

Exploring the Use of Virtual Learning Environments and Automated Essay Scoring Systems for Enhancing Writing Skills in Foreign Language Education: A Focus on IntelliMetric

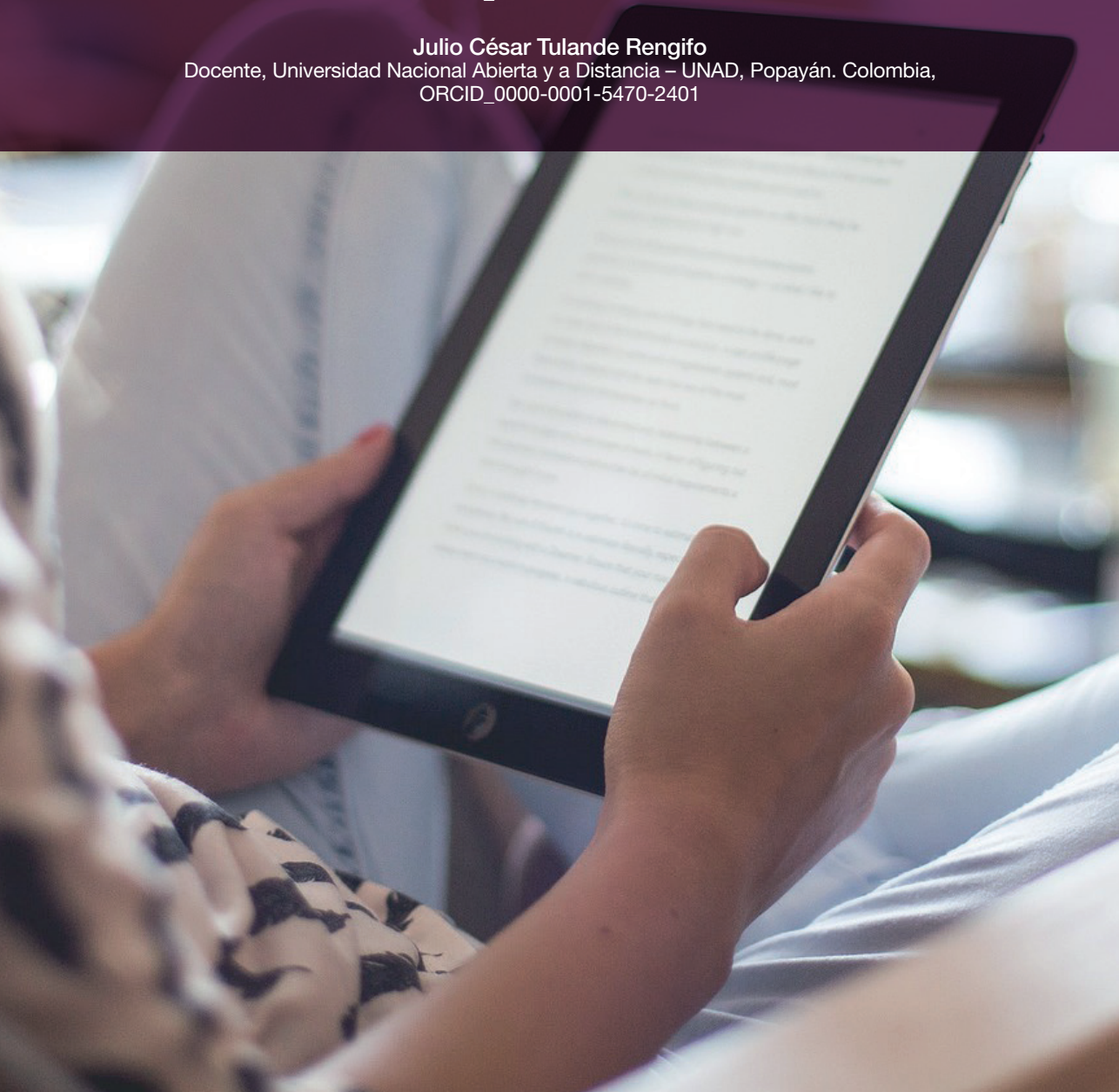
Exploración del uso de entornos virtuales de aprendizaje y sistemas automatizados de calificación de ensayos para mejorar las habilidades de escritura en la enseñanza de lenguas extranjeras: Enfoque en IntelliMetric

Milly Andrea Muñoz Fandiño

Docente, Universidad Nacional Abierta y a Distancia – UNAD, Colombia.
ORCID_0000-0002-0952-6258

Julio César Tulande Rengifo

Docente, Universidad Nacional Abierta y a Distancia – UNAD, Popayán, Colombia,
ORCID_0000-0001-5470-2401



ABSTRACT

Strong writing skills are essential for foreign language education, especially for students pursuing a bachelor's degree in foreign languages with emphasis in English (LiLEI in Spanish). However, teaching writing to students can be challenging due to various factors such as class size, text length, and availability of feedback. This article proposes an exploration of the IntelliMetric automated essay scoring system, which provides immediate feedback to students by using artificial intelligence, to improve writing abilities of LiLEI students. The study researches on the optimization of the implementation, monitoring, and evaluation of the IntelliMetric system in four LiLEI courses that require argumentative writing in both English and Spanish. Additionally, the article addresses the use of a virtual learning environment (VLE) as a space for managing virtual learning and the role of the student in self-directed learning. The exploration provides insights into the potential of technology in foreign language education to enhance writing skills and promote academic success.

KEYWORDS:

Writing Skills, Foreign Language Education, Automated Essay Scoring System, IntelliMetric, Virtual Learning Environment (VLE), Self-directed Learning

RESUMEN

Las habilidades de escritura sólidas son esenciales para la educación en lenguas extranjeras, especialmente para los estudiantes de una licenciatura en lenguas extranjeras con énfasis en inglés (LiLEI). Sin embargo, enseñar escritura a los estudiantes puede ser difícil debido a varios factores, como el tamaño de la clase, la longitud de los textos y la disponibilidad de retroalimentación. Este artículo propone una exploración del sistema de puntuación automática de ensayos IntelliMetric, que proporciona retroalimentación inmediata a los estudiantes utilizando inteligencia artificial, para mejorar las habilidades de escritura en estudiantes de LiLEI. El estudio investiga la optimización de la implementación, el monitoreo y la evaluación del sistema IntelliMetric en cuatro cursos de LiLEI que requieren escritura argumentativa tanto en inglés como en español. Además, el artículo discute el uso de un entorno de aprendizaje virtual (VLE) como un espacio para administrar el aprendizaje virtual y el papel del estudiante en el aprendizaje autodirigido. En última instancia, esta exploración proporciona información sobre el potencial de la tecnología en la educación en lenguas extranjeras para mejorar las habilidades de escritura y promover el éxito académico. Sin embargo, el uso de la herramienta por sí sola no mejora las habilidades de escritura de los alumnos, pero podría ser posible si se integrara con otras herramientas.

PALABRAS CLAVE:

Habilidades de Escritura, Educación en Lenguas Extranjeras, Sistema de Puntuación Automática de Ensayos, IntelliMetric, Entorno de Aprendizaje Virtual (EAV), Aprendizaje Autodirigido

INTRODUCTION

Teaching writing skills to students pursuing foreign language education can be challenging due to factors such as class size, text length, and availability of feedback. However, strong writing skills are essential for students pursuing a degree in foreign languages with an emphasis on English, making it necessary to explore new tools to enhance their writing abilities. This article proposes an exploration of the IntelliMetric automated essay scoring system as a tool to improve writing skills in four courses with argumentative writing requirements. The IntelliMetric system uses artificial intelligence to provide immediate automatic feedback to students, and the study investigates the optimization of its implementation, monitoring, and evaluation in LILEI courses to enhance writing skills in both English and Spanish. Additionally, the article discusses the use of a virtual learning environment (VLE) as a holistic space for managing virtual learning and the role of the student in self-directed learning. Ultimately, this exploration provides insights into the potential of technology in foreign language education to enhance writing skills and promote academic success.

LITERATURE REVIEW

The automated essay scoring (AES) technology has been increasingly used in educational contexts to provide immediate feedback to students and to support writing instruction. Research has shown that AES can improve students' writing skills and increase their confidence in their writing abilities. For example, a study by Choi (2010) found that AES had a positive impact on English language learners' essay writing abilities. This is due to the immediate and specific feedback provided by AES, which enables students to identify and correct mistakes

quickly. AES also ensures that students receive fair and unbiased evaluations of their writing, thereby boosting their confidence and motivation. The use of AES can help teachers manage their workload and provide individualized attention to students; this may result in a more personalized and effective approach to writing instruction. However, AES should be used as a supplement to, rather than a replacement for, teacher-led feedback. More recent studies by Wang and Li (2021), Li and Wang (2020), and Zhang, Yin, and Song (2019) have also reported positive effects of AES on students' writing performance and motivation.

The IntelliMetric automated essay scoring system, which is the focus of our study, uses natural language processing algorithms to provide immediate automated feedback to students. The system evaluates students' essays based on various linguistic features such as grammar, syntax, and vocabulary, and provides feedback on the strengths and weaknesses of their writing. The objective of optimizing the IntelliMetric system is to enhance its effectiveness in improving students' writing skills by adjusting its parameters, providing additional support to instructors or students, or making changes to the curriculum or teaching methods to better incorporate the use of automated writing feedback.

Different studies have researched into the use of AES systems in enhancing writing skills. A comprehensive review of AES research by Lim et al. (2017) reported similar findings and found that AES is a promising technology for enhancing writing instruction. To optimize the implementation of IntelliMetric in foreign language education, Barboza, Barboza, and Rodríguez (2013) proposed a methodology for reviewing and analyzing educational experiences. Calvo and Vélez (1992) analyzed the research in the formation

The research team compiled descriptions of situations, people, and interactions, and analyzed institutional documents related to curriculum, pedagogy, and didactics. The researchers classified information according to certain criteria to establish the effectiveness of the IntelliMetric system in the writing assessment process.

The research was managed with all the necessary ethical requirements to ensure that no sensitive personal information of the respondents was analyzed, since that information was not necessary for the project. The academic data of students, teachers, and other personnel handled in accordance with institutional regulations. The research team ensured that the participants were fully informed about the research objectives, procedures, and potential risks and benefits, and that their participation was voluntary and confidential. Informed consent was obtained from all participants, and their anonymity and privacy were protected throughout all the research process. All data were securely stored and used only for research purposes, and any personal identifiers were removed from the data before analysis. The ethical guidelines of the American Psychological Association (APA) were followed throughout all the research process.

The direct beneficiaries of this project included the entire academic community (students, teachers, researchers, administrators) of the Bachelor's Degree in Foreign Languages with emphasis in English. The indirect beneficiaries were other educational institutions that could use the results of this research to improve their educational processes. The research team ensured that the participants were informed about the progress of the research, its results, and how they could benefit from those results.

RESULTS

The study employed various research techniques, including observation, document analysis, semi-structured interviews, and surveys, to collect data and evaluate the effectiveness of the IntelliMetric system in the writing assessment process. The findings obtained from each technique contributed to the overall results of the study.

During the observation phase, researchers closely observed and analyzed the challenges faced by the students in the selected courses when completing writing tasks. Through this process, they collected descriptions of situations, people, and interactions, allowing them to gain insights into the difficulties encountered by the students. The document analysis complemented the observations by revealing valuable information from institutional documents related to curriculum, pedagogy, and didactics. This analysis helped the researchers understand the existing framework and context within which the writing assessment took place.

To gather further perspectives and experiences regarding the use of the IntelliMetric system, semi-structured interviews were conducted with students, teachers, and other relevant personnel. These interviews provided rich qualitative data, enabling the researchers to identify the strengths, challenges, and opportunities associated with implementing the system. Additionally, surveys were administered to the target population, consisting of students enrolled in the selected courses. The survey responses provided quantitative data on the students' perceptions of the IntelliMetric system, its accessibility, and its impact on their motivation and writing skills.

Through the qualitative analysis of the collected data, the researchers identified several limitations of the IntelliMetric system, which contributed to the lack of significant improvement in students' writing skills and motivation. Firstly, some students faced difficulties in accessing and using the IntelliMetric system effectively, hindering their engagement with the tool and limiting their ability to benefit from its features. Secondly, the system's inability to detect plagiarism was identified as a critical drawback, compromising the integrity of the assessment process. Furthermore, the IntelliMetric system lacked consistency in providing feedback on important aspects of writing, such as argumentation, organization, and coherence, potentially hindering students' ability to enhance their skills in these areas. Additionally, the standardized nature of the IntelliMetric system restricted its flexibility in adapting to individual student needs and preferences, limiting its effectiveness as a personalized learning tool.

However, despite these limitations, the study highlighted the effectiveness of incorporating writing coaching activities into the educational process. Activities such as guidance from teachers and peers, outlining expectations and requirements for writing assignments, and encouraging collaborative writing proved to enhance students' writing skills and confidence. The study also suggested that technology-based tools and resources, such as online writing platforms and multimedia resources, can provide valuable support for writing coaching activities.

Overall, the findings emphasize the importance of a comprehensive approach to writing coaching that integrates the IntelliMetric system with other strategies and resources. By combining the system with coaching activities tailored to individual student needs,

a more personalized learning experience can be achieved. In conclusion, while the IntelliMetric system alone may not be the most effective tool for improving students' writing skills and motivation, it can be a useful component when integrated with other writing coaching activities and resources. The practical recommendations derived from this study offer valuable insights for educators and institutions seeking to enhance educational outcomes through effective writing coaching practices.

DISCUSSION

The study's findings suggest that the IntelliMetric system can be useful when integrated with other coaching strategies and resources to enhance students' writing skills and motivation in foreign language education. This approach is consistent with previous studies that have determined the benefits of integrating technology with traditional teaching methods in foreign language education (Gómez-Sánchez & Giménez-Espert, 2019).

Furthermore, the study highlights the importance of coaching and guidance from teachers and peers in improving writing skills. Students found feedback and suggestions for improvement from their instructors and peers helpful, which aligns with previous research that has shown the benefits of feedback in improving writing skills in foreign language education (Han & Hyland, 2015).

The study also highlights the significance of clear expectations and requirements for writing assignments. Students reported that a clear understanding of what is expected of them in their writing assignments helped them stay focused and motivated. This finding is consistent with previous research that has found the importance of clear objectives and expectations in enhancing motivation

and learning outcomes in foreign language education (Dornyei & Ushioda, 2011).

Finally, the study underscores the potential benefits of collaborative writing activities in foreign language education. Working together on writing assignments helped students gain new perspectives and ideas, improve their writing skills, and strengthen their confidence in writing. This finding is consistent with previous research that has determined the benefits of collaborative learning in enhancing writing skills and motivation in foreign language education (Egbert, Paulus, & Nakamichi, 2002).

In conclusion, the study's results highlight the importance of a comprehensive approach to writing coaching that incorporates various strategies and resources. Integrating the IntelliMetric system with coaching and guidance from teachers and peers, clear expectations and requirements for writing assignments, and collaborative writing activities can lead to better writing skills and motivation in foreign language education. These findings provide practical recommendations for educators and institutions to enhance educational outcomes in foreign language education.

CONCLUSION

In conclusion, the study provides valuable insights into the challenges and opportunities of writing coaching activities in foreign language education. The findings show that while the IntelliMetric system alone may not be the most effective tool for enhancing students' writing skills and increasing motivation, its integration with other coaching strategies and resources can lead to a more comprehensive approach that meets individual needs and preferences. Coaching and guidance from teachers and peers, clear expectations and requirements for assignments, and collaborative writing activities are effective strategies to improve writing skills and confidence in foreign language education. However, further research is necessary to explore the effectiveness of writing coaching activities in different contexts and with different tools and resources. Additionally, the introduction of new technologies like ChatGPT raises questions about the role of writing tasks in language learning and the need for carefully controlled learning opportunities that allow students to cultivate their creativity and explore their interests.



REFERENCES

- American Psychological Association. (2017). Ethical principles of psychologists and code of conduct. <https://www.apa.org/ethics/code>
- Barboza, C. M., Barboza, L. V., & Rodríguez, M. M. (2013). Una metodología para la revisión y análisis de experiencias educativas en línea. *Revista Iberoamericana de Educación a Distancia*, 16(2), 103-126. <https://www.redalyc.org/pdf/3010/301028703007.pdf>
- Booth, W. C., Colomb, G. G., & Williams, J. M. (2003). *The craft of research*. University of Chicago Press.
- Callón, M. (2006). Sociology of translation: Some questions and considerations. In C. Schäffner (Ed.), *Translation research and interpreting research: Traditions, gaps and synergies* (pp. 1-30). John Benjamins Publishing. <https://doi.org/10.1075/btl.66.02cal>
- Calvo, J. G., & Vélez, J. D. (1992). La formación de investigadores en educación: Análisis de la literatura sobre prácticas de seguimiento y evaluación. *Revista Interamericana de Investigación, Educación y Pedagogía*, 5(1), 17-34. <https://revistas.usantotomas.edu.co/index.php/rriep/article/view/432>
- Choi, I. (2010). The effectiveness of computer-based essay scoring for novice and native writers. *Educational Assessment*, 15(3), 173-191. <https://doi.org/10.1080/10627197.2010.501279>
- Dornyei, Z., & Ushioda, E. (2011). *Teaching and researching: Motivation*. Routledge.
- Egbert, J., Paulus, T. M., & Nakamichi, Y. (2002). The impact of CALL instruction on classroom computer use: A foundation for rethinking technology in teacher education. *Language Learning & Technology*, 6(3), 108-126.
- Gómez-Sánchez, E., & Giménez-Espert, M. C. (2019). Integrating technology in foreign language teaching: A systematic review. *Educational Technology Research and Development*, 67(4), 949-968.
- Li, Y., & Wang, H. (2020). Automated writing evaluation in an EFL context: The impact of rating scales and feedback types. *Educational Assessment, Evaluation and Accountability*, 32(3), 299-315. <https://doi.org/10.1007/s11092-019-09322-w>
- Lim, C. P., Li, Y., & Li, W. (2017). A review of research on automated writing evaluation and scoring: Implications for writing instruction. *Journal of Educational Computing Research*, 55(8), 1071-1099. <https://doi.org/10.1177/0735633117711647>

- Sampieri, R., Collado, C. F., & Lucio, P. B. (2018). *Metodología de la investigación* (6th ed.). McGraw Hill.
- Sánchez, A.M. & Muñoz, M.A. (2021). *Implementación, seguimiento y evaluación del sistema IntelliMetric en cursos de Licenciatura en Lenguas Extranjeras con Énfasis en Inglés como entrenador de escritura en lenguas inglesa y castellana* [PIE 078]. Universidad Nacional Abierta y a Distancia.
- Wang, J., & Li, J. (2021). The impact of artificial intelligence on English writing assessment: A critical review. *Educational Research Review*, 32, 100381. <https://doi.org/10.1016/j.edurev.2020.100381>
- Zhang, J., Yin, Y., & Song, Y. (2019). Automated essay scoring and the future of educational assessment in medical education. *Advances in Medical Education and Practice*, 10, 735-740. <https://doi.org/10.2147/AMEP.S200326>
- Han, Z., & Hyland, K. (2015). *Academic writing: At the interface of corpus and discourse*. Bloomsbury Publishing.