Advancing Reading Comprehension Through Project CLUE (Comprehensive Learning and Understanding in English): A Mixed-Methods Investigation Among Grade 12 HUMSS Students

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ABSTRACT

Reading comprehension is essential to students' academic development, particularly in understanding information and completing research-related tasks. This study examined changes in reading assessment performance following the implementation of Project CLUE (Comprehensive Learning and Understanding in English) among 84 Grade 12 Humanities and Social Sciences (HUMSS) students at Sto. Domingo Integrated High School, Santa Rosa City, Laguna. An explanatory sequential mixed-methods design was employed, involving a one-group pretest–posttest assessment and interviews with 15 purposively selected students representing varied reading gains. Project CLUE incorporated CEFR-aligned reading materials, vocabulary exercises, context clues, comprehension activities, and visual organizers through a Google Sites-based platform. Results showed an increase in mean reading assessment scores from 343.62 (SD = 96.67) to 379.44 (SD = 95.44), representing a mean gain of 35.82 points. The difference was statistically significant, $t(83) = 8.243$, $p < .001$. The standardized paired-change effect was $d_z = 0.90$, while the mean gain represented approximately 0.37 of the pretest standard deviation. The approximate 95% confidence interval for the mean gain ranged from 27.18 to 44.46 points. Changes were also observed in the aggregate CEFR proficiency distribution. Interview findings described perceived improvements in reading comprehension, vocabulary, confidence, and reading strategies, alongside continuing difficulties with unfamiliar words, lengthy passages, time constraints, and technology access. Although the findings indicate improved group assessment performance following the implementation, the one-group design does not establish that Project CLUE alone caused the improvement. The study provides preliminary evidence regarding the potential contribution of structured and digitally supported reading activities to school-based instruction.

Keywords: Reading Comprehension, Project CLUE, CEFR, Mixed-Methods Research, HUMSS Students

INTRODUCTION

Reading comprehension enables students to understand written information, identify important details, interpret unfamiliar vocabulary, and develop meaning from texts. These skills are particularly important among Grade 12 Humanities and Social Sciences (HUMSS) students, whose academic requirements involve examining social issues, evaluating information, and completing research activities. Reading comprehension requires learners to apply appropriate strategies and connect textual information with their existing knowledge. Peng et al. (2024) emphasized the importance of combining comprehension strategies with background knowledge in supporting reading development.

At Sto. Domingo Integrated High School, English mean percentage scores were 56.47 in School Year 2022–2023, 57.12 in 2023–2024, and 55.80 in 2024–2025. These figures represent overall English performance rather than reading comprehension specifically. Nevertheless, they provide a school-based context for examining possible improvements in literacy instruction.

Project CLUE (Comprehensive Learning and Understanding in English) was developed as a structured reading intervention integrating CEFR-aligned reading materials, vocabulary activities, context-clue exercises, comprehension tasks, and visual organizers through a Google Sites-based platform. The Common European

Framework of Reference for Languages provides proficiency descriptors that can guide the organization of language learning objectives and instructional materials (Council of Europe, 2020).

Digital resources may also support reading instruction when integrated with purposeful learning activities. Murphy and Arciuli (2024) reported that digital reading comprehension instruction can contribute to improvements among school-aged learners of English as an additional language, although outcomes depend on instructional approaches and implementation. Similarly, vocabulary knowledge is an important consideration in academic reading. Warnby (2025) examined the relationships among academic reading, vocabulary knowledge, and general English proficiency, highlighting the relevance of vocabulary development to students' academic preparedness.

Despite the availability of reading strategies and digital learning resources, there remains a need to examine how structured reading activities can be implemented in a school-based setting and how students experience such interventions. In particular, the present study examined changes in reading assessment performance and explored students' experiences following the implementation of Project CLUE. Its contribution lies in providing school-based quantitative and qualitative evidence about a structured reading intervention, rather than establishing its causal effectiveness.

Specifically, the study sought to answer the following questions:

1. What are the students' reading assessment performance levels before and after the implementation of Project CLUE in terms of mean scores and standard deviations?

2. Is there a statistically significant difference between the students' pretest and posttest reading assessment scores?

3. What changes are observed in the students' aggregate CEFR proficiency distribution before and after the intervention?

4. How do students describe their experiences with Project CLUE in terms of reading comprehension, vocabulary development, confidence, reading strategies, learning environment, and challenges?

5. How do the qualitative findings provide additional context for understanding the quantitative results?

METHODOLOGY

The study employed an explanatory sequential mixed-methods design following Creswell and Plano Clark (2018). Quantitative data were collected and analyzed first, followed by qualitative interviews to provide additional context for interpreting the assessment findings.

The quantitative phase involved 84 Grade 12 HUMSS students at Sto. Domingo Integrated High School during School Year 2026–2027. Total population sampling was employed to include the identified student population. For the qualitative phase, 15 students were purposively selected based on their reading gains, representing high, moderate, and minimal improvement.

Project CLUE was implemented from June to September 2026. It provided CEFR-aligned reading materials, vocabulary exercises, context-clue activities, comprehension tasks, and visual organizers through a Google Sites-based platform. The activities encouraged students to identify main ideas, recognize supporting details, interpret unfamiliar words, and organize information from reading passages. These instructional components were informed by literature emphasizing the use of complementary comprehension strategies and background knowledge (Peng et al., 2024).

The British Council EnglishScore Reading Test was administered before and after the intervention. Descriptive statistics, including means and standard deviations, were used to summarize students' assessment performance. A paired-samples t-test examined the difference between pretest and posttest scores. The standardized paired-change effect size was reported as Cohen's d_z. Its interpretation was supplemented by the mean gain relative to

the pretest standard deviation. A 95% confidence interval was calculated for the mean difference. Aggregate CEFR proficiency distributions were also compared.

Semi-structured interviews explored students' experiences with the intervention. Responses were manually coded and organized into recurring themes using the thematic analysis procedures described by Braun and Clarke (2006). A co-teacher reviewed the coding, while participant codes were used to protect students' identities. The integration of quantitative and qualitative findings followed the mixed-methods considerations discussed by DeJonckheere et al. (2024).

The study observed informed consent, confidentiality, and voluntary participation in accordance with its documented research and school approval procedures. Participation in the interviews was voluntary, and participant codes were used in presenting responses.

RESULTS AND DISCUSSION

3.1 Quantitative Findings

The students' mean reading assessment score increased from 343.62 (SD = 96.67) in the pretest to 379.44 (SD = 95.44) in the posttest, reflecting a mean gain of 35.82 points. The paired-samples t-test indicated a statistically significant difference, $t(83) = 8.243$, $p < .001$. The standardized paired-change effect was $d_z = 0.90$. However, this value represents the mean change relative to the standard deviation of individual difference scores. When expressed relative to the pretest standard deviation, the observed gain was approximately 0.37 standard deviations. The approximate 95% confidence interval for the mean gain was 27.18 to 44.46 points.

These findings indicate that students obtained higher reading assessment scores after participating in Project CLUE. However, statistical significance should not be interpreted as proof that the intervention independently produced the improvement. Other learning experiences, regular English instruction, maturation, familiarity with the assessment, and increased motivation may also have contributed to the observed difference.

The findings are consistent with Peng et al. (2024), who emphasized the importance of combining reading comprehension strategies with background knowledge. The vocabulary activities incorporated into Project CLUE also reflect the importance of vocabulary knowledge in academic reading, as discussed by Warnby (2025). These studies provide a theoretical basis for the instructional components of Project CLUE, although they do not independently establish the effectiveness of this particular intervention.

Changes were also observed in the aggregate CEFR proficiency distribution. The number of students classified at B2 increased from 21 in the pretest to 33 in the posttest, while C1 increased from four to eight. Meanwhile, A1 decreased from seven to four, A2 from 18 to 14, and B1 from 34 to 25. No students were classified at C2 in either assessment.

These descriptive changes suggest a shift in the overall distribution toward higher proficiency categories. However, aggregate frequencies cannot establish the exact movement of individual students between proficiency levels. Without individual transition data and an appropriate statistical test of the distributional changes, the results should be interpreted descriptively. Classification near CEFR cut-off points may also be affected by measurement variability.

3.2 Qualitative Findings

The interviews revealed six recurring themes concerning students' experiences with Project CLUE.

Enhanced Reading Comprehension. Participants described improvements in identifying main ideas and supporting details. One student stated, “Project CLUE helped me improve my ability to understand the main idea and identify important details in a text” (P4). This response illustrates the participant's perceived benefit from the comprehension activities. The finding is consistent with Peng et al. (2024), who highlighted the importance of combining comprehension strategies in reading instruction.

Vocabulary Development. Students appreciated activities that introduced unfamiliar words and helped them understand their meanings. One participant explained, "The vocabulary activities were the most helpful because they introduced me to new words and taught me their meanings" (P5). This response highlights the perceived relevance of vocabulary exercises in understanding reading passages. Warnby (2025) similarly emphasized the relationship between vocabulary knowledge and academic reading.

Increased Confidence. Some participants reported becoming more comfortable when working with reading passages. Their accounts suggest that organized activities and opportunities for practice may have supported their confidence in approaching reading tasks. However, these findings represent self-reported experiences rather than measured changes in reading confidence.

Use of Reading Strategies. Participants identified summarizing, highlighting, predicting, and rereading as strategies they applied during reading activities. One participant shared, "I learned strategies like predicting, summarizing, identifying key ideas, and asking questions while reading" (P4). These accounts indicate students' awareness of different approaches to understanding written texts. Peng et al. (2024) likewise emphasized the value of combining appropriate reading strategies.

Supportive Learning Environment. The Google Sites-based platform provided an organized location for reading materials and activities. Participants' experiences suggest that digital resources offered opportunities to revisit materials and engage in independent practice. Murphy and Arciuli (2024) noted that digital reading instruction can support comprehension development when appropriate instructional strategies are incorporated. Nevertheless, the usefulness of digital platforms depends on accessibility and the quality of instructional implementation.

Continuing Reading Challenges. Despite their positive experiences, students continued to encounter unfamiliar vocabulary, lengthy passages, limited time, and difficulties accessing technology. These accounts indicate that participation in the intervention did not eliminate all reading difficulties. They also highlight the importance of providing differentiated materials and printed or offline alternatives.

3.3 Integration of Quantitative and Qualitative Findings

The quantitative and qualitative findings provide complementary perspectives on students' experiences with Project CLUE. The increase in mean reading assessment scores indicates improved group performance at posttest, while the interviews offer possible explanations for how participants experienced the learning activities.

In particular, students' accounts concerning vocabulary development, identifying main ideas, and using reading strategies provide context for understanding the instructional experiences associated with the observed score improvement. These findings are consistent with the reading strategy considerations discussed by Peng et al. (2024) and the importance of vocabulary knowledge emphasized by Warnby (2025).

The reported difficulties involving unfamiliar words, lengthy passages, time constraints, and technology access also provide an important qualification to the quantitative findings. Although the overall group mean increased, students continued to experience challenges. Furthermore, because the qualitative participants were selected to represent varied reading gains, their experiences should be interpreted as additional perspectives rather than evidence that all students benefited equally.

The integration of both strands suggests that Project CLUE provided structured opportunities for reading practice and that selected participants perceived its activities as useful. Nevertheless, the qualitative findings cannot establish which intervention component contributed most to the observed quantitative change. The results should therefore be understood as complementary evidence of students' assessment performance and reported experiences, rather than definitive proof of intervention effectiveness.

CONCLUSION, LIMITATIONS, AND RECOMMENDATIONS

The study found an increase of 35.82 points in the mean reading assessment scores of 84 Grade 12 HUMSS students following the implementation of Project CLUE. The pretest–posttest difference was statistically significant, $t(83) = 8.243$, $p < .001$, with a standardized paired-change effect of $d_z = 0.90$. Relative to the pretest

standard deviation, the gain was approximately 0.37 standard deviations. The aggregate CEFR distribution also showed changes toward higher proficiency categories.

Interview participants described perceived improvements in reading comprehension, vocabulary, confidence, and reading strategies. However, difficulties involving unfamiliar vocabulary, lengthy passages, time constraints, and technology access remained. These findings suggest that Project CLUE may serve as a supplementary framework for organizing structured reading activities in senior high school instruction.

Several limitations should be considered. First, the one-group pretest–posttest design did not include a comparison group. Consequently, the observed improvement cannot be attributed exclusively to Project CLUE because other instructional and external factors may have influenced the results. Second, the available aggregate CEFR data do not establish individual proficiency transitions. Third, the reported findings do not establish whether changes occurred in specific reading subskills or whether certain student groups benefited more than others. Finally, the qualitative findings were drawn from 15 purposively selected participants and should not be generalized to all students.

Future implementations may consider combining vocabulary development, context-clue exercises, comprehension activities, and visual organizers with regular English instruction. Printed and offline alternatives may be provided to students experiencing technology access difficulties. These practices may be considered as supplementary instructional approaches rather than established solutions.

Future researchers are encouraged to employ comparison groups or other stronger research designs, examine individual CEFR transitions, assess specific reading subskills, and investigate differences in outcomes according to baseline proficiency and technology access. Further studies may also document intervention dosage, implementation fidelity, student platform engagement, and follow-up performance to provide a more comprehensive evaluation of Project CLUE.

AI Use Disclosure

AI-assisted tools were used to support portions of the manuscript's drafting, language editing, and organization. The researcher reviewed and revised the manuscript and remains responsible for the research design, implementation, data, statistical analysis, interpretation, and verification of all manuscript contents. AI use is disclosed in accordance with the applicable journal publication and ethical guidelines.

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