Using the Moodle Platform in the English Reading Comprehension of Students at a Higher Education Military School

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The use of virtual educational platforms has experienced a remarkable increase in the academic field, offering innovative tools that enhance the quality of teaching and the learning process. The objective of the research was to determine the influence of the use of the Moodle platform on the English reading comprehension of students in a higher education military school. The study was a basic, causal correlational, non-experimental, cross-sectional design. The population included 1,341 students from a military school in Lima, Peru, and the sample consisted of 300 students selected by random probability sampling. The results showed that the use of the Moodle platform has a regular performance (45.7%), while English reading comprehension is in process (39.7%). It was concluded that the use of the Moodle platform has a significant influence on English reading comprehension, being this influence high (Nagelkerke’s $R^2 = 0.808$).

Keywords: Moodle platform, reading comprehension, English teaching, military school, higher education

INTRODUCTION

The implementation of virtual educational platforms has experienced remarkable growth in the academic field, providing innovative tools to improve the quality of teaching and learning (Guaña, 2023).
In this context, the Moodle platform has become an integral tool that facilitates content management, interaction between teachers and students, and continuous assessment (Cabero-Almenara et al., 2019). Furthermore, in today’s educational environment, English language proficiency is essential, and its effective acquisition goes beyond the simple memorization of vocabulary and grammatical rules (Ramalingam et al., 2022). Reading comprehension, particularly, plays a vital role in the development of comprehensive communication skills in both academic and professional settings (Wibowo et al., 2020). Scholarship at a military institution adds an additional layer of complexity, as students must achieve a high level of English proficiency in order to meet specific communication challenges in an international context (Meng et al., 2020).

During the development of the research, several problems that the students faced regarding reading comprehension in English were identified. These challenges highlighted the specific areas that required attention and improvement in the educational process. First, at the literal level, it was noted that some students experienced difficulties in extracting explicit and direct information from English texts. Identifying specific details, such as facts and events, was challenging for some, suggesting a possible limitation in their abilities to decode and extract basic information. Similarly, at the inferential level, additional problems were found related to the ability of students to make logical inferences and deductions based on the information provided in the English texts. The connection of ideas and the interpretation of more subtle concepts were less evident for some students, indicating a need to strengthen inferential skills in the reading process.

In a similar way, in the critical level, it was found that some students showed difficulties in analyzing in a reflective and evaluative way the content of English texts. The superficial interpretation of texts has affected the ability of students to apply a critical approach to their reading comprehension. In that sense, the ability to question, critically interpret and form informed opinions about reading materials presented challenges. These problems, identified retrospectively, highlight the importance of addressing different levels of reading comprehension in the design and implementation of educational strategies, especially when using platforms such as Moodle. Given this, the following research question has been proposed: How does the use of the Moodle platform influence the English reading comprehension of students in a higher education military school?

Despite the growing adoption of virtual platforms such as Moodle in educational environments, there is a lack of studies that specifically explore the causal relationship between the use of this platform and the English reading comprehension levels of military students in higher education. By addressing this research gap, light could be shed on the specific dynamics affecting English reading comprehension in online military contexts, providing valuable insights for educational program improvement, institutional decision making, and the design of effective pedagogical strategies in the military environment. For this reason, the main objective was to determine the influence of the use of the Moodle platform on the English reading comprehension of students in a higher education military school. Furthermore, it was also stated as a general hypothesis: the use of the Moodle platform influences the English reading comprehension of students in a higher education military school.

LITERATURE REVIEW

In relation to the previous works reviewed, Syakur et al. (2020) pointed out that the use of online educational platforms significantly improves academic results and student participation in English language education programs, offering an effective and collaborative alternative for teaching at the higher education level. Similarly, Ismail et al. (2020) highlighted the positive benefit of implementing Moodle in the acquisition of reading skills, improving comprehension of difficult concepts through its interactive interface and simulations. In addition, Prasetya (2021) states that Moodle offers tools related to assessment strategies, such as multiple choice questions, short answers, essays, true/false statements and missing words. According to Apoko (2022), this diversity in assessment strategies is vital for stimulating the English language learning performance of students in online learning environments.
Likewise, Riyani et al. (2023) found that students had positive perceptions about Moodle and its reading tools, highlighting their usefulness, motivation and satisfaction. In the case of Meléndez & Vimos (2021), they highlighted that the strategies, such as quizzes and games, applied through the learning platforms, improve English reading comprehension. Susanti & Putri (2022) found that these improvements were especially in the skills of finding implicit information, word meanings, word references, evaluating texts, and summarizing texts. For Girfanova et al. (2019) another positive aspect, is that it provides students with opportunities for self-assessment, comparison and progress, improving confidence and skills in English. In addition, Samiei & Ebadi (2021) indicated that improvements in the literal, inferential and critical comprehension of students, through the use of these technologies, endure in the long term, highlighting the sustainability and lasting impact of these interventions in the development of reading skills.

According to Kasim & Khalid (2016), learning management systems (LMS) are ruled by the pedagogical principle of social constructivism and are designed to manage learning environments, facilitate interaction between teachers and students, and optimize educational outcomes. In addition, learning platform tools are classified into learning, communication and productivity tools. In the case of Moodle, Makruf et al. (2022) indicates that it is a platform that facilitates the creation of online courses, offering tools for content management, evaluation and student participation. Its open source nature allows for customization and adaptability to the specific educational needs of institutions. In addition, Morze et al. (2021) argue that Moodle stands out for its accessibility, flexibility and constructivist approach, facilitating interaction between teachers and students, promoting collaborative and effective learning environments.

On the other hand, according to De-La-Peña & Luque-Rojas (2021), the ability of reading comprehension makes possible the knowledge amalgamation, thus facilitating the training processes and the successful management of both academic and personal situations. According to Flores (2019), English reading comprehension refers to the ability to understand, interpret and extract meaning from written texts in the English language, assessing the literal, inferential and critical comprehension of the student. Likewise, Akbarovna (2023) refers to the process by which readers use cognitive strategies to extract meaning and knowledge from texts, involving decoding, interpretation and reflection. Similarly, for Yapp et al. (2021) the English reading comprehension involves the ability to understand and assimilate information presented in written texts in English, assessing the ability to interpret and remember the content. In this regard, according to Al-Jarrah (2018), it covers the ability of readers to construct meaning from texts written in the language, understanding both specific details and broader concepts.

METHODOLOGY

The study presented is of a basic type and follows a quantitative approach. According to Hernández-Sampieri & Mendoza (2018) these studies have as their main purpose to broaden knowledge in scientific fields without seeking immediate practical applications, collecting data that are then subjected to statistical analysis to verify the hypotheses put forward in the research. Likewise, a non-experimental cross-sectional design was used, and a causal correlational study was carried out. In this case, the variables were studied in a defined interval without manipulating them, analyzing the influence of the Moodle platform on English reading comprehension.

Population, Sample and Sampling

The population consisted of 1,341 students from a military school in Lima, Peru, at a higher education level. This educational institution has an agreement with a private university through which its students receive English classes remotely. In the case of the sample, 300 students were selected by random probability sampling. In addition, the participation of students with the rank of aspiring cadets who were enrolled in online English classes through the educational platform of the Language Center of a private university was established as a criterion for inclusion. Excluded were those aspiring cadets who were discharged, were absent due to scholarships abroad or were hospitalized for health reasons. Ninety-five percent of the students were male and 100% were full-time students, as it is a military training center.
Tools

In the case of the use of the Moodle platform, the technique used was the survey and as an instrument
the Nina-Cuchillo (2020) questionnaire was applied, comprising 25 items, distributed in 3 dimensions:
learning tools (1-7), communication tools (8-15) and productivity tools (16-25), measured by means of the
Likert scale, with the options: (1) never, (2) almost never, (3) sometimes, (4) most of the times, (5) always.
Regarding English reading comprehension, the technique was evaluation, using the reading comprehension
test as an instrument. This test was comprised of four narrative texts in English, each of which was evaluated
by 20 questions on a dichotomous scale (incorrect = 0, correct = 1). The questions addressed the literal,
inferential and critical levels of comprehension, thus allowing for a comprehensive assessment of the ability
to understand texts.

Validity and Reliability

The validity of the instrument was evaluated through expert judgment, involving the analysis of three
specialists, who concluded that the instrument was adequate. For reliability, a pilot test was conducted using
a sample of 30 participants. In relation to the instrument that measures the use of the Moodle platform, a
Cronbach’s Alpha coefficient of 0.885 was obtained, and for the English reading comprehension test, the
value of the Kuder-Richardson coefficient was 0.840. Both values were significantly high, indicating the
reliability of the instruments in both dimensions.

Data Collection Procedure

Data collection regarding the use of the Moodle platform was carried out through the implementation
of a questionnaire designed in a Google form, which was uploaded to the virtual classroom for students to
complete at the end of the class. In the case of the English reading comprehension test, the test was taken
by creating a test on the Moodle platform, the duration of which was 1 hour. The information collected was
used to create a database in an Excel spreadsheet. The SPSS V.25 statistical program was used to analyze
the results. In the statistical analysis phase, descriptive statistics were used to display the results of the
research, and inferential statistics were used to verify the hypothesis by applying the ordinal logistic
regression test. This selection was made because the variables were qualitative and ordinal in nature, and
had a nonparametric distribution. Therefore, through the Nagelkerke coefficient, the influence of the use of
the Moodle platform on English reading comprehension was evaluated.

RESULTS

Descriptive Analysis

<table>
<thead>
<tr>
<th>Levels</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deficient</td>
<td>86</td>
<td>28.7%</td>
</tr>
<tr>
<td>Regular</td>
<td>137</td>
<td>45.7%</td>
</tr>
<tr>
<td>Efficient</td>
<td>77</td>
<td>25.7%</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100%</td>
</tr>
</tbody>
</table>

According to Table 1, 28.7% of the students surveyed indicated that their use of the Moodle platform
has a poor performance, 45.7% stated that they have a regular performance and for 25.7% their performance
is efficient. Therefore, it could be deduced that the proficiency of the students in the Moodle platform is
regular.
In Table 2, it can be noticed that, regarding the learning tools, 31.7% of the students indicated that their proficiency is deficient, for 39.3% it is regular and for 29.0% it is efficient. In the communication tools, 32.7% stated that their performance was deficient, 43.7% showed a fair performance and 23.7% were efficient. Regarding productivity tools, 33.3% showed a poor performance, 44.7% a fair performance and 22.0% an efficient proficiency. It could be deduced, therefore, that the students had a regular performance in each of the Moodle platform tools.

The descriptive results reveal that most of the students surveyed perceive their performance in the use of the Moodle platform as regular. This finding contrasts with Riyani et al. (2023), which highlights a positive perception. Both fair and poor levels could be influenced by several factors, such as the user interface, the quality of the proposed activities or familiarity with the platform. Taking into consideration Prasetya’s (2021) findings on Moodle assessment tools, student dissatisfaction could be related to the nature of the assessment strategies implemented on the platform. Likewise, Meléndez & Vimos (2021) highlighted the improvement of reading comprehension through strategies such as quizzes and games, but the poor perception of students suggests that these tools may not be fully meeting their expectations or needs.

Table 3 shows that, in literal comprehension of English, 33.7% of the students demonstrated that they were at an initial level, 41.7% were in process, 18.3% obtained an expected level, and 18.3% achieved an outstanding level. In the case of inferential comprehension, 33.3% showed initial progress, 42.0% were in process, 20.3% obtained expected level and 4.3% an outstanding level. Finally, in critical comprehension, 30.3% of the students evaluated showed an initial level, 49.7% were in process, 17.0% obtained an expected level and only 3.0% showed an outstanding level. It could be inferred, therefore, that the students who took the reading comprehension test in English were in the process of learning at the literal, inferential and critical levels.
TABLE 4
LEVELS OF THE DIMENSIONS OF ENGLISH READING COMPREHENSION

<table>
<thead>
<tr>
<th>Levels</th>
<th>Literal comprehension</th>
<th>Inferential comprehension</th>
<th>Critical comprehension</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
<td>f</td>
</tr>
<tr>
<td>Initial level</td>
<td>101</td>
<td>33.7%</td>
<td>100</td>
</tr>
<tr>
<td>In process</td>
<td>125</td>
<td>41.7%</td>
<td>126</td>
</tr>
<tr>
<td>Expected level</td>
<td>55</td>
<td>18.3%</td>
<td>61</td>
</tr>
<tr>
<td>Outstanding level</td>
<td>19</td>
<td>6.3%</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100%</td>
<td>300</td>
</tr>
</tbody>
</table>

The results reveal that the majority of military school students are in a developmental process in their English reading comprehension. This finding suggests that there is significant room for improvement in reading comprehension skills in the specific context of this population. According to Samiei & Ebadi (2021) this scope for improvement can be achieved through the constant and progressive use of educational technologies such as Moodle, so that it can be adapted to the specific needs of each student. Likewise, Syakur et al. (2020) suggest that online educational platforms, such as Moodle, can significantly improve understanding of difficult concepts through their interactive interface. To this end, it is necessary to explore how each specific Moodle tool can be better employed to strengthen English reading comprehension. Given this, Prasetya (2021) points out that the platform offers various strategies that could be employed to foster deeper literal, inferential, and critical comprehension.

Inferential Analysis

The inferential analysis test was performed to check the research hypotheses. In addition, it was established that the significance value should be less than 0.05 for the hypothesis to be accepted as valid. First, the general hypothesis was analyzed, establishing both the null and the alternative hypothesis.

Ho: The use of the Moodle platform does not impact the English reading comprehension of students in a higher education military school.

Ha: The use of the Moodle platform influences the English reading comprehension of students in a higher education military school.

TABLE 5
VARIABILITY TEST OF THE RESEARCH HYPOTHESIS

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Variables</th>
<th>Log likelihood logarithm</th>
<th>Chi-square</th>
<th>Bilateral significance</th>
<th>Nagelkerke $R^2$</th>
<th>% of influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>General hypothesis</td>
<td>Use of the Moodle platform</td>
<td>37.484</td>
<td>399.512</td>
<td>0.000</td>
<td>0.808</td>
<td>80.8%</td>
</tr>
<tr>
<td></td>
<td>English reading comprehension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As shown in Table 5, it is evident that the ordinal logistic regression test calculates a Chi-square value (399.512), with a significance value (bilateral significance = 0.000) of less than 0.05. With these results, the null hypothesis is rejected and the study hypothesis is tested. Furthermore, the value of Nagelkerke’s $R^2$ coefficient (0.808) shows that the regression model has a high level of adjustment (80.8%) for the independent variable use of the Moodle platform and its influence on the dependent variable English reading comprehension.
Inferential analysis was also performed for the specific hypotheses. Ho: The use of the Moodle platform does not influence the dimensions of English reading comprehension of students in a higher education military school. Ha: The use of the Moodle platform influences the dimensions of English reading comprehension of students in a higher education military school.

### TABLE 6
VARIABILITY TEST OF SPECIFIC HYPOTHESES

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Variables</th>
<th>Log likelihood</th>
<th>Chi-square</th>
<th>Bilateral significance</th>
<th>Nagelkerke R²</th>
<th>% of influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific hypothesis 1</td>
<td>Use of the Moodle platform Literal comprehension</td>
<td>49.002</td>
<td>303,817</td>
<td>0.000</td>
<td>0.698</td>
<td>69.8%</td>
</tr>
<tr>
<td>Specific hypothesis 2</td>
<td>Use of the Moodle platform Inferential comprehension</td>
<td>45.085</td>
<td>297,139</td>
<td>0.000</td>
<td>0.693</td>
<td>69.3%</td>
</tr>
<tr>
<td>Specific hypothesis 3</td>
<td>Use of the Moodle platform Critical comprehension</td>
<td>41.028</td>
<td>285,273</td>
<td>0.000</td>
<td>0.687</td>
<td>68.7%</td>
</tr>
</tbody>
</table>

Table 6 shows that the significance value (Bilateral)=0.000 is less than 0.05 for all cases. This rejects the null hypothesis and tests the specific hypotheses of the research. In the case of specific hypothesis 1, the Chi-square value (303.817) and Nagelkerke’s R² coefficient (0.698) indicate that the regression model has a moderate level of adjustment (69.8%). In the case of specific hypothesis 2, the Chi-square value (297.139) and Nagelkerke’s R² coefficient (0.693) show that the regression model has a moderate level of adjustment (69.3%). Finally, in specific hypothesis 3, the Chi-square value (285.273) and Nagelkerke’s R² coefficient (0.687) show that the regression model has a moderate level of adjustment (68.7%).

These findings corroborate the findings of Syakur et al. (2020), which suggest that online educational platforms, such as Moodle, can have a positive impact on academic results and student engagement. Likewise, Samiei & Ebadi (2021) support the idea of sustained improvements in long-term English reading comprehension through the use of educational technologies. In the case of Ismail et al. (2020), he highlights Moodle’s ability to improve the understanding of difficult concepts through its interactive interface, by means of the diversity of tools it offers. Furthermore, Makruf et al. (2022) highlights that students who achieved better performance in English reading comprehension is due to the versatility of Moodle to manage content, assessment and student engagement. The flexibility and adaptability of Moodle to specific educational needs, also highlighted, seem to have played a fundamental role in the improvement of reading comprehension.

### CONCLUSIONS

In conclusion, the current study explored the influence of the use of the Moodle platform on the English reading comprehension of students in a higher education military school. The results obtained reveal that, although most students perceive their performance in the use of Moodle and its learning, communication and productivity tools as regular, there is also a large percentage of students with an unsatisfactory level of competence in the dimensions of the platform.
In terms of English reading comprehension, it is noted that most of the students are in a process of development, especially in the literal, inferential and critical dimensions. These findings suggest that there is considerable scope for improving reading comprehension skills in this specific context, and the results contrast with positive perceptions reported in other studies.

The inferential analysis supports the general hypothesis, demonstrating that the use of the Moodle platform significantly influences students’ English reading comprehension. The ordinal logistic regression test reveals a significance value of less than 0.05, leading to the rejection of the null hypothesis. The high Nagelkerke’s $R^2$ coefficient (80.8%) indicates a strong adjustment of the regression model, highlighting the importance of the use of Moodle in improving reading comprehension. Meanwhile, in the case of the specific hypotheses, it is also shown that the use of the Moodle platform significantly influences literal, inferential and critical comprehension of English, although for these cases, the Nagelkerke’s $R^2$ coefficient indicates a moderate degree of incidence (69.8%, 69.3% and 68.7%, respectively).

Consequently, it is recommended that the higher education military institution explore specific strategies within Moodle to address the identified shortcomings, such as the quality of the proposed activities and the assessment strategies implemented. In addition, it is suggested to focus on the design of pedagogical interventions that take advantage of Moodle tools to strengthen literal, inferential and critical comprehension of English. These actions could contribute to closing the gap between students’ perceptions and their actual achievement in reading comprehension, thus promoting a more effective learning environment in the higher education military school.

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REFERENCES


