

USING A DIGITAL ENVIRONMENT TO FOSTER WRITING AS A LEARNING AND REFLECTIVE TOOL: THE ORWELL PROJECT

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Abstract

Writing is a key ability for academic and personal life. In higher education, writing has been proved as a powerful instrument to boost reflection and learning. However, fostering writing among university students is not always included in the syllabus and students struggle when they have to write demanding texts, such as argumentations. Furthermore, although using virtual environments has advantages, such providing a free access and self-regulation of time to students, not many open-access tools are available.

In this paper we present an educational intervention to foster writing as a learning and critical thinking tool. Our educational intervention is based on two tools that are implemented at University of Cantabria. On the one hand, a writing lab, with two elements: a virtual training on argumentative synthesis for the Moodle platform and materials to promote writing as a learning tool. On the other hand, a plugin to extract and analyse information on how students use the resources in the Moodle course.

Our project is a part of a broader Erasmus + project called ORWELL, which its main objective is supporting digital writing competences in higher education: <https://orwellproject.eu/>.

The main objectives of our subproject are:

- Create an online intervention to support students on how to write argumentative syntheses independently.
- Provide materials to encourage employing writing as a though tool.
- Create a Moodle Plugin and implement it to collect data about students' usage of the platform.

All the materials created for the Writing Lab have been implemented in the Moodle platform of the bachelor of Infant Education and Primary Education from the University of Cantabria. The writing lab consists of an intervention, videos and resources to motivate students to improve their writing by informing on its importance. Besides, the plugin to analyse the usage and behaviour of students in Moodle will provide information on which the resources they access, the time that they spend doing the tasks, the order they follow, etc.

The project is still in progress. For the moment, 65 students have completed the intervention on how to write argumentative synthesis. The intervention consists of an instructional video about the process and a practice guided by questions and graphic aids during which they will write an argumentative synthesis based on two new texts previously read. In addition to the intervention, students perform a pre-test and an initial and final satisfaction questionnaire. The preliminary results indicate that students are satisfied with the intervention.

The first version of the plug-in has been implemented in the Moodle of University of Cantabria and we will analyse and contrast data in the next few months.

The material developed in this subproject will be translated into Italian and English so more students will benefit from this work. We hope our results will allow us to share materials for fostering writing as a learning tool at higher education.

Keywords: Erasmus Project, writing, e-learning, university.

1 INTRODUCTION

Writing is a key ability for academic and personal life. At higher education, writing has been proved as a powerful instrument to boost reflection and learning [1]. However, fostering writing among university students is not always included in the syllabus [2] and students struggle when they have to write demanding texts, such as argumentations [3]. Although currently, virtual learning has increased

enormously because using virtual environments has advantages, such providing a free access and self-regulation of time to students. However, not many open-access tools are available regarding writing, and even less in Spanish [4].

In this paper we present an educational intervention to foster writing as a learning tool. Our project is a part of a broader Erasmus + project called ORWELL, which its main objective is supporting digital writing competences in higher education: <https://orwellproject.eu/>. In this project, University of Cantabria and WIDE services are collaborating with the University of Florence, the University of Malmö and the European Development Agency EUDA. The project consists of three main work packages (WP) that will lead to the creation of materials to share good practices of writing, improve discipline-general writing skills and support collaborative writing in online environments.

Here we present part of the results of the second WP. Our educational intervention is based on two tools that are implemented at University of Cantabria. On the one hand, a writing lab, with two elements: a virtual training on argumentative synthesis for the Moodle platform and a document with materials and resources to promote writing as a learning tool. On the other hand, a plugin to extract and analyse information on how students use the resources in the Moodle course.

Regarding the writing lab, each of the elements contains different resources. In the document, students can access information about writing, videos to improve academic reading and writing, an introduction to argumentative synthesis, different papers on the topic and resources that they can apply as teachers. These document serves as an introduction to the topic and as a motivational resource to appreciate the importance of involving writing in every aspect and level of academic life.

The virtual training is based on a previous intervention developed by a recognized Spanish research team on writing. Thus, we adapted one of the interventions already tested in Luna et al. (2022) [5] implemented two different interventions on integrative argumentation with virtual education students, one focusing on the product features of argumentative test and the other one on the processes involved in the writing of these types of texts. Based on their results, we are focusing our intervention on the processes involved using the same materials. Results also showed that the level of integration improved thanks to both interventions, but more in the process intervention. For that reason, we decided to use that one in our project.

The training consists of a video explaining the steps that should be followed in relation with the processes involved in writing an argumentative synthesis and a series of questions and graphic aids to guide these processes. Argumentative synthesis is a type of text that requires critical thinking and is a challenge even for university students. It is a task that involves writing about a controversial topic from two or more sources that present opposing perspectives and has been shown to have great learning potential, especially if the purpose of the task is to explore the arguments of the different positions and seek the best of each. It is necessary, therefore, to train students to be able to reach integrative conclusions that take into account both positions, critically analysing the arguments and counterarguments given and seeking solutions to resolve life's controversies. This is not an easy task, especially when there is generally a low motivation to carry out this type of assignment.

Regarding the plug-in, it has been developed and is starting to be implemented on the Moodle platform to extract and analyse information on the usage and behavior of students in Moodle. It provides information on which resources they access, the time that they spend doing the tasks, the order they follow, etc., that could be helpful for educational purposes [6].

The main objectives of our subproject are:

- Create an online intervention to support students on how to write argumentative syntheses independently.
- Provide materials to encourage employing writing as a thought tool.
- Create a Moodle Plugin and implement it to collect data about students' usage of the platform.

Withing this framework, the purpose of this paper is to disseminate the project that we are currently working on, display the materials that are public access and show the results that we are getting from implementing it at University of Cantabria with higher education students. In particular, we want to show results on students' participation, the characteristics of their essays, students' satisfaction and the process of design and the first results of the plug-in to extract the data from Moodle.

2 METHODOLOGY

As it has been stated, our educational intervention is based on two tools: a writing lab and a plug-in. All the materials created have been implemented in the Moodle platform of the bachelor's degree of Infant Education and the bachelor's degree of Primary Education from the University of Cantabria.

2.1 Intervention design

The intervention methodology combines qualitative and quantitative data, and participants are distributed into the intervention group and the contrast group.

The project is still in progress and we present preliminary results.

2.2 Participants

The participants in the project are the students of the bachelor's degree of Infant Education and the bachelor's degree of Primary Education. Until now, 177 students have participated in the project, carrying out the intervention and writing argumentative synthesis. 65 students have completed the intervention on how to write argumentative synthesis and other 65 have completed the contrast group tasks.

2.3 Implementation

The implementation of the material has been done through Moodle. This is a Learning Managing system opensource [7] widely used by university institutions for blended or distance learning. In the Moodle course, students have access to the document containing the resources and information on writing and the chance to carry out the virtual training, either the intervention group or the contrast group, with a benefit in the final mark of the subject.

The students in the intervention group had to proceed following these steps: write the pre-test, an argumentative synthesis based on two initial texts taking about teachers' external evaluation; answer and initial questionnaire; watching the explanatory video on the processes that they need to follow; reading two new texts on students' external evaluation; writing the post-test following the intervention with the questions and using the graphic aid; they finish with a final questionnaire. The first task was carried out in the classroom after the research technician explained the whole project. Students could present their work in paper format instead of using the computer, the rest of the project was held by students in an autonomous and virtual way. The participation in the project was voluntary but was connected to their curriculum and they can get a bonus mark on their final mark.

There was also a contrast group of students participating in the research that wrote the two argumentative syntheses without performing the intervention. For ethical reasons, they accessed the intervention once they had uploaded both texts on the platform and needed to upload a final revised version after doing the intervention.

2.4 Analysis

2.4.1 *Writing lab*

The argumentative synthesizes are analysed using a rubric based on the level of integration of the ideas. The texts that they read in relation to the topic that they need to write about provide two different views on the same topic, one with arguments and the other one with contra arguments. Students need to consider both positions and keep an integrative view of the topic, presenting both positions and providing integrative solutions. Therefore, the rubric determines seven levels of overall integration in the synthesis, from level 0, where students give their personal opinion and do not base their argumentation on the source texts, to level 6, a maximum integration via weighing or synthesizing [5].

Questionaries were analysed using descriptive analysis and the mean value.

2.4.2 *Plug-in*

The plugin implemented in the Moodle platform can be a valuable tool for extracting and synthesizing student usage statistics. Some of the key capabilities offered by the plugin include:

- **Session Tracking and Time Dedication:** The plugin allows tracking the number of sessions students have initiated on the platform and the total time dedicated to their learning activities. This

provides an overall view of student participation and time investment in the virtual learning environment.

- **Aggregation by Tool Type:** The ability to aggregate data by tool type, such as forums or quizzes, is crucial. This enables teachers and administrators to obtain specific information on how students interact with various platform tools, helping to assess the effectiveness of each tool in the learning process.
- **Breakdown of Specific Content:** By allowing the breakdown of data by specific content, such as topic notes or forum message replies, the plugin offers a more detailed understanding of how students interact with specific content. This can help identify areas of interest or difficulty for students.
- **Support in Decision-Making:** By providing information on the students' learning process, the plugin becomes a valuable tool for decision-making. Teachers can use this data to tailor their teaching approaches, identify areas for improvement, and personalize the learning experience.
- **Assessment of Compliance with Teacher Recommendations:** The ability to analyze whether students follow the recommended learning process by the teacher is crucial. This allows evaluating the effectiveness of teaching strategies and making adjustments as needed to improve retention and academic performance.

In summary, the plugin provides a comprehensive and detailed insight into student behavior on the Moodle platform, which can be essential for enhancing the quality of learning and adapting teaching to individual student needs.

3 RESULTS

3.1 Writing Lab

3.1.1 Participation

In general, we can affirm that the initial participation level has a low percentage, although in the last week of the semester more students are engaging with the project and finishing all the tasks. Considering both groups (intervention and contrast) less than 40% of the students from Infant Education and Primary Education bachelor's degrees have completed the tasks. Most of the student's state as their main motivation to participate in the intervention to be able to improve their writing abilities and get a better grade in their final exam.

3.1.2 Characteristics of the essays written by students

The characteristics of the essays written by students show that the extent of the writing is, in most of the cases, shorter than one side of a paper sheet written digitally, or two sides written by hand.

Preliminary results show an increase in the identification of the arguments after the intervention. The biggest improvement can be seen in the incorporation of arguments from both perspectives into the final argumentative synthesis.

The contrast group data has not been yet analysed.

3.1.3 Student's satisfaction

Initial and final satisfaction questionnaires have been analysed and preliminary results indicate that students are satisfied with the intervention. Students had to answer different questions related with their satisfaction on different elements of the intervention, such as the resources (video, graphic aid and question), how useful and educational the intervention was, and if the time given was adequate. All the questions received a medium answer of 7.7 or above. In Fig. 1 you can see the answers to the first question of the questionnaire.

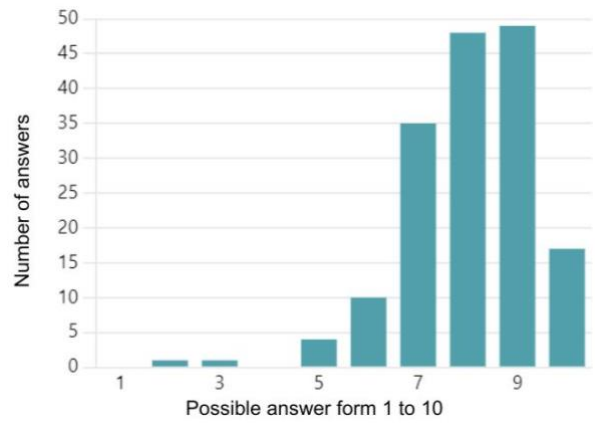


Figure 1. Graph of answers to the question: How useful did you find this intervention for your training as a teacher? 1 - not at all useful; 10 - very useful.

3.2 Moodle Plug-in

The first version of the plug-in has been implemented in the Moodle of University of Cantabria and we will analyse and contrast data in the next few months. However, the preliminary results indicate that it fulfils the requirements indicated in section 2.4.2. In Fig. 2. an example is shown of the plugin running in one subject at the University of Cantabria:

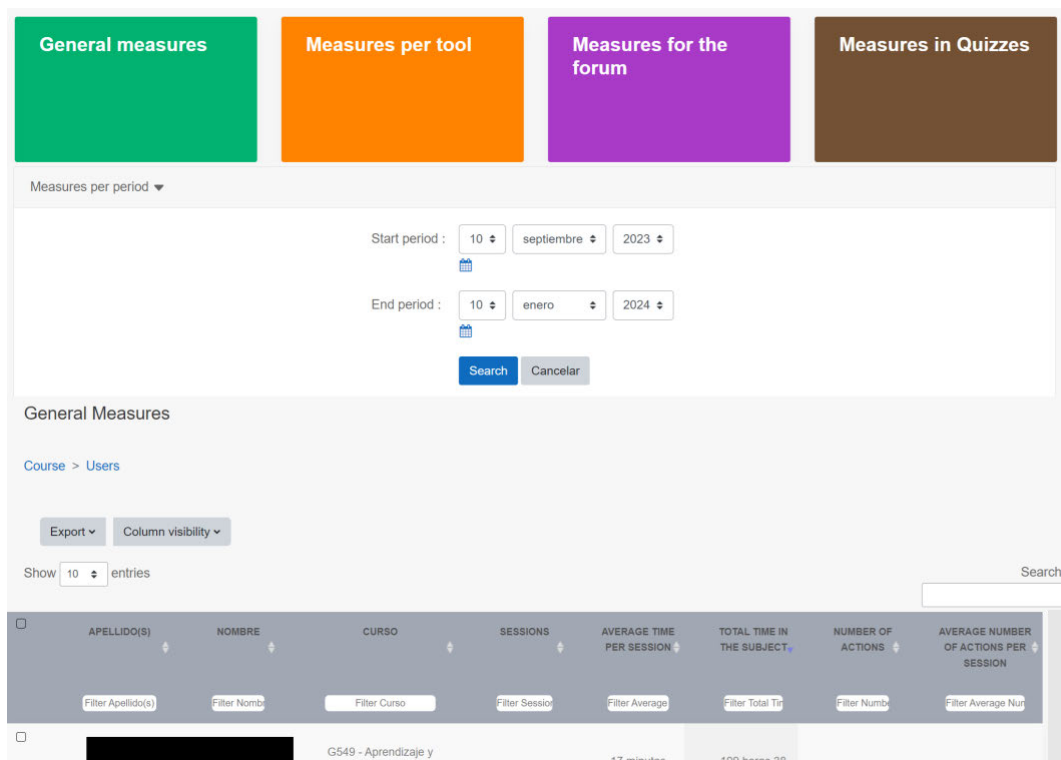


Figure 2. Example of the Moodle plugin working

4 CONCLUSIONS

Writing is a very important competence that should be one of the main curriculums' focus in every educational stage and subject. Writing is an essential tool for learning in higher education [8].

With this research, firstly, we have affirmed that university students are not motivated to do writing tasks, especially the ones that involve more complicated mental processes, such as having to find solutions in controversial topics. They do not perform adequately in these tasks, proving that writing training is essential [3, 5].

The intervention has shown that students improve their writing competence when guiding the processes that writing argumentative synthesis require, even though the achievement of integration is not high.

Giving the students the chance to do it virtually and giving them the chance to choose when to do it has been seen as a positive thing, but students tend to leave it until the last moment.

In sum, undergraduate students need support using writing as a learning tool and this is a long run endeavour [9], but educational actions as those within ORWELL project seem to help in that process. The material developed in this subproject will be translated into Italian and English so more students will benefit from this work. Furthermore, the plugin proves to function correctly and can be useful for extracting relevant information about students' learning processes. We hope our results will allow us to share materials for fostering writing as a learning tool in higher education.

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REFERENCES

- [1] P. D. Klein and P. Boscolo. "Trends in research on writing as a learning activity". *Journal of Writing Research*, vol. 7, no. 3, pp.-pp. 311–350, 2016. Retrieved from <https://doi.org/10.17239/jowr-2016.07.03.01>.
- [2] R. Gaves, T. Hyland, and B. M. Samuels. "Undergraduate writing assignments: and analysis of syllabi at one Canadian college", *Written Communication*, vol. 27, no 3, pp.-pp. 293-317, 2010. Retrieved from <https://doi.org/10.1177/0741088310371635>
- [3] P. A. Alexander, J. Fusenig, E. C. Schoute, A. Singh, Y. Sun and J. E. van Meerten. "Confronting the challenges of undergraduates' argumentation writing in a "Learning How to Learn" course", *Written Communication*, vol. 40, no 2, pp.-pp. 482-517, 2023.
- [4] T. Limpo, A. Nunes, and A. Coelho. "Introduction to the special issue on technology-based writing instruction: A collection of effective tools". *Journal of Writing Research*, vol. 12, no. 1, pp.-pp. 1–7, 2020. Retrieved from <https://doi.org/10.17239/jowr-2020.12.01.01>
- [5] M. Luna, R. Villalón, I. Martínez-Álvarez and M. Mateos. " Online interventions to help college students to improve the degree of integration of their argumentative synthesis" *Reading and writing*, vol. 36, pp. 937-963, 2022.
- [6] C. Romero and S. Ventura. "Educational data mining and learning analytics: An update survey." *WIREs Data Mining and Knowledge Discovery*, vol. 10, no. 3, 2020. Retrieved from <https://doi.org/10.1002/widm.1355>
- [7] Moodle, Accessed 11 January 2024. Retrieved from <https://moodle.org/?lang=es>.
- [8] J.C. Bean and D. Melzer. *Engaging ideas: The professor's guide to integrating writing, critical thinking, and active learning in the classroom*. John Wiley & Sons, 2021
- [9] C. Bazerman. "Understanding the lifelong journey of writing development". *Infancia y aprendizaje*, vol. 36, no. 4, pp.-pp. 421-441, 2013.