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Improving English Learning Outcomes in Discussion Text through the Fishbone Diagram Method

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ABSTRACT

this classroom action research investigated whether cooperative learning supported by the fishbone diagram method could improve english learning outcomes in discussion text among grade xii students. the study involved 31 students of class xii mipa 1 at sma negeri 1 banyuasin i during the 2021/2022 academic year. Data were collected through tests, classroom observations, interviews, photographs, and instructional documents. The action research was conducted in two cycles comprising planning, action, observation, and reflection. Success was defined as at least 70% of students attaining the minimum mastery criterion of 70. At the pre-cycle stage, 10 students (32.26%) reached mastery. In Cycle I, the mean test score was 72.81 and reported mastery increased; the source manuscript reports 61.29% in the Cycle I results section but 67.74% (21 students) in its conclusion. After instructional refinement in Cycle II, the mean score increased to 80.29 and 28 students (90.32%) achieved mastery. Mean observed learning activity also increased from 73.4% in Cycle I to 87.5% in Cycle II. The findings indicate that the fishbone diagram can function as a visual organizer for identifying opposing arguments, organizing supporting details, and structuring collaborative discussion before students read or compose a discussion text. Because the study used classroom action research in one class without a comparison group, the results should be interpreted as evidence of classroom improvement rather than a causal estimate of treatment effectiveness.

Keywords: discussion text; fishbone diagram; cooperative learning; graphic organizer; English learning outcomes

INTRODUCTION

English instruction at senior-high-school level requires students to comprehend and produce several text genres, including discussion text. Discussion text is particularly demanding because learners must identify an issue, distinguish opposing positions, connect reasons with evidence, and organize a balanced conclusion. These demands combine reading comprehension, vocabulary knowledge, argument organization, and written expression. Research on active and generative learning suggests that students learn more effectively when they are required to select, organize, explain, and discuss information rather than receive it passively (Theobald et al., 2020; Brod, 2021; Fiorella, 2023).

In the source classroom, students of Class XII MIPA 1 at SMA Negeri 1 Banyuasin I experienced difficulty identifying the social function, text structure, linguistic features, main ideas, and supporting

details of discussion texts. Classroom observation also indicated boredom with long texts, limited vocabulary, dependence on teacher explanation, low motivation to summarize texts, and difficulty collecting evidence for written arguments. A pre-cycle test showed that only 10 of 31 students (32.26%) reached the minimum mastery criterion of 70, with scores ranging from 35 to 72. These classroom conditions provided the practical basis for the action research.

Graphic organizers can externalize relationships among ideas and reduce the organizational burden involved in complex reading and writing tasks. In English-language learning, graphic organizers have been associated with improvements in writing quality, reading comprehension, vocabulary acquisition, and critical thinking (Styati & Irawati, 2020; Min et al., 2023; Prasansaph, 2024; Mannag & Dagdag, 2024; Elhawwa, 2024). Their instructional value is consistent with multimedia and cognitive-load perspectives: well-designed visual structures can direct attention to essential relationships when they are integrated with explanation and learner activity (Mayer et al., 2020; Sweller, 2020; Castro-Alonso et al., 2021).

The fishbone diagram, also known as an Ishikawa cause-and-effect diagram, organizes a focal issue at the 'head' and related causes, reasons, or sub-reasons along branching 'bones.' Although originally developed for quality analysis, the structure can be adapted to language learning because it makes relationships among a central issue and supporting arguments visible. Previous EFL studies have used fishbone diagrams for analytical or argumentative writing, vocabulary learning, reading, and discussion-text instruction (Ardianto et al., 2020; Alquraishy et al., 2021; Kasim et al., 2021; Le Quy, 2021; Batu et al., 2021; Fauziah, 2022; Simanjuntak et al., 2022).

Cooperative learning provides a complementary social structure for using such organizers. Small-group interaction can distribute cognitive work, prompt explanation, expose students to alternative interpretations, and create opportunities for feedback and scaffolding. Evidence from collaborative-learning research indicates potential benefits for comprehension, motivation, and learner participation when collaboration is structured rather than left unguided (Ibrahim et al., 2023; Wisniewski et al., 2020). In the present intervention, students worked in heterogeneous groups, analyzed discussion texts, generated arguments through fishbone diagrams, presented their work, and revised their understanding through teacher and peer feedback.

Accordingly, this study aimed to determine whether the cooperative fishbone-diagram method could improve English learning outcomes in discussion text among Grade XII MIPA 1 students at SMA Negeri 1 Banyuasin I. The study also examined changes in observed classroom participation across the two action-research cycles.

LITERATURE REVIEW

Discussion Text and Argument Organization

Discussion text presents an issue from at least two contrasting perspectives. Successful comprehension therefore requires learners to distinguish claims, reasons, supporting information, and relationships among opposing viewpoints. For writing, students must transform these relationships into a coherent rhetorical structure. Visual planning tools can support this process by making argument relations explicit before full sentences are produced (Styati & Irawati, 2020; Al Halim, 2024).

Graphic organizers are especially relevant when learners must integrate reading and writing. Recent EFL research reports that graphic-organizer instruction can strengthen analytical and generalization skills, reading performance, vocabulary acquisition, and writing outcomes (Min et al., 2023; Prasansaph, 2024; Mannag & Dagdag, 2024; Ayiz & Hidayatulloh, 2024). Such benefits are not automatic; organizers need clear prompts, modeling, and alignment with the target genre.

Fishbone Diagram as a Graphic Organizer

The fishbone diagram represents a focal problem or issue and branches that categorize contributing factors. In language instruction, the same architecture can be repurposed to separate pro and con arguments, identify causes, record keywords, and connect supporting details. The visual format may help students convert a long text into a compact representation and then use that representation as a plan for oral discussion or writing (Bilsel & Lin, 2012; Coccia, 2018; Ardianto et al., 2020).

Fishbone-based EFL studies have reported improvements in expository and argumentative writing, vocabulary memorization, and text organization (Alquraishy et al., 2021; Kasim et al., 2021; Le Quy, 2021; Fauziah, 2022; Simanjuntak et al., 2022). The method is also compatible with brainstorming and the '5 Whys' technique, in which repeated why-questions encourage learners to move from surface claims toward underlying reasons.

Cooperative and Active Learning

Cooperative learning places students in small groups with shared tasks and opportunities for explanation, questioning, and peer support. Active-learning evidence across education indicates that participation and generative engagement can improve achievement and reduce performance gaps when tasks are well structured (Theobald et al., 2020; Darling-Hammond et al., 2020). In EFL contexts, collaborative learning and scaffolding have also been associated with improved reading comprehension and motivation (Ibrahim et al., 2023).

The present study combined the visual organizer with heterogeneous grouping, group analysis, presentation, teacher facilitation, and reflection. This combination is important because the diagram itself

is a tool; the instructional mechanism also depends on the quality of discussion, feedback, and guided practice (Wisniewski et al., 2020; Fiorella, 2023).

METHODS

Research Design, Setting, and Participants

The study employed Classroom Action Research conducted in two cycles. Each cycle followed four recurring stages: planning, action, observation, and reflection. The research was carried out at SMA Negeri 1 Banyuasin I, Banyuasin Regency, South Sumatra, Indonesia, from July to October 2021. Participants were 31 students in Class XII MIPA 1 in the first semester of the 2021/2022 academic year, comprising 9 male and 22 female students.

Intervention Procedure

In Cycle I, the teacher introduced discussion text and the fishbone diagram, formed heterogeneous groups, distributed discussion-text worksheets, modeled brainstorming, and asked groups to analyze and present their diagrams. Students subsequently constructed their own fishbone diagrams from assigned topics and developed them into discussion texts. Reflection after Cycle I identified limited participation, uneven group contribution, vocabulary difficulties, and insufficient confidence. Cycle II therefore added targeted questioning, peer assistance for lower-performing students, more deliberate participation of less-confident students, and group rewards.

Data Collection and Analysis

Primary data consisted of achievement tests, classroom observations, and interviews; photographs and instructional documents served as secondary evidence. Individual mastery was defined as a score of at least 70. The action was considered successful when at least 70% of students reached the minimum mastery criterion. Observation data were summarized as scores and percentages. Because the source manuscript does not report inferential tests, effect sizes, instrument reliability, or item-level validity evidence, the present article retains a descriptive interpretation of change across cycles.

RESULTS AND DISCUSSION

Achievement across the Action-Research Cycles

The pre-cycle assessment showed that 10 of 31 students (32.26%) achieved the minimum score of 70. In Cycle I, the source results section reports a mean score of 72.81 and mastery of 61.29%. The source conclusion, however, reports Cycle I mastery as 67.74% (21 students). This internal discrepancy is retained transparently rather than silently reconciled. In Cycle II, the mean score increased to 80.29 and 28 students

(90.32%) reached mastery. Thus, the Cycle II outcome exceeded the predefined success criterion of 70% mastery.

Table 1. Summary of English learning outcomes across stages

Stage	Mean score	Students reaching mastery	Mastery (%)
Pre-cycle	Not reported	10	32.26
Cycle I	72.81	19 according to 61.29%; 21 in source conclusion	61.29 / 67.74*
Cycle II	80.29	28	90.32

Note. The original manuscript contains inconsistent Cycle I mastery figures: 61.29% in the results section and 67.74% (21 students) in the conclusion.

Changes in Observed Learning Activity

Observed classroom activity improved between cycles. The overall observation percentage increased from 73.4% in Cycle I to 87.5% in Cycle II. The largest reported improvement occurred in active questioning and responding, which rose from 57.26% to 95.16%. Discussion activity increased from 67.74% to 79.03%, while presentation activity increased from 66.13% to 77.42%. These patterns are consistent with the intended shift from teacher-dominated explanation toward structured participation and peer-supported learning.

Table 2. Student learning activity in Cycles I and II

Observed activity	Cycle I (%)	Cycle II (%)	Change (pp)
Listening to teacher explanation	79.03	89.52	+10.49
Asking questions and responding	57.26	95.16	+37.90
Following instructional steps	87.10	90.32	+3.22
Participation in the learning process	83.06	93.55	+10.49
Active group discussion	67.74	79.03	+11.29
Presenting group discussion results	66.13	77.42	+11.29
Mean	73.40	87.50	+14.10

Note. Percentages are reproduced from the original classroom-observation tables; pp = percentage points.

Interpretation

The improvement is educationally plausible because the fishbone diagram converts a complex discussion text into a visible network of issues and reasons. This can help students identify central ideas, distinguish supporting details, and prepare arguments before writing. Recent research on graphic organizers similarly reports gains in reading, writing, vocabulary, and critical-thinking outcomes when organizers are embedded in guided tasks (Min et al., 2023; Prasansaph, 2024; Mannag & Dagdag, 2024; Elhawwa, 2024).

The cooperative format likely contributed to the observed participation gains. Students did not merely complete diagrams individually; they discussed texts, negotiated ideas, presented group products, answered

questions, and received feedback. These activities correspond to generative and active-learning processes in which learners retrieve, organize, explain, and elaborate information (Brod, 2021; Fiorella, 2023). The marked increase in questioning and responding in Cycle II is also consistent with the deliberate instructional revision that required less-confident students to participate.

Nevertheless, the data do not isolate the effect of the fishbone diagram from other changes introduced across cycles, including repeated exposure to discussion text, teacher feedback, peer support, rewards, and targeted questioning. Classroom action research is designed primarily for iterative improvement of local practice. Accordingly, the results support the usefulness of the intervention in this classroom but do not establish that the fishbone diagram alone caused the observed gains.

Limitations

The study involved one class of 31 students in one school and did not include a comparison group. The instruments are described only briefly, and reliability, validity, item difficulty, and inter-observer agreement are not reported. The source manuscript also contains an inconsistency in the Cycle I mastery percentage (61.29% in the results section versus 67.74% in the conclusion). Future studies should use larger samples, clearer instrument validation, consistent student-level datasets, and, where feasible, quasi-experimental comparison groups.

CONCLUSION AND RECOMMENDATIONS

The cooperative fishbone-diagram method was associated with improved English learning outcomes and classroom participation in discussion-text instruction for Class XII MIPA 1 at SMA Negeri 1 Banyuasin I. Mastery increased from 32.26% at the pre-cycle stage to 90.32% in Cycle II, while the mean Cycle II score reached 80.29. Observed learning activity increased from 73.4% in Cycle I to 87.5% in Cycle II. The fishbone diagram appears useful as a visual scaffold for organizing opposing arguments, identifying reasons and supporting details, and preparing students for collaborative discussion and writing. Teachers may adapt the organizer to other argumentative genres, but should combine it with explicit modeling, vocabulary support, peer interaction, and formative feedback. Further research should verify the approach with stronger measurement and comparative designs.

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