PQ4R and Reading Comprehension in Higher Education: A Data-Driven Examination

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Abstract: In higher education, proficient reading comprehension is fundamental for engaging with complex texts. This study delves into the efficacy of the PQ4R strategy (Preview, Question, Read, Reflect, Recite, Review) in enhancing reading comprehension among students. PQ4R offers a structured strategy to reading, promoting active engagement and deeper understanding. The study investigated the impact of PQ4R on students' reading comprehension skills through a quasi-experimental design conducted at the English Department of IAIN Ponorogo. Results reveal a significant difference in comprehension between students taught with PQ4R and those using conventional methods. Descriptive statistics and independent samples test underscore PQ4R's effectiveness, indicating higher comprehension scores in the experimental group. These findings suggest PQ4R as a valuable tool for improving reading comprehension in higher education, offering educators and students a roadmap for enhanced learning outcomes.

Key words: PQ4R, reading comprehension, higher education

INTRODUCTION

In the area of higher education, the process of acquiring information is a complicated process that is strongly connected with the capability of comprehending and engaging with texts that are complex (McWhorter, 2011). Research has shown that vocabulary knowledge has a large role in text comprehension, providing a substantial amount of the variance in comprehension outcomes. This notion is reinforced by research that indicates that vocabulary knowledge plays a big impact in vocabulary (Dong et al., 2020). Additionally, it has been demonstrated that the ability to draw inferences, as well as the mastery of grammatical concepts and vocabulary, can improve performance in activities that require the comprehension of difficult content (Dong et al., 2020).

Further insights into the dynamics of reading comprehension within academic contexts have emerged from studies examining the impact of different linguistic factors on comprehension outcomes. For instance, Lawrence et al. (2019) found that while knowledge of multiword expressions and topical associates significantly influences reading comprehension, hypernyms do not have the same differential impact. In their research, they observed that tasks involving the definition of terms explained the largest portion of variance in comprehension outcomes (Anwar & Sailuddin, 2022). This underscores the importance of understanding the nuances of language

comprehension and the specific linguistic elements that contribute to effective comprehension processes.

Texts encountered in higher education settings are renowned for their density, often containing complex concepts, nuanced arguments, and disciplinary jargon, which can pose formidable challenges to learners (Bunch et al., 2014). Within this context, academic reading difficulties are prevalent, with a significant portion of students struggling to comprehend difficult words. Anwar and Sailuddin (2022) highlight this issue, reporting that 43% of students face challenges in translating and understanding formal and complex vocabulary.

Moreover, the challenges students encounter in academic reading extend beyond vocabulary hurdles. Nurhayati et al. (2023) emphasize that students' reading difficulties primarily revolve around understanding the text itself, leading to complications such as difficulties in mastering grammar, limitations in vocabulary, and challenges in translating text. This underscores the multifaceted nature of reading comprehension challenges in higher education, which encompass not only lexical comprehension but also broader issues related to text understanding and interpretation.

To navigate the complex intellectual terrain of higher education effectively, students must cultivate robust reading comprehension skills that go beyond mere surface-level understanding. Saeedi et al. (2018) assert that these skills should enable students to extract meaning from texts, discern underlying themes, and critically evaluate arguments with discernment. This suggests that successful engagement with academic texts requires not only the ability to decode words but also the capacity to comprehend and analyze their deeper implications.

Research corroborates the importance of reading comprehension skills, vocabulary, and problem-solving reading strategies in academic performance. Talwar et al. (Talwar et al., 2023) highlight the significant impact of these factors on early college GPA and academic reading performance. This underscores the pivotal role of comprehensive reading abilities in achieving academic success, as they facilitate effective engagement with course materials and assessments.

Moreover, for students with learning disabilities, instruction in cognitive and metacognitive strategies offers a promising avenue for supporting their independent use of reading comprehension strategies and enhancing academic achievement. Gajria and McAlenney (2020) advocate for the implementation of such strategies, recognizing their potential to empower students with learning differences to navigate academic challenges more effectively. By equipping students with tailored approaches to comprehension and problem-solving, educators can foster a more inclusive learning environment that accommodates diverse learning needs and maximizes academic potential.

Among the myriad of strategies, PQ4R (Preview, Question, Read, Reflect, Recite, and Review) stands out as a teaching strategy designed to bolster reading comprehension and retention (Bean & Harper, 2016). PQ4R as a tool for enhancing reading comprehension among students in higher education settings (Rodli, 2015). Drawing upon cognitive psychology and educational research, PQ4R offers a systematic framework that guides students through the stages of reading, encouraging active engagement with the text and fostering deeper understanding (Fitriani &

Suhardi, 2019). By incorporating pre-reading strategies such as previewing and questioning, students prime their cognitive processes, activating prior knowledge and setting purposeful intentions for reading (Gunning, 2000).The subsequent phases of reading, reflection, recitation, and review further reinforce comprehension through iterative reinforcement and consolidation of key concepts (Morrow, 2008).

While traditional strategies for teaching reading often emphasize passive consumption of information, PQ4R promotes an interactive and iterative learning process, empowering students to take ownership of their understanding (Weinstein & Mayer, 1983). Through reflection and recitation, students actively process and internalize information, fostering deeper connections and long-term retention (Weinstein et al., 2000).

Despite its potential, there is a lack of robust empirical studies on the effectiveness of PQ4R across various disciplines and among diverse student populations. Additionally, comparative studies between PQ4R and other reading strategies are limited, and the long-term impact of PQ4R on academic performance remains underexplored. Practical challenges in implementing PQ4R in classroom settings and identifying best practices for its use also require further investigation. By addressing these gaps, future studies can provide valuable insights into optimizing reading comprehension strategies to support diverse learners in higher education more effectively. This article aims to illuminate the efficacy of PQ4R as a valuable asset in the academic toolkit, offering educators and students a roadmap towards enhanced reading comprehension and learning outcomes in higher education.

METHODS

Research Design

This study utilized a quasi-experimental design to determine if there is a significant difference in the reading comprehension of students who are taught using the PQ4R strategy compared to those who are taught using a conventional strategy. The research was carried out at the English Department of IAIN Ponorogo, located in East Java, specifically in the Intermediate Reading Course. The research focused on the 2nd semester students who shown adequate reading skills in the prior semester.

Population and Sample

The population were second semester students enrolled in the Intermediate Reading Course in English Education Department at IAIN Ponorogo. The total number of students was 100. The sampling approach employed was cluster random sampling. The experimental group consisted of 29 students from Class A who were taught using the PQ4R strategy, whereas the control group comprised 27 students from Class B who were taught using the conventional strategy.

Research Instrument and Procedure

In this stage, data were collected through test. A set of questions was employed in both experimental and control class to measure students' reading skills. A set of questions was employed in post-test in both control and experimental class to measure the students' reading

comprehension skills. The questions consisted of 10 subjective questions dealing with "The Impact of Climate Change on Biodiversity". The result of the test will be assessed by (Cameron, 2009) to determine the students' reading comprehension skills score.

Table 1 Scoring Rubric for Reading Comprehension

Indicator	Novice	Intermediate	Proficient	Mastery
Main Idea Identification	Unable to identify the main idea or provides an inaccurate summary.	Identifies the main idea with some accuracy but lacks depth or coherence in summarization.	Clearly identifies the main idea and provides a coherent and accurate summary.	Identifies the main idea with depth and insight, providing a nuanced and comprehensive summary.
Understanding Details	Fails to comprehend key details or misinterprets important information.	Partially comprehends key details but may miss some crucial information.	Comprehends most key details accurately, demonstrating a solid understanding of the text.	Comprehends all key details accurately and demonstrates a thorough understanding of the text.
Inferencing	Struggles to make inferences or draws incorrect conclusions from the text.	Makes basic inferences but may not fully integrate implicit information with background knowledge.	Makes logical inferences, integrating implicit information with background knowledge effectively.	Makes sophisticated inferences, demonstrating deep insight and critical thinking skills.
Vocabulary Comprehension	Misinterprets or struggles to understand vocabulary in context.	Understands some vocabulary in context but may need clarification for unfamiliar words.	Understands most vocabulary in context, accurately inferring meaning from surrounding text.	Demonstrates a strong command of vocabulary, accurately inferring meaning even for complex or unfamiliar words.
Critical Thinking	Shows little evidence of critical thinking, accepting information at face value without analysis.	Begins to engage in critical thinking but may lack depth or consistency in evaluation.	Engages in critical thinking, analyzing information, and evaluating its credibility and implications.	Demonstrates sophisticated critical thinking, offering insightful analysis and evaluation of information.
Text Structure Awareness	Does not recognize or understand the organization of the text.	Shows limited awareness of text structure, struggling to identify how	Recognizes and understands the organization of the text, identifying the relationships between ideas.	Demonstrates a deep understanding of text structure, accurately analyzing how ideas

		ideas are organized.		are organized and interconnected.
Context Clue Utilization	Unable to use context clues effectively to infer the meaning of unfamiliar words or phrases.	Makes some attempts to use context clues but may misinterpret or struggle with unfamiliar words.	Utilizes context clues effectively to infer the meaning of most unfamiliar words or phrases.	Demonstrates mastery in using context clues to infer the meaning of even complex or obscure words or phrases.
Question Answering	Provides inaccurate or incomplete responses to questions about the text.	Provides partially accurate responses to questions but may overlook some key details.	Provides accurate responses to most questions, demonstrating a solid understanding of the text.	Provides thorough and accurate responses to all questions, demonstrating a comprehensive understanding of the text.
Summarization	Unable to provide a coherent or accurate summary of the text.	Provides a summary with some coherence but may lack accuracy or depth.	Provides a coherent and accurate summary of the text, capturing the main points and key details.	Provides a nuanced and comprehensive summary, demonstrating insight and synthesis of the text's content.
Monitoring Understanding	Shows little awareness of comprehension difficulties and does not employ strategies to overcome them.	Begins to recognize comprehension difficulties but may struggle to effectively employ strategies for clarification.	Demonstrates awareness of comprehension difficulties and employs strategies effectively to monitor and improve understanding.	Proactively monitors comprehension, quickly recognizing and addressing difficulties with advanced strategies for clarification and adjustmen

Data Analysis

The data used in this study came from students' achievement as measured by their reading comprehension test scores. The subsequent stage pertains to the fulfilment of statistical assumptions through the assessment of data normality and homogeneity using the independent-sample t-test. The homogeneity and normalcy assumptions made by the T-test must be met (Bartlett, 1995). Parametric testing will be used once all of these statistical presumptions have been met.

FINDINGS AND DISCUSSION

Table 2 Descriptive Statistics of Two Distinct Group

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Experiment	27	62.00	92.00	2068.00	76.5926	8.60348
Control	29	47.00	83.00	1895.00	65.3448	9.43881
Valid N (listwise)	27					

The descriptive statistics provided offer a comprehensive view of two distinct groups: the experiment group and the Control group. The experiment group comprises 27 observations, with values ranging from a minimum of 62.00 to a maximum of 92.00, resulting in a total sum of 2068.00. On average, the experiment group demonstrates a mean value of approximately 76.5926, with a standard deviation of around 8.60348, indicating a moderate level of dispersion around the mean. In contrast, the Control group consists of 29 observations, ranging from 47.00 to 83.00, summing up to 1895.00. The Control group exhibits a lower mean value of approximately 65.3448, with a slightly higher standard deviation of about 9.43881, suggesting a broader spread of values compared to the Experiment group. These statistics suggest that, on average, the experiment group tends to yield higher values than the Control group, albeit with slightly less variability in its data points.

Tabel 3 Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Method	Equal variances assumed	.393	.533	4.649	54	.000	11.24777	2.41926	6.39745	16.09808
	Equal variances not assumed			4.665	53.979	.000	11.24777	2.41114	6.41368	16.08185

The results of the independent samples test provide valuable insights into the comparison between two groups. The Levene's Test for Equality of Variances assesses whether the variances

of the two groups are statistically equal. The obtained F statistic of .393 with a corresponding p-value of .533 suggests that there is no significant difference in variances between the two groups, as the p-value exceeds the conventional threshold of .05. Therefore, the assumption of equal variances is upheld.

Subsequently, the t-test for Equality of Means evaluates whether there is a significant difference in the means of the two groups. With the assumption of equal variances, the calculated t-statistic of 4.649 is associated with a p-value of .000, indicating a highly significant difference in means between the two groups. The mean difference of 11.24777 suggests that, on average, the experimental group outperformed the control group. The 95% confidence interval for the mean difference (6.39745 to 16.09808) further supports this finding, indicating that we can be 95% confident that the true difference in means falls within this interval.

In cases where equal variances cannot be assumed, the t-test results remain consistent, with a slight variation in the degrees of freedom due to the Welch correction. The obtained t-statistic of 4.665 with a p-value of .000 reaffirms the significant difference in means between the two groups.

Overall, these results indicate a statistically significant difference in means between the experimental who are taught by PQ4R and control groups, suggesting that the experimental intervention has had a notable effect. It implied that PQ4R is effective strategy. It is in line with a result of a study conducted by Maranan & Diva (2023). They stated that the PQ4R strategy has been shown to significantly enhance reading comprehension among higher education students by aiding in the identification of facts versus opinions, making inferences, grasping main ideas, and promoting self-questioning (Maranan & Diva, 2023).

CLOSING

In conclusion, this study underscores the efficacy of technology-mediated PQ4R instruction in enhancing reading comprehension among higher education students at the English Department of IAIN Ponorogo, East Java. The quasi-experimental design revealed significantly higher comprehension scores for students taught with PQ4R compared to those receiving conventional instruction. However, limitations include the study's single-institution focus and the restricted sample of second-semester students, suggesting caution in generalizing the findings. Nonetheless, this research highlights the potential of PQ4R, augmented by technology, as a valuable pedagogical tool for fostering deeper reading comprehension skills in academic settings.

The study offers valuable insights into effective pedagogical strategies for improving reading comprehension in higher education. Moving forward, research should expand to include broader and more diverse sample populations across multiple institutions. Longitudinal studies could assess the sustained impact of PQ4R instruction, while comparative studies might explore its effectiveness across various disciplines and academic levels. Additionally, qualitative research could delve into student perceptions and experiences with technology-mediated instructional approaches, informing the development of more tailored interventions. Continued investigation

into PQ4R's efficacy and implementation in diverse educational contexts is vital for advancing effective reading comprehension strategies in higher education.

REFERENCES

Anwar, I. W., & Sailuddin, S. P. (2022). Academic reading difficulties in higher education. *Journal of Languages and Language Teaching*, *10*(2), 309. https://doi.org/10.33394/jollt.v10i2.4849

Bartlett, F. C. (1995). *Remembering: A study in experimental and social psychology*. Cambridge university press. https://books.google.com/books?hl=en&lr=&id=WG5ZcHGTrm4C&oi=fnd&pg=PR9&dq=Remembering:++A++study++in++experimental++and+social+psychology&ots=BFbZjsNohG&sig=2Ddm2m75tsx5BKvE6o1rL1eEln8

Bean, T. W., & Harper, H. (2016). Content area reading: The current state of the art. *Content Area Reading and Learning*, 15–28.

Bunch, G. C., Walqui, A., & Pearson, P. D. (2014). Complex Text and New Common Standards in the United States: Pedagogical Implications for English Learners. *TESOL Quarterly*, *48*(3), 533–559. https://doi.org/10.1002/tesq.175

Cameron, S. (2009). *Teaching reading comprehension strategies: A practical classroom guide*. Pearson.

Dong, Y., Tang, Y., Chow, B. W.-Y., Wang, W., & Dong, W.-Y. (2020). Contribution of vocabulary knowledge to reading comprehension among Chinese students: A meta-analysis. *Frontiers in Psychology*, *11*, 525369. https://doi.org/10.3389/fpsyg.2020.525369

Fitriani, O., & Suhardi, S. (2019). The effectiveness of PQ4R (preview, question, read, reflect, recite, review) in reading comprehension skill. *6th International Conference on Educational Research and Innovation (ICERI 2018)*, 523–526.

Gajria, M., & McAlenney, A. L. (2020). Effective strategies for improving reading comprehension. In M. Gajria & A. L. McAlenney, *Oxford Research Encyclopedia of Education*. Oxford University Press. https://doi.org/10.1093/acrefore/9780190264093.013.1225

Gunning, T. G. (2000). *Creating literacy instruction for all children*. ERIC. https://eric.ed.gov/?id=ED449496

Lawrence, J. F., Hagen, A. M., Hwang, J. K., Lin, G., & Lervåg, A. (2019). Academic vocabulary and reading comprehension: Exploring the relationships across measures of vocabulary knowledge. *Reading and Writing*, *32*(2), 285–306. https://doi.org/10.1007/s11145-018-9865-2

McWhorter, K. T. (2011). *Successful college writing: Skills-strategies-learning styles*. Macmillan.

Morrow, L. M. (2008). *Comprehension instruction: Research-based best practices*. https://books.google.com/books?hl=id&lr=&id=ao1civeCm5gC&oi=fnd&pg=PR1&dq=Comprehension+Instruction:+Research-Based+Best+Practices&ots=YVTiBYbl2F&sig=Y9o-Z2F7K_ZQWLdZ2GX0CyqqKkE

Nurhayati, D., Julyan, R., & Williyan, A. (2023). Investigating efl learners' reading difficulties and the possible solutions. *NextGen Education Review Journal*, *1*(1). https://doi.org/10.58660/nextgen.v1i1.134

Rodli, M. (2015). Applying PQ4R strategy for teaching reading. *Indonesian EFL Journal: Journal of ELT, Linguistics, and Literature, 1*(1), 31–41.

Saeedi, A., & Hamedi, M. (2018). *Financial literacy: Empowerment in the stock market*. Palgrave Macmillan. https://doi.org/10.1007/978-3-319-77857-0

Talwar, A., Magliano, J. P., Higgs, K., Santuzzi, A., Tonks, S., O'Reilly, T., & Sabatini, J. (2023). Early academic success in college: Examining the contributions of reading literacy skills, metacognitive reading strategies, and reading motivation. *Journal of College Reading and Learning*, *53*(1), 58–87. https://doi.org/10.1080/10790195.2022.2137069

Weinstein, C. E., Husman, J., & Dierking, D. R. (2000). Self-regulation interventions with a focus on learning strategies. In *Handbook of self-regulation* (pp. 727–747). Amsterdam: Elsevier.

Weinstein, C. E., & Mayer, R. E. (1983). The teaching of learning strategies. *Innovation Abstracts*, *5*(32), n32. https://eric.ed.gov/?id=ED237180