E-ISSN: 3031-8629
P-ISSN: 3032-3258
Halaman 198-206
Volume 2 Nomor 4 Tahun 2025

The Effect of Problem-Based Learning Method Assisted with Story Mapping in Reading Comprehension at SMAN 1 Gerung

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Abstrak

Penelitian ini menyelidiki apakah pembelajaran berbasis masalah (problem-based learning atau PBL) yang didukung oleh pemetaan cerita (story mapping) memengaruhi pemahaman membaca siswa kelas X di SMAN 1 Gerung. Sebuah penelitian kuasi-eksperimen dengan desain perbandingan pre-test–post-test dilakukan terhadap 71 siswa yang dipilih melalui teknik purposive sampling. Kelas eksperimen mendapatkan kegiatan PBL yang didukung oleh peta cerita naratif, sedangkan kelas kontrol mendapatkan pengajaran konvensional. Pemahaman membaca dinilai menggunakan tes pilihan ganda, dan skor dianalisis secara deskriptif serta inferensial menggunakan SPSS. Rata-rata kelompok eksperimen meningkat dari 57,37 menjadi 71,89, sedangkan rata-rata kelompok kontrol meningkat dari 53,71 menjadi 62,40. Meskipun kelompok eksperimen menunjukkan peningkatan deskriptif yang lebih besar, perbandingan post-test menggunakan uji Mann-Whitney U tidak mencapai signifikansi statistik ($U = 465{,}50, p = 0{,}083$). Dengan demikian, temuan ini tidak memberikan bukti yang cukup bahwa PBL yang dibantu oleh pemetaan cerita mengungguli pengajaran konvensional pada kondisi yang diteliti. Peningkatan yang diamati mengindikasikan bahwa pendekatan gabungan ini layak untuk diteliti lebih lanjut dengan sampel yang lebih besar, durasi penerapan yang lebih panjang, serta pengukuran keterlibatan kelas.

Kata kunci: pembelajaran berbasis masalah; pemetaan cerita; pemahaman membaca; teks naratif; kuasi-eksperimen

Abstract

This study investigated whether problem-based learning (PBL) supported by story mapping affected the reading comprehension of tenth-grade students at SMAN 1 Gerung. A quasi-

experimental pre-test–post-test comparison was conducted with 71 students selected through purposive sampling. The experimental class received PBL activities supported by narrative story maps, while the control class received conventional instruction. Reading comprehension was assessed using multiple-choice tests, and scores were analyzed descriptively and inferentially using SPSS. The experimental group mean increased from 57.37 to 71.89, whereas the control group mean increased from 53.71 to 62.40. Although the experimental group showed a larger descriptive gain, the post-test comparison using the Mann–Whitney U test did not reach statistical significance ($U = 465.50$, $p = .083$). Thus, the findings do not provide sufficient evidence that PBL assisted by story mapping outperformed conventional instruction under the conditions studied. The observed gains suggest that the combined approach merits further investigation with larger samples, longer implementation, and measures of classroom engagement.
Keywords: problem-based learning; story mapping; reading comprehension; narrative text; quasi-experiment

INTRODUCTION

Reading comprehension requires learners to identify central ideas, interpret supporting information, connect events, and construct coherent meanings from texts. For learners of English as a foreign language, these demands are intensified by unfamiliar vocabulary and text organization (Grabe & Stoller, 2019). Narrative reading also requires attention to setting, characters, conflict, sequence, and resolution. Graphic organizers can make these relationships visible and provide readers with an explicit framework for processing a story (Idol, 1987).

At SMAN 1 Gerung, preliminary teacher interviews and observations persistent difficulty identifying main ideas, summarizing texts, and relating different sections of a passage. More than 60% of students scored below the school minimum completion criterion in reading comprehension. This local concern motivated the search for instruction that combined active interpretation with explicit structural support.

Problem-based learning (PBL) starts from a meaningful problem and requires learners to investigate, discuss, justify, and revise possible solutions. It can create

opportunities for collaborative reasoning rather than relying entirely on teacher explanation (Savery, 2015). In an EFL reading classroom, the approach may prompt learners to examine textual evidence and negotiate interpretations. Lin (2017) stated benefits of PBL for reading comprehension, reading strategies, and active-learning attitudes in a university setting; however, such findings cannot automatically be generalized to secondary-school narrative reading.

Story mapping offers a complementary visual structure by organizing characters, setting, events, problems, and resolutions. Idol (1987) documented group story mapping as a comprehension strategy; Sugandi et al. (2022) examined story maps for narrative reading; and Oktarina et al. (2024) studied the combination of PBL and story mapping. These studies support investigating whether a problem-solving orientation and explicit narrative representation can operate together in a school context. The present study therefore asked whether PBL assisted by story mapping produced a statistically significant difference in tenth-grade students' reading comprehension compared with conventional instruction.

Research conducted by English education lecturers at Mandalika University of Education provides a relevant basis for interactive reading instruction. Imran and Sandiarsa S. (2018) investigated the Teammates Consult strategy in reading narrative texts and statistically significant differences in reading performance and motivation. Their findings suggest that structured peer consultation can support students' engagement with narrative meaning. Similarly, Sandiarsa et al. (2020) compared PQRST and SQ3R reading strategies across text types and identified a significant difference between instructional strategies. Together, these studies indicate that how learners process, discuss, and organize textual information is an important consideration in reading pedagogy.

Additional studies from FBMB UNDIKMA emphasize classroom interaction and motivation. Tawali (2021) stated improvements in students' reading comprehension through the Listen–Read–Discuss strategy, while Isgaf et al. (2024) examined the Fan-N-Pick cooperative strategy in relation to students' interest in reading comprehension. Sandiarsa S. and Firman (2024) further reviewed

pedagogical strategies and opportunities for more engaging English language teaching. Firman and Sandiarsa S. (2024) highlighted supportive teacher relationships, collaborative peer interaction, and classroom climate as contributors to learning motivation. These perspectives support the rationale for combining PBL's collaborative problem solving with story mapping's visual organization, although they do not establish that this particular combination will necessarily produce a statistically significant effect.

Recent evidence provides further theoretical support for narrative visualization. Sugandi et al. (2022) examined story mapping in a quasi-experimental study of tenth-grade students and better narrative reading comprehension following story-map instruction. From a text-structure perspective, story mapping may help learners identify how orientation, complications, and resolution contribute to the overall meaning of a narrative. This finding provides a rationale for using visual organization as a reading scaffold, although it does not demonstrate the effectiveness of combining story mapping with PBL in every context.

Oktarina et al. (2024) directly investigated problem-based learning assisted by story mapping among eighth-grade learners. Their study provides a recent empirical comparison for the present instructional approach. Conceptually, PBL organizes reading around questions that require explanation and evidence, while story mapping supplies a visible representation of narrative relationships. Tawali (2021) also found improvement in reading comprehension through Listen–Read–Discuss instruction, supporting the broader relevance of structured reading and discussion activities. These studies differ in setting, text type, and design, so their results should not be assumed to predict the present study's statistical outcome.

METHOD

The study adopted a quasi-experimental design with experimental and control groups, using pre-tests and post-tests. The participants were 71 tenth-grade students of SMAN 1 Gerung, West Lombok, selected through purposive sampling. The experimental group learned narrative reading through problem-based activities

assisted by story mapping, whereas the control group received conventional instruction. The instructional focus was narrative text and comprehension of its content and structure.

The research instrument consisted of multiple-choice reading comprehension questions administered before and after instruction. Validity and reliability testing and analyzed the data with SPSS. Descriptive statistics included means, ranges, and standard deviations. After assumption checks, the between-group post-test comparison was performed using a two-sided Mann–Whitney U test with a significance threshold of .05.

RESULTS AND DISCUSSION

The descriptive results indicated improvements in both groups. Table 1 reproduces the group-level results reported below:

Table 1. Descriptive reading comprehension scores

Group / statistic	Pre-test	Post-test
Experimental mean	57.37	71.89
Experimental SD	27.71	21.86
Experimental minimum–maximum	0–100	32–100
Control mean	53.71	62.40
Control SD	23.70	24.68
Control minimum–maximum	4–88	16–92

The experimental group gained 14.52 points on average, while the control group gained 8.69 points. The descriptive difference in gains was 5.83 points. These figures suggest greater improvement in the group exposed to PBL and story mapping; nevertheless, descriptive change alone does not establish a statistically reliable treatment effect. The experimental group also started with a higher pre-test mean (57.37 versus 53.71), making baseline differences relevant to interpretation.

Table 2. Mann–Whitney U test of post-test scores

Statistic	Value
Mann–Whitney U	465.500
Wilcoxon W	1095.500
Z	−1.731
Asymptotic significance (two-tailed)	0.083

As shown in Table 2, the two-tailed significance level was .083, above the prespecified .05 threshold. The null hypothesis of no between-group difference was therefore not rejected. This result does not demonstrate that the two approaches are equivalent; it means that the present data did not establish a statistically significant difference. The distinction matters because the higher experimental post-test mean (71.89 compared with 62.40) might otherwise be misinterpreted as conclusive evidence of effectiveness.

The descriptive pattern is consistent with the instructional rationale for pairing PBL and story mapping. PBL encourages learners to discuss and evaluate narrative problems, while story maps provide a shared visual reference for characters, conflicts, and outcomes. Idol (1987) explained how narrative mapping directs attention toward interconnected story components, and Lin (2017) found that PBL can promote reading strategy use and active engagement. Oktarina et al. (2024) similarly investigated the combined method in reading comprehension. These connections offer plausible explanations for the observed direction of improvement, but they do not replace direct evidence of the mechanism in this particular study.

The present findings can be considered alongside earlier local studies without treating their outcomes as directly equivalent. Imran and Sandiarsa S. (2018) found significant effects for Teammates Consult on narrative-text reading, and Tawali (2021) documented gains during Listen–Read–Discuss instruction. Sandiarsa et al. (2020) also showed that reading strategies may differ in their effects across text types. Unlike those findings, the present between-group comparison did not reach statistical significance ($p = .083$). Differences in participants, instructional

procedures, assessment designs, and treatment duration may help explain variation across studies, but these explanations were not directly tested here.

The instructional interpretation also needs to distinguish comprehension outcomes from motivation. Isgaf et al. (2024) focused on interest in reading comprehension, whereas Firman and Sandiarsa S. (2024) examined the motivational role of supportive learning environments. Their work suggests plausible reasons why cooperative PBL tasks might encourage participation; however, the present study did not directly measure motivational change. The broader pedagogical discussion by Sandiarsa S. and Firman (2024) supports adapting interactive teaching strategies to learners' needs. Accordingly, story mapping may remain a useful classroom scaffold, but the present evidence supports only a descriptive advantage rather than a confirmed significant treatment effect.

There are several reasons to interpret the result cautiously. The purposive sample was drawn from a single school, limiting generalizability. Group means and a post-test nonparametric comparison, but the analysis did not provide a baseline-adjusted effect estimate or confidence interval. In addition, improvements in engagement and understanding of narrative structure were discussed in the study but were not established by a separately quantitative engagement measure. Future studies should document intervention duration and fidelity, collect classroom-process evidence, and consider baseline-adjusted comparisons and longer-term follow-up. Such work would clarify whether the visually supported problem-solving process offers an advantage beyond ordinary reading practice.

The recent literature helps distinguish instructional plausibility from demonstrated effectiveness. Sugandi et al. (2022) reported a favorable outcome for story mapping in narrative comprehension, and Oktarina et al. (2024) investigated its integration with PBL. These findings suggest that visual representations and problem-oriented tasks are reasonable strategies to examine, but differences in study populations and analytical procedures limit direct comparison. In the present study, the larger descriptive gain did not translate into a statistically significant post-

test difference (p = .083); therefore, the cited studies provide theoretical context rather than confirmation of a treatment effect.

CONCLUSION

Both groups improved in reading comprehension, with a larger descriptive mean gain in the PBL–story-mapping group. However, the Mann–Whitney U test did not show a statistically significant post-test difference (p = .083). Thus, this study does not establish superiority of the combined approach. Teachers may explore story mapping within problem-based narrative lessons while monitoring learners' progress, and future researchers should use broader samples, longer interventions, and stronger measures of learning processes.

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