covering levels from A1 (basic) to C1 (advanced). Its purpose is to measure linguistic skills in comprehension and production, providing an objective reference for competency levels.

Test Structure: The evaluation consists of four main sections, each aimed at assessing a specific linguistic skill:

a) Listening Comprehension: Duration: 25-30 minutes; Format: Multiple-choice questions, matching exercises, and short-answer questions; Assessment: Ability to understand conversations, announcements, interviews, and speeches according to the evaluated level Comprensión Lectora (Reading):
b) Reading Comprehension: Duration: 30-40 minutes; Format: Reading texts with multiple-choice questions, fill-in-the-blank exercises, and idea-matching tasks; Assessment: Understanding of informative texts, emails, articles, and literary excerpts.
c) Writing Expression: Duration: 40-60 minutes; Format: Writing tasks ranging from short texts to more elaborated essays, depending on the level; Assessment: Coherence, cohesion, grammar, vocabulary, and contextual appropriateness.
d) Speaking Expression: Duration: 10-20 minutes; Format: Interview with an examiner, participation in dialogues, and presentation of a topic; Assessment: Fluency, pronunciation, grammar, and effective communication skills.
e) Evaluation Criteria by Level: Each CEFR level corresponds to specific skills. (Table 1)

Table 1. Evaluation Criteria by Level (CEFR A1-C1)

Level	Description
A1 (Beginner)	Understands basic phrases and communicates in simple situations.
A2 (Basic)	Handles everyday expressions and can participate in simple exchanges.
B1 (Intermediate)	Understands clear texts and engages in conversations on familiar topics.
B2 (Upper Intermediate)	Expresses oneself fluently and understands complex texts.
C1 (Advanced)	Uses the language flexibly and understands extended speeches.

Scoring and Results: The scores obtained in each section are averaged to determine the candidate's level within the A1-C1 range. A detailed report is provided with recommendations to improve linguistic performance.

Test Administration: Modality: Online or in-person; Total Duration: 90-120 minutes; Requirements: Valid identification and access to equipment with audio (for the online modality).

Data analysis

The data collected from the three analysis indicators (Increase in CEFR levels; Performance in reading and understanding scientific articles; Confidence and fluency in oral communication) were subjected to a normality test (Kolmogorov-Smirnov), demonstrating the absence of a normal distribution. Therefore, the Wilcoxon Signed-Rank Test (two related samples), a non-parametric test, was used to compare the before-and-after performance results within the same sample ($p \leq 0.05$).

Similarly, a pivot table designed in Microsoft Excel 2021 was used for data tabulation, and SPSS v26 was employed to calculate the normality test and the aforementioned non-parametric correlational statistic.

RESULTS

Although the analysis was based on median comparisons, the results are presented as means due to the symmetrical data distribution, facilitating interpretation.

Table 2 shows the average values for a sample of 250 students, comparing the success indicators before and after implementing the methodological strategy.

Table 2. Data Comparison

Success Indicators	Final Average (Pretest)	Final Average (Postest)	Average Difference
Increase in CEFR Levels	2.0	3.0	+1.0
Performance in Reading and Comprehension of Scientific Articles (Scale 1-10)	5.5	8.2	+2.7
Confidence and Fluency in Oral Communication (Scale 1-10)	4.8	7.6	+2.8

This table reflects significant progress in the indicators after the implementation of the strategy, with an initial average increase in CEFR levels of 2 to 3 points (Difference: +1 point), an increase in performance in reading and comprehension of scientific articles from an average of 5.5 points to 8.2 points (Difference: +2.7 points), as well as an

increase in confidence and fluency in oral communication from an average of 4.8 points to 7.6 points (Difference: +2.8 points).

On the other hand, when comparing the data, the Wilcoxon Signed-Rank Test reveals significant differences in favor of the post-test, both in the increase in CEFR levels, as well as in the improvement in performance in reading and comprehension of scientific articles and confidence and fluency in oral communication ($p<0.001$).

DISCUSSION

This study evaluated the impact of a program designed to develop and improve English language skills in health science students. It focuses on mastering technical terms, communication skills in clinical contexts, and understanding scientific literature. The results indicate significant improvements in all evaluated indicators ($p<0.001$), which suggests the effectiveness of the implemented methodology.

One of the most relevant findings is the average increase of one level in the Common European Framework of Reference for Languages (CEFR) scale, from 2.0 to 3.0, indicating a substantial advancement in the participants' overall language proficiency. This result is consistent with previous studies that have shown that immersion programs or specialized instruction can accelerate English learning in academic and professional contexts[24]. In particular, the design of the program, based on contextualized learning strategies, may have facilitated the internalization of technical vocabulary and the application of grammatical structures in real-life situations.

Regarding reading and comprehension of scientific articles, students experienced an increase of 2.7 points on a scale from 1 to 10, indicating a significant improvement in their ability to interpret and analyze academic texts in English. This finding is particularly relevant in the field of health sciences, where most of the scientific literature is published in this language[25]. The methodology used, which included guided reading activities and critical analysis of articles, may have been key to this progress. Additionally, exposure to academic discourse structures in English may have contributed to the development of higher-level reading comprehension skills.

In the dimension of confidence and fluency in oral communication, participants reported an increase of 2.8 points on the same scale, suggesting an improvement in their ability to express themselves effectively in clinical and academic settings in English. This result is in line with previous research that highlights the importance of communicative practice in second language learning[26,27]. The inclusion of clinical simulation exercises and the use of structured feedback strategies may have enhanced the students' confidence in interacting in real professional situations.

Despite these advancements, it is important to consider some limitations of the study. Firstly, although the sample of 250 students provides a solid basis for analyzing the results, it cannot be guaranteed that the findings are generalizable to all populations of health science students. Differences in the curriculum, institutional context, and level of exposure to English may influence the program's effectiveness. Additionally, the

program's impact was evaluated in the short term, so it would be advisable to conduct longitudinal studies to determine the sustainability of the observed improvements over time.

Another potential limitation is the lack of a control group, which prevents attributing the advances solely to the intervention implemented. Future research could include more robust experimental designs to establish more precise causal relationships. Moreover, although the evaluation of progress was based on standardized measurements, it would also be useful to complement these data with qualitative analysis exploring students' perceptions of the learning process.

FINAL CONSIDERATIONS

The results of this study indicate that the implementation of a specialized English training program for health sciences students can have a positive impact on their language skills, improving their ability to read scientific literature, communicate in clinical contexts, and progress through the CEFR levels. However, future research could refine the methods used and explore complementary strategies to optimize English learning in academic and professional environments.

REFERENCES

1. Bagiyan AY, Shiryaeva TA, Tikhonova EV, et al. The real value of words: how target language linguistic modelling of foreign language teaching content shapes students' professional identity. Heliyon. 2021;7(3):e06581. DOI: 10.1016/j.heliyon.2021.e06581.

2. Fernández Lorenzo A, Armijos Robles L, Cárdenas Coral F, et al. Elementos clave para perfeccionar la enseñanza del inglés en la Universidad de las Fuerzas Armadas ESPE. Educ Méd Super [Internet]. 2018 [accessed 2025/01/10];32(1). Available from: http://ems.sld.cu/index.php/ems/article/view/1066

3. Ataullayeva M. Communicative competence as a factor of personal and professional development of a future specialist. Журнал академических исследований нового Узбекистана [Internet]. 2024 [accessed 2025/01/10];1(2):17-22. Available from: https://in-academy.uz/index.php/yoitj/article/view/27623

4. Yin L, Ng F, Rutherford-Rojas M, et al. Assessing medical student readiness to navigate language barriers in telehealth: cross-sectional survey study. JMIR Med Educ. 2022;8(3):e36096. DOI: 10.2196/36096.

5. Asqui Luna JE, León Sinche JC, Santillán Obregón RR, et al. Influencia de la teoría de las inteligencias múltiples en la educación física: estudio de casos. Rev Cubana Invest Bioméd [Internet]. 2017 [accessed 2025/01/10];36(3). Available from: http://scielo.sld.cu/scielo.php?pid=S0864-03002017000300012&script=sci_arttext&tlng=pt

6. Castañeda Sáenz KA, Calero Morales S, Romero Frómeta E, et al. Estado anímico en el tiempo libre de estudiantes que inician y culminan la Universidad. Rev Cubana Inv Bioméd [Internet]. 2018 [accessed 2025/01/10];37(2). Available from: https://revibiomedica.sld.cu/index.php/ibi/article/view/50

7. Pacheco E, Villafuerte-Holguín J, López JC. Physical activity and motivation for learning English as a foreign language in young children in Ecuador. Retos. 2022;44:988-98. DOI: 10.47197/retos.v44i0.90137.

8. Mayedo Núñez Y, Rodríguez Peña JC, de la Torre Rodríguez E, et al. Abordaje histórico del proceso enseñanza-aprendizaje de Inglés con Fines Específicos en la carrera de Estomatología. Rev Cubana Estomatol [Internet]. 2021 [accessed 2025/01/10];58(2). Available from: http://scielo.sld.cu/scielo.php?pid=S0034-75072021000200017&script=sci_arttext&tlng=pt

9. Rodríguez Naliet A, Alpízar León YP, García Hernández G. Importancia del idioma Inglés en el campo de la Medicina. Medicentro Electrónica [Internet]. 2020 [accessed 2025/01/10];24(2):413-21. Available from: http://scielo.sld.cu/scielo.php?pid=S1029-30432020000200413&script=sci_arttext&tlng=pt

10. Martínez Quintana J. Enfoque basado en tareas para el aprendizaje de lenguas extranjeras. Revista Varela [Internet]. 2020 [accessed 2025/01/10];20(56):204-17. Available from: https://revistavarela.uclv.edu.cu/index.php/rv/article/view/23

11. Hummel KM. Introducing second language acquisition: Perspectives and practices. 2nd ed. UK: John Wiley & Sons; 2021.

12. Cazar Costales SN, Cazar Costales SS, Guijarro Paguay SL. La enseñanza del Inglés en la Educación Superior latinoamericana: Una perspectiva actual. Imaginario Soc [Internet]. 2023 [accessed 2025/01/10];6(1). Available from: https://revista-imaginariosocial.com/index.php/es/article/view/97/212

13. Getie AS. Factors affecting the attitudes of students towards learning English as a foreign language. Cogent Educ. 2020;7(1):1738184. DOI: 10.1080/2331186X.2020.1738184.

14. Sagarra-Romero L, Ruidiaz Peña M, Monroy Antón A, et al. ithlete Heart Rate Variability app: knowing when to train. Br J Sports Med. 2017;51(18). DOI: 10.1136/bjsports-2016-097303.

15. Maican MA, Cocoradă E. Online foreign language learning in higher education and its correlates during the COVID-19 pandemic. Sustainability. 2021;13(2):781. DOI: 10.3390/su13020781.

16. Game Mendoza KM, Vinueza Burgos GdC, Icaza Rivera DP, et al. Efectos de las estrategias colaborativas en el proceso académico de enseñanza-aprendizaje de voleibolistas prejuveniles. Retos. 2024;61:1172-83. DOI: 10.47197/retos.v61.109363.

17. Monroy Antón A, Calero Morales S, Fernández Concepción RR. Los programas de actividad física para combatir la obesidad y el sobrepeso en adolescentes. Rev Cubana Pediatr [Internet]. 2018 [accessed 2025/01/10];90(3):1-9. Available from: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0034-75312018000300016

18. Calero-Morales S, Vinueza-Burgos GdC, Yance-Carvajal CL, et al. Gross motor development in preschoolers through conductivist and contructivist physical-recreational activities: Comparative research. Sports. 2023;11(3):61. DOI: 10.3390/sports11030061.

19. Rodríguez Ángel F, Páez Granja RE, Altamirano Vaca EJ, et al. Nuevas perspectivas educativas orientadas a la promoción de la salud. Educ Méd Super [Internet]. 2018 [accessed 2025/01/10];31(4). Available from: https://ems.sld.cu/index.php/ems/article/view/1366

20. Rodríguez Torres AF, Naranjo Munive JE, Merino Alberca WV, et al. Adaptaciones curriculares en la enseñanza para alumnos con problemas respiratorios. Rev cuba med gen integr [Internet]. 2018 [accessed 2025/01/10];33(4). Available from: https://revmgi.sld.cu/index.php/mgi/article/view/717

21. Ramírez Cañas A. Inclusión de Juegos Serios y Procesamiento del Lenguaje Natural en el Aprendizaje Basado en Tareas de Lenguas Extranjeras [thesis in Internet]. Medellín: Tecnológico de Antioquia Institución Universitaria; 2022 [accessed 2025/01/10]. Available from: https://dspace.tdea.edu.co/handle/tdea/1952

22. Llorente Zambrano EA, Vélez Cagua MB, Montilla Pacheco AJ, et al. Estrategias de aprendizaje para mejorar la competencia lingüística del idioma inglés. Latitud Cero [Internet]. 2024 [accessed 2025/01/10];1(1). Available from: https://revistas.uleam.edu.ec/index.php/latitud_cero/article/view/642

23. Fan J, Yan X. Assessing speaking proficiency: a narrative review of speaking assessment research within the argument-based validation framework. Front psychol. 2020;11:330. DOI: 10.3389/fpsyg.2020.00330.

24. Bequis-Lacera M, Parrado Castillo L, Ruíz Romero M, et al. Dificultades del Aprendizaje de una Segunda Lengua en Universitarios de salud. EDU REVIEW. 2024;12(2):145-68. DOI: 10.62701/revedu.v12.5413.

25. Ortiz-Núñez R. Análisis métrico de la producción científica sobre COVID-19 en SCOPUS. Rev cuba inf cienc salud [Internet]. 2020 [accessed 2025/01/10];31(3). Available from: http://scielo.sld.cu/scielo.php?pid=S2307-21132020000300002&script=sci_arttext&tlng=pt

26. Haro Calero RD, Yépez Pullopaxi GC. Didáctica de la enseñanza de una segunda lengua: un enfoque innovador para el inglés. Conrado [Internet]. 2023 [accessed 2025/01/10];19(93):582-90. Available from: http://scielo.sld.cu/scielo.php?pid=S1990-86442023000400582&script=sci_arttext&tlng=en

27. Tursunovich RI. Development of communicative competence in teaching foreign language for professional purposes. Int Conf Scie Rese Natu Soc Sci [Internet]. 2023 [accessed 2025/01/10];2(1):26-33. Available from: https://econferenceseries.com/index.php/srnss/article/view/759

Responsible editor: Silvio Soler-Cárdenas.

HOW TO CITED THIS ARTICLE

Moreira-Cáceres DA. Methodological strategy to improve English in university students of health sciences. Rev Méd Electrón [Internet]. 2025. [cited: date of access];47:e6461. Available from: http://www.revmedicaelectronica.sld.cu/index.php/rme/article/view/6461/6225