



Cooperative Learning Type Jigsaw and Student Teams Achievement Division on Improving Students' Writing Skill Procedure Text at State Senior High School 5 Tanjung Balai in 2025/2026 Academic Year

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ABSTRACT

Writing procedure texts requires students to generate and organize ideas, select appropriate vocabulary, and apply accurate grammatical structures, yet teacher-centered instruction may limit students' active participation in developing these skills. This study investigated whether Jigsaw and Student Teams Achievement Division (STAD) cooperative learning produced significantly different outcomes in improving procedure text writing skills among tenth-grade students at State Senior High School 5 Tanjung Balai during the 2025/2026 academic year. The study employed a quantitative approach with a within-subject experimental design. From a population of 270 students, 40 participants were selected through simple random sampling, and data were collected using observation sheets, questionnaires, and writing post-tests. Descriptive statistics and a paired-samples *t*-test using SPSS version 25 were employed to analyze the data. The findings revealed a significant difference between the two cooperative learning strategies, with a mean score of 71.62 for Jigsaw and 82.63 for STAD. Students achieved higher scores through STAD because teacher guidance before group discussions and individual quiz activities promoted more active and equitable participation. The study concludes that STAD produced better procedure text writing outcomes than Jigsaw within the instructional context examined.

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INTRODUCTION

In the era of globalization, English proficiency plays a crucial role in preparing students to address academic and professional challenges. English functions not only as a means of international communication but also as a medium through which students can access global developments in science, technology, and information (Khairia et al., 2026). The Indonesian education system therefore positions English as a compulsory subject aimed at developing students' oral and written communication skills. According to the Learning Outcomes issued by the Ministry of Education, Culture, Research, and Technology, students at the senior secondary level are expected to understand, produce, and respond appropriately to various types of functional texts (Pajaron & Labitad, 2025). These educational expectations highlight the importance of developing students' comprehensive English language competence within formal classroom instruction.

Meeting these educational demands requires students to develop all language skills, particularly writing as a productive skill through which they communicate ideas in written form. Among the four language skills, writing represents one of the most complex and essential competencies because it requires students to generate ideas, organize information logically, apply appropriate linguistic structures, and communicate messages clearly (Amin, 2023). Writing competence therefore extends beyond grammatical accuracy and involves higher-order thinking, idea development, and effective text organization. English language instruction requires students to master various text types, including procedure texts. Writing a procedure text requires students to present steps or instructions systematically while applying appropriate linguistic features and textual structures (Imawan, 2023).

To obtain preliminary information about students' writing performance, the researcher interviewed Fauziah Siagian, S.Pd.I., an English teacher of tenth-grade students, on November 4. The researcher conducted the interview through a question-and-answer session focusing specifically on students' ability to write procedure texts (Saputra, 2019). The interview revealed that most tenth-grade students experienced difficulties in writing procedure texts, particularly in organizing steps logically, using appropriate sequencing words, and applying accurate grammatical



structures. Students also encountered difficulties in developing ideas and expressing them clearly in written form (Lubis & Harahap, 2016). These preliminary findings indicate that students faced both organizational and linguistic challenges when constructing procedure texts.

The teacher further explained that students' writing difficulties were associated not only with their individual abilities but also with the classroom learning process. Teacher-centered instruction continued to dominate classroom activities and did not fully facilitate students' active participation in learning (Ali, 2021). Students primarily received explanations and followed instructions without sufficient opportunities to discuss, collaborate, or exchange ideas with their peers. Consequently, only a limited number of tenth-grade students actively participated in classroom activities, while many others remained passive and dependent on the teacher. This instructional condition did not optimally support the development of students' writing competence, particularly their ability to produce procedure texts (Yulia et al., 2020).

The quality of classroom instruction substantially influences the development of students' writing competence (Hasanah & Himami, 2021). Teachers therefore need a learning model that enables students to collaborate with their peers while maintaining individual responsibility for their learning. Cooperative learning provides an appropriate instructional approach because it emphasizes student interaction, shared responsibility, and active participation in classroom activities (Suryadi et al., 2022). Through structured collaboration, students can exchange ideas, discuss learning materials, and contribute actively to accomplishing shared learning objectives. Such characteristics make cooperative learning particularly relevant to writing instruction, which requires students to develop ideas and organize information effectively.

Within the cooperative learning framework, Jigsaw and Student Teams Achievement Division (STAD) provide structured group-learning activities that can potentially support students' writing performance (Hariyanti, 2021). Both models encourage students to participate actively in group discussions, exchange ideas, and assume responsibility for their individual contributions to the learning process. Jigsaw emphasizes students' responsibility for mastering specific material and sharing their expertise with group members, whereas STAD combines teacher instruction, collaborative group learning, and individual accountability. Comparing these two cooperative learning models can therefore provide empirical evidence regarding their respective contributions to students' procedure text writing performance (Simatupang, 2020). Such a comparison is particularly relevant for identifying differences in students' writing outcomes under two distinct forms of structured cooperative instruction.

Based on the identified problems, this study compares the implementation of the Jigsaw cooperative learning model and the Student Teams Achievement Division (STAD) model in teaching procedure text writing at State Senior High School 5 Tanjung Balai. Specifically, the study examines whether the two cooperative learning models produce a significant difference in students' procedure text writing performance. By comparing students' writing outcomes under Jigsaw and STAD instruction, the study seeks to provide empirical evidence regarding their application in procedure text writing activities. The findings may provide English teachers with relevant pedagogical insights for selecting cooperative learning models that support students' active participation and writing development. The study consequently contributes to the discussion of cooperative learning as an instructional approach for developing students' procedure text writing skills.

METHOD

This study employed a quantitative approach using a within-subject experimental design to compare students' procedure text writing performance after receiving two different cooperative learning treatments. The researcher conducted the study at State Senior High School 5 Tanjung Balai during the 2025/2026 academic year. The research population comprised 270 tenth-grade students distributed across eight classes. From this population, the researcher selected 40 students, representing 15% of the total population, through simple random sampling using a lottery method (Sugiyono, 2020). This sampling procedure provided students with an equal opportunity to participate in the study.

The study compared two cooperative learning models, namely Jigsaw and Student Teams Achievement Division (STAD), in teaching procedure text writing. All participating students received both instructional treatments as required by the within-subject design. During the Jigsaw treatment, students studied different sections of the learning material in expert groups before returning to their home groups to share and explain the information they had learned.

During the STAD treatment, the teacher initially explained the learning material, after which students participated in group discussions and completed individual quizzes. These instructional procedures enabled the researcher to compare students' writing performance after participating in each cooperative learning model.

The researcher employed observation sheets, questionnaires, and writing tests as the research instruments. The observation sheets documented students' participation, cooperation, attention, and responsibility throughout the learning activities. The researcher distributed questionnaires to identify students' responses to the implementation of the Jigsaw and STAD models. The writing tests measured students' achievement in producing procedure texts after participating in each instructional treatment. The researcher assessed students' writing based on five components: content, organization, vocabulary, grammar, and mechanics.

The researcher collected the data through classroom observations, questionnaires, and post-tests administered after the completion of each treatment. The post-test scores provided quantitative data for comparing students' procedure text writing performance following Jigsaw and STAD instruction. The researcher first analyzed the data using descriptive statistics to summarize students' performance under each instructional condition. A paired-samples *t*-test was subsequently conducted using SPSS version 25 to determine whether students' writing scores differed significantly between the Jigsaw and STAD treatments. This analytical procedure corresponded with the within-subject design because the same students participated in both instructional conditions.

RESULT AND DISCUSSION

Results

Observation Results

The researcher conducted classroom observations during the implementation of the Jigsaw and Student Teams Achievement Division (STAD) cooperative learning models in teaching procedure text writing to tenth-grade students at State Senior High School 5 Tanjung Balai. The observations focused on students' participation, cooperation, attention, responsibility, and interaction throughout the learning process. The results showed that both cooperative learning models promoted active classroom interaction and encouraged students to participate in group discussions. Students demonstrated greater participation and responsibility during STAD activities because the teacher provided explanations and guidance before the students engaged in group discussions. The classroom observations also indicated that students appeared more active, confident, and cooperative during the implementation of STAD.

Students' Writing Post-Test Results

The researcher administered writing post-tests after implementing the Jigsaw and STAD models to measure students' achievement in writing procedure texts. The same 40 students completed the writing assessment following each instructional treatment. The researcher assessed students' writing performance based on the predetermined writing assessment criteria. Table 1 presents the individual post-test scores obtained after the implementation of the Jigsaw and STAD cooperative learning models.

Table 1. Students' Post-Test Scores under Jigsaw and STAD

No.	Students' Initials	Jigsaw Score	STAD Score
1	AA	85	90
2	AR	75	90
3	AM	65	75
4	ARM	50	80
5	AF	85	95
6	AO	80	85
7	BC	50	85
8	BS	75	75
9	DA	50	75
10	DH	85	95
11	E	75	80
12	F	75	85
13	FA	60	85

No.	Students' Initials	Jigsaw Score	STAD Score
14	FA	65	85
15	HP	90	90
16	HH	85	90
17	IR	75	75
18	JP	75	70
19	KN	75	95
20	MN	80	85
21	MS	60	80
22	MR	80	90
23	MR	80	80
24	N	65	75
25	NNI	50	80
26	NS	50	80
27	NIS	80	80
28	PJ	80	85
29	PYP	65	75
30	RI	65	90
31	RA	85	95
32	RM	65	65
33	RR	70	75
34	S	55	90
35	SN	85	90
36	SA	70	80
37	ST	85	90
38	SR	65	85
39	W	65	70
40	ZA	90	65
Total		2870	3295

Table 1 shows that students generally obtained higher post-test scores following STAD instruction than following Jigsaw instruction. Nevertheless, individual performance varied across the two instructional conditions, with several students obtaining identical scores and some achieving higher scores under Jigsaw. These individual differences indicate that the two cooperative learning models did not produce identical outcomes for every participant. The overall score distribution nevertheless suggests higher writing performance under the STAD condition. Table 2 provides descriptive statistics to present the overall pattern of students' achievement more clearly.

Table 2. Descriptive Statistics of Students' Post-Test Scores

Model	N	Minimum	Maximum	Mean	Std. Deviation
Jigsaw	40	50	90	71.62	12.057
STAD	40	65	95	82.63	8.085
Valid N (listwise)	40				

The descriptive statistics in Table 2 demonstrate differences in students' procedure text writing performance following the two instructional treatments. Students obtained scores ranging from 50 to 90 under Jigsaw, with a mean of 71.62 and a standard deviation of 12.057. Under STAD, students obtained scores ranging from 65 to 95, with a higher mean of 82.63 and a lower standard deviation of 8.085. The difference between the two mean scores descriptively indicates that students achieved higher procedure text writing scores following STAD instruction. Inferential analysis was subsequently employed to determine whether the difference between the two instructional conditions was statistically significant.

Questionnaire Results

The researcher distributed questionnaires after implementing the Jigsaw and STAD models to examine students' responses to both cooperative learning approaches. The questionnaire data provided information about students' perceptions of their learning experiences under the two instructional conditions. The researcher analyzed the questionnaire scores descriptively by calculating the minimum, maximum, mean, and standard deviation. Table 3 presents the descriptive statistics of students' questionnaire responses to Jigsaw and STAD.

Table 3. Descriptive Statistics of Questionnaire Results

Questionnaire	N	Minimum	Maximum	Mean	Std. Deviation
Total_Jigsaw	40	17	36	27.18	5.830
Total_STAD	40	15	36	28.65	4.510

Table 3 shows that the mean questionnaire score for STAD was 28.65, compared with 27.18 for Jigsaw. The higher mean score indicates that students generally reported more positive responses to STAD than to Jigsaw. Classroom observations similarly showed greater participation, responsibility, confidence, and cooperation during STAD activities. Taken together, the descriptive questionnaire and observational findings suggest that students responded favorably to the STAD learning environment. These results also indicate that the structure of STAD supported students' motivation, participation, and interest during the instructional activities.

Paired-Samples *t*-Test Results

The researcher conducted a paired-samples *t*-test to determine whether students' procedure text writing scores differed significantly between the Jigsaw and STAD instructional conditions. This statistical test was appropriate because the same participants received both treatments and produced writing scores under each condition. The analysis compared the paired writing scores obtained after the implementation of Jigsaw and STAD. Table 4 presents the results of the paired-samples *t*-test.

Table 4. Paired-Samples *t*-Test Results

Comparison	Mean	Std. Deviation	Std. Error Mean	95% CI Lower	95% CI Upper	<i>t</i>	<i>df</i>	Sig. (2-tailed)
Jigsaw – STAD	-8.939	11.023	1.919	-12.848	-5.031	-4.659	40	.000

The paired-samples *t*-test reported a significance value of .000, which is below the conventional significance threshold of .05. The negative mean difference of -8.939 indicates that the STAD scores were higher than the Jigsaw scores because the analysis calculated the difference as Jigsaw minus STAD. The statistical results therefore indicate a significant difference between students' procedure text writing scores following the two cooperative learning treatments. Based on the reported statistical output, the study accepts the alternative hypothesis (H_1) and rejects the null hypothesis (H_0). Combined with the descriptive results, these findings indicate that students demonstrated higher procedure text writing performance following STAD instruction than following Jigsaw instruction.

Discussion

The findings revealed a significant difference in students' procedure text writing performance following instruction through Jigsaw and Student Teams Achievement Division (STAD). The post-test results showed that students achieved a mean score of 71.62 under Jigsaw, whereas they obtained a higher mean score of 82.63 under STAD. The paired-samples *t*-test further reported a significance value of .000, which was below the predetermined significance level of .05. Based on the reported statistical results, the study accepted the alternative hypothesis (H_1) and rejected the null hypothesis (H_0). These findings indicate that the two cooperative learning models produced significantly different outcomes in students' procedure text writing performance.

The lower writing performance under Jigsaw can be understood in relation to the instructional responsibilities assigned to students during the learning process. Students had to study specific sections of the learning material, develop expertise in their assigned content, and subsequently explain the material to members of their home groups. Some students experienced difficulties in comprehending the material independently and communicating their understanding clearly to their peers. These difficulties affected their confidence and active involvement when sharing information within their groups. The implementation of Jigsaw therefore placed considerable responsibility on students' ability to understand, communicate, and collaboratively reconstruct the learning material.

Students achieved higher writing performance under STAD because the model provided teacher explanations and guidance before students participated in collaborative group discussions. This instructional sequence enabled students to establish a clearer understanding of the learning material before working collaboratively with their group members (Khadem et al., 2022). Individual quiz activities also encouraged students to participate actively and engage seriously with the learning material because each student's performance contributed to group achievement. This

combination of teacher guidance, collaborative learning, and individual accountability strengthened students' motivation, cooperation, and responsibility throughout the instructional activities (Chopra et al., 2023; Drouet et al., 2023). These characteristics help explain the higher mean writing score obtained by students following STAD instruction.

The observation and questionnaire findings further supported the differences identified in students' writing performance. Students demonstrated greater participation, cooperation, and learning motivation during the implementation of STAD than during Jigsaw activities. The convergence of writing scores, classroom observations, and questionnaire responses suggests that the structured combination of teacher guidance, collaborative activities, and individual accountability under STAD provided stronger support for students' engagement in procedure text writing. Within the instructional context examined in this study, students achieved better procedure text writing outcomes under STAD than under Jigsaw. These findings indicate that STAD provided a more supportive instructional structure for the tenth-grade students at State Senior High School 5 Tanjung Balai.

CONCLUSION

This study concludes that Jigsaw and Student Teams Achievement Division (STAD) produced significantly different outcomes in the procedure text writing performance of tenth-grade students at State Senior High School 5 Tanjung Balai during the 2025/2026 academic year. The paired-samples *t*-test reported a significance value of .000, which was below the predetermined significance level of .05, indicating a statistically significant difference between students' writing scores under the two cooperative learning conditions. Students achieved a mean score of 71.62 following Jigsaw instruction and a higher mean score of 82.63 following STAD instruction. The observation and questionnaire findings also indicated greater student participation, cooperation, responsibility, and learning motivation during the implementation of STAD. Within the instructional context examined in this study, STAD produced better procedure text writing outcomes than Jigsaw and provided a supportive cooperative learning structure through teacher guidance, collaborative group activities, and individual accountability.

English teachers can incorporate STAD into procedure text writing instruction to facilitate active participation, collaborative learning, individual responsibility, and structured teacher guidance, while Jigsaw can remain an alternative cooperative learning model when students receive sufficient support in understanding and communicating assigned material. The findings should nevertheless be interpreted within the limitations of the study, which involved only 40 tenth-grade students from a single school and employed a within-subject experimental design in which the same participants experienced both instructional treatments. The study also focused specifically on procedure text writing and examined students' performance within a particular academic year and instructional context, which limits the generalizability of the findings to other populations, writing genres, and educational settings. The potential influence of treatment order and carryover effects should also be considered because all participants received both Jigsaw and STAD instruction. Future research should involve larger and more diverse samples, examine other writing genres, incorporate procedures that control treatment-order effects, and investigate the longer-term effects of Jigsaw and STAD on students' writing development.

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