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Project Based Learning Model for Integrating Social Class XII Disaster Materials at Santa Ursula High School Jakarta

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Abstract

This study aimed to examine the implementation of the Project-Based Learning (PjBL) model in integrating disaster-related learning materials into Grade XII Social Studies instruction at Santa Ursula High School, Central Jakarta. The research was conducted from July 2024 to July 2025 using a descriptive quantitative research design. Data were analyzed using descriptive statistical techniques to evaluate instructional planning, adherence to the PjBL implementation stages, and student learning outcomes across three assessment domains: attitudes, knowledge, and skills. The findings revealed a high level of adherence to the PjBL instructional framework, supported by comprehensive instructional planning and an implementation rate of 98%. Student learning outcomes were consistently high across all assessed domains. The mean attitude assessment score was 94, the mean knowledge assessment score was 97, and the mean skills assessment score was 95, with all three domains classified as Excellent. These findings suggest that the integration of disaster-related materials through PjBL was associated with favorable student learning outcomes and provided opportunities to promote active participation, creativity, collaboration, and contextual understanding of disaster-related concepts. The structured implementation of PjBL also appeared to support the integration of theoretical knowledge with practical learning activities. Overall, the study provides descriptive evidence of the feasibility of implementing PjBL in disaster education at the senior high school level. However, because the research employed a descriptive design without a comparison group or inferential statistical analysis, the findings do not establish a causal effect of PjBL on student learning outcomes.

INTRODUCTION

Indonesia is geographically situated at the convergence of three major tectonic plates: the Indo-Australian Plate, the Pacific Plate, and the Eurasian Plate. In addition, Indonesia lies within the Mediterranean and Circum-Pacific seismic belts (Azizah et al., 2022). Its location along the boundaries of major tectonic plates, particularly the interaction between the Indo-Australian and Eurasian plates, contributes to its position within the broader Pacific Ring of Fire, a region characterized by intense tectonic and volcanic activity (Rahmadani et al., 2023). Consequently, Indonesia is highly exposed to various geological hazards, including volcanic eruptions, earthquakes, and tsunamis

generated by submarine seismic events (Ali et al., 2024). According to Law No. 24 of 2007 concerning Disaster Management, natural disasters are events or series of events caused by natural phenomena, including earthquakes, tsunamis, volcanic eruptions, floods, droughts, typhoons, and landslides. These disasters can result in substantial consequences, including fatalities, injuries, infrastructure damage, economic losses, displacement, and adverse psychological effects. Therefore, strengthening disaster risk reduction and preparedness is essential to minimizing the potential impacts of natural hazards on individuals and communities.

Indonesia's exposure to natural hazards underscores the need to shift disaster management approaches from predominantly reactive emergency responses toward proactive disaster risk reduction and mitigation strategies (Azizah et al., 2022). Inadequate knowledge of disaster mitigation and preparedness measures may increase individual and community vulnerability, highlighting the importance of disaster education (Ho et al., 2022). Integrating disaster risk reduction education into school curricula can help students understand different types of natural hazards, recognize the importance of environmental protection, and identify appropriate mitigation and preparedness strategies, thereby contributing to the development of disaster-resilient communities (Hayudityas, 2020). Education also provides a strategic means of introducing disaster hazards and associated risks, enabling students to develop awareness, preparedness, and responsible attitudes toward potential emergencies (Puspaningrum et al., 2022). Disaster awareness encompasses an understanding of hazards, exposure, vulnerability, and protective measures necessary to safeguard lives, property, and livelihoods, as well as appropriate attitudes and behaviors during emergencies (Faisal, 2021). As formal educational institutions, schools play an important role in developing disaster-related knowledge, preparedness competencies, and risk awareness among students (Hamid et al., 2021). Given that children and adolescents may face particular vulnerabilities during disasters, integrating disaster education into classroom instruction is especially important. Beyond acquiring theoretical knowledge, students can serve as agents of change by sharing disaster preparedness information with their families and communities and encouraging the adoption of appropriate mitigation and protective measures (Johan et al., 2021).

Disaster mitigation education can also provide meaningful contexts for organizing instructional activities and strengthening students' engagement with real-world environmental and social challenges (T. Wulandari et al., 2023). Contextualizing learning activities around disaster-related issues may improve the relevance of classroom instruction while supporting students' understanding of disaster hazards, preparedness, and mitigation strategies (Mustofa & Handini, 2020). However, disaster mitigation education at Santa Ursula High School, Jakarta, had primarily been incorporated into Geography instruction through theoretical explanations. The instructional materials focused mainly on volcanic eruptions and earthquakes, accompanied by general descriptions of disaster mitigation measures. This approach provided limited opportunities for students to explore disaster-related issues through interdisciplinary

investigation and practical learning activities. Disaster risk education seeks to strengthen awareness, knowledge, understanding, and protective behaviors that support preparedness, prevention, mitigation, and recovery (Tahmidaten & Krismanto, 2019). It also emphasizes learning experiences that prepare individuals and communities to recognize disaster threats, improve their response capacities, and reduce potential adverse consequences (Ali et al., 2024). Accordingly, disaster education should extend beyond the transmission of factual information by providing opportunities for students to apply their knowledge to realistic situations, develop appropriate response strategies, and communicate disaster preparedness information to their families and communities (Septikasari & Ayriza, 2018).

Disaster-related content, traditionally included in Geography instruction, can be integrated with other social studies disciplines to facilitate a more comprehensive understanding of disasters from environmental, economic, sociological, and historical perspectives. At the senior high school level, social studies subjects are generally organized into distinct disciplines, including Geography, Economics, Sociology, and History. Although each discipline provides a different perspective, integrating relevant concepts around a common theme can help students understand the interconnected dimensions of complex social and environmental problems (Endayani, 2018). For example, Geography can explain the spatial distribution of natural hazards and disaster risks, Economics can examine financial losses and resource allocation, Sociology can explore community vulnerability and collective responses, and History can provide insights into previous disasters and changes in societal preparedness. Interdisciplinary learning can also encourage students to identify problems, collect and interpret information, collaborate with peers, construct knowledge independently, and develop critical thinking skills (R. Wulandari et al., 2019). Consequently, integrating disaster-related content across social studies subjects offers opportunities to connect theoretical knowledge with practical disaster risk reduction challenges.

Implementing interdisciplinary thematic learning requires an instructional model that encourages students to develop ideas, exercise creativity, participate actively in discussions, strengthen self-confidence, and cultivate positive character attributes. Such an approach is consistent with the goal of creating meaningful, interactive, engaging, and inspiring learning experiences (Kementerian Pendidikan dan Kebudayaan, 2018). Project-Based Learning (PjBL) represents a student-centered instructional model that emphasizes collaborative inquiry, active participation, and the development of projects addressing authentic problems or real-world situations (Nababan et al., 2023). Through PjBL, students engage in identifying problems, investigating relevant information, analyzing findings, developing project outputs, and presenting their results, thereby connecting conceptual understanding with practical learning experiences (Risani et al., 2023). In the context of integrated disaster education, students can undertake collaborative projects involving the construction of disaster dioramas and the presentation of interdisciplinary analyses incorporating Geography, Economics, Sociology, and History. These activities can provide opportunities to examine the physical characteristics

of disasters, assess their socioeconomic consequences, explore community responses, and investigate historical disaster events. By organizing learning around authentic disaster-related projects, PjBL may support active engagement, collaboration, creativity, and the application of interdisciplinary knowledge.

Previous research on disaster education and project-based instructional approaches has highlighted the potential benefits of contextual learning activities, collaborative investigations, and project presentations in helping students understand complex environmental and social issues (Nababan et al., 2023; Risani et al., 2023; Tahmidaten & Krismanto, 2019). However, the implementation of interdisciplinary disaster education requires attention not only to the selection of instructional models but also to the consistency of instructional planning, execution, monitoring, and assessment. In particular, the extent to which individual PjBL stages are implemented and aligned with interdisciplinary learning objectives warrants further investigation. Within the context of Santa Ursula High School, Jakarta, a specific research gap concerned the limited documentation of how disaster-related projects integrating Geography, Economics, Sociology, and History were planned, implemented, monitored, and evaluated. Examining these processes is important because effective project implementation depends on coherent instructional organization, appropriate teacher guidance, systematic progress monitoring, and meaningful feedback. The contextual contribution of this study lies in its detailed examination of adherence to the instructional stages of PjBL, combined with descriptive assessments of students' attitudes, knowledge, and skills in a Grade XII Social Studies classroom. This approach provides a more comprehensive account of instructional implementation than an examination of lesson plans or final project outcomes alone.

Based on these considerations, this study aimed to describe the implementation of Project-Based Learning in integrating disaster-related instructional materials into Grade XII Social Studies Class 1 at Santa Ursula High School, Jakarta. Specifically, the research sought to examine instructional planning, document the implementation of individual PjBL stages, and describe student learning outcomes across three assessment domains: attitudes, knowledge, and skills. From a practical perspective, the findings were expected to provide guidance for teachers regarding project scheduling, instructional monitoring, formative feedback, assessment procedures, and interdisciplinary coordination in disaster education. Academically, the study sought to contribute descriptive evidence concerning the implementation of interdisciplinary PjBL in senior high school disaster education, providing a contextual reference for subsequent investigations involving different classrooms, schools, or instructional settings. Nevertheless, because the research employed a descriptive quantitative design without baseline outcome measurements or a comparison group, its findings were intended to characterize instructional implementation and observed student performance rather than establish causal effects of PjBL on learning outcomes.

METHOD

This study employed a descriptive quantitative case study design (Abubakar, 2021; Elvera & Astarina, 2021; Ramdhan, 2021; Wada et al., 2024) to examine the implementation of Project-Based Learning (PjBL) in integrated disaster education at Santa Ursula High School, Jakarta, from July 2024 to July 2025. The study population comprised 68 Grade XII Social Studies students, with 34 students from Class XII Social Studies 1 included in the analysis. Although the original study described the sampling technique as random sampling, the participants were drawn from a single intact classroom, and individual random selection was not clearly documented. The research focused on the integration of disaster-related instructional materials across four subjects: Geography, Economics, Sociology, and History.

Data were collected through classroom observations, instructional documentation, PjBL implementation checklists, and student assessment rubrics covering attitudes, knowledge, and skills. Students participated in collaborative projects involving disaster scenario investigations, project planning, disaster diorama development, presentations, and reflection activities. The implementation was assessed across six instructional stages: identifying the project topic, designing project procedures, developing a project schedule, monitoring project progress, evaluating and presenting project outcomes, and reflecting on the learning process. Classroom observations and instructional documentation were used to assess adherence to the planned instructional stages. However, detailed instrument validity testing, interrater reliability assessments, and internal consistency coefficients were not reported.

Data were analyzed using descriptive statistical techniques, including frequency distributions, percentages, and mean assessment scores. The implementation of each PjBL stage was evaluated using percentage-based completion measures, while student learning outcomes were summarized across the attitude, knowledge, and skills domains. Overall implementation adherence was approximately 98%, although some limitations were identified in project monitoring and scheduling. The analysis focused on instructional implementation and observed student performance without conducting inferential statistical tests. Because the study did not include baseline learning outcome measurements or a comparison group, the findings were interpreted as descriptive evidence of PjBL implementation rather than proof of its causal effectiveness in improving student learning outcomes.

RESULTS AND DISCUSSION

Planning or design is an activity carried out by educators in the learning activities to be carried out. A well-prepared learning plan can help educators carry out their duties as educators in serving the learning needs of students and can be used as a guideline for educators in teaching and guidelines for students in learning. This is very useful as a guide for activities in achieving learning goals, as a basic pattern in managing tasks and authority, and as a tool for whether or not an activity is effective.

In the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 65 of 2013 concerning Standards of the Process of Primary and Secondary Education, it is stated that one of the main tasks of educators is to plan learning. Educators in education units have the obligation to prepare a complete and systematic Learning Implementation Plan (RPP) so that learning takes place interactively, inspiring, fun, challenging, efficient, motivates students to participate actively and provides sufficient space for initiative, creativity and independence in accordance with the talents, interests, and physical and psychological development of students. The lesson plan used in integrated learning of Disaster material was made by researchers together with class XII SOS educators in the subjects of Geography (Mrs. Ranti), Economics (Mrs. Ambar), Sociology (Mrs. Icha) and History of Interests (Mrs. Friska).

Based on the results of research at SMA Santa Ursula Jakarta, the researcher saw and carried out the implementation of learning using the PjBL model in learning that was integrated with Disaster material in class XII Social 1 in accordance with the syntax order. The results of the researcher's observations were divided into three things, namely observations during the introductory, core and closing activities. In addition, the researcher also analyzed the results of the assessment obtained by students.

Good introductory activities will help students to learn more effectively and efficiently. Educators can create good initial learning conditions in a relatively short time so that some activities at the beginning of learning can support the learning process and outcomes of students. Some ways that educators can do to create good early learning conditions are to create an interesting and fun classroom atmosphere, use simple language that is easy for students to understand, create activities that suit students' interests and needs, provide motivation and ensure that students can understand the learning objectives to be achieved.

Based on the results of research at Santa Ursula High School, educators greet students, check attendance, neatness, cleanliness of classrooms, prepare necessary media, tools and books, conduct perceptions, convey basic competencies and learning goals to be achieved. The perception carried out by educators is that educators invite students to remember and look back at natural disasters that occur in Indonesia today, especially natural disasters that have been experienced by students. Perception activities can help students to understand the material to be learned based on students' experiences.

Syntax 1: Project Determination

The determination of the project is carried out by the educator with the students by determining the theme/topic of the project. Based on the results of the research listed in Table 1, the implementation of the first syntax is 100%. The syntak 1 activity was carried out at the first meeting, the educator displayed pictures and videos about natural disasters that occurred in Indonesia today, such as floods and landslides that occurred in several areas in January 2025. After that, the educator also asked about the impact of natural disasters faced by the community. Students responded to the educator's questions according to the experiences they had faced. Students responded to the experiences experienced when students experienced flooding at home, around the house and the

students' trips to school. Then, the educator responded to the students' answers and provided reinforcement by providing explanations of disaster materials that were integrated with economic problems, social problems, challenges and responses.

After students understand the problems and material that has been presented by the educator, students can ask about some things that cannot be understood. When students have understood the material that has been delivered, the educator begins to provide guidelines regarding projects that must be carried out by students in groups. The class is divided into six groups with different materials, namely Earthquakes, Floods, Landslides, Volcanic Eruptions, Tsunamis and Tornadoes. The distribution of materials is carried out randomly using a spin wheel.

Table 1. Implementation of Sintak 1

No.	Aspects Assessed	Yes	No
Syntax 1: Project Determination (Meeting 1)	Syntax 1: Project Determination (Meeting 1)	Syntax 1: Project Determination (Meeting 1)	Syntax 1: Project Determination (Meeting 1)
1.	Educators display pictures and videos about natural disasters that are happening in Indonesia today.	1	
2.	Educators asked about the impact of natural disasters faced by the community.	1	
3.	Educators respond to students' answers and reinforce students' answers.	1	
4.	The educator also explained the integration of disaster material with material on economic problems, social problems, challenges and responses.	1	
5.	Educators provide opportunities for students to ask questions related to the material that has been delivered.	1	
6.	Educators respond to questions asked by students.	1	
7.	Educators provide explanations about the rules and projects that must be carried out by students.	1	
8.	Educators divide the entire student body in the classroom into six groups.	1	
	Number of syntax is performed	8	
	Percentage of implementation	100%	

Source: Research Results Data (2025)

Syntax 2: Designing Project Completion Steps

The design of project completion steps is carried out by educators by facilitating students to design steps for project completion activities creatively. Based on the results of the research listed in Table 2, the implementation of syntax two is 100%. Syntax two activities are carried out at the first meeting, students must determine the steps taken in working on the project. Students can determine what natural disasters will be raised, the impact of economic and social problems faced and the challenges and responses that must be carried out by the community.

Table 2. Implementation of Sintak 2

No.	Aspects Assessed	Yes	No
Syntax 2: Designing Project Completion Steps (Meeting 1)	Syntax 2: Designing Project Completion Steps (Meeting 1)	Syntax 2: Designing Project Completion Steps (Meeting 1)	Syntax 2: Designing Project Completion Steps (Meeting 1)
1.	The educator explained several things that must be done as a form of guide for the steps of working on the project.	1	
2.	Educators invite students to make steps to work on projects in groups.	1	
3.	Educators check progress in the group. If needed, educators provide reinforcement and direction.	1	
	Number of syntax is performed	3	
	Percentage of implementation	100%	

Source: Research Results Data (2025)

Syntax 3: Preparation of Project Implementation Schedule

The preparation of the project implementation schedule is carried out by educators by providing assistance to students to determine the scheduling of all activities. Based on the results of the research listed in Table 3, the implementation of syntax three is 100%. The syntax three activity is carried out in the first meeting, students prepare a schedule with the group by paying attention to the schedule that has been determined by the school to collect projects and presentations. Educators also provide motivation and enthusiasm to students that students are able to complete projects optimally.

Table 3. Implementation of Sintak 3

No.	Aspects Assessed	Yes	No
Syntax 3: Preparation of Project Implementation Schedule (Meeting 1)	Syntax 3: Preparation of Project Implementation Schedule (Meeting 1)	Syntax 3: Preparation of Project Implementation Schedule (Meeting 1)	Syntax 3: Preparation of Project Implementation Schedule (Meeting 1)
1.	Educators invite students to see the scheduling of all activities that must be done.	1	
2.	Educators ask students to create a schedule in groups.	1	
3.	Educators check the division of tasks that have been carried out by students and give directions to students.	1	
	Number of syntax is performed	3	
	Percentage of implementation	100%	

Source: Research Results Data (2025)

Syntax 4: Project Completion with Educator Facilitation and Monitoring

The completion of the project with the facilitation and monitoring of educators is carried out by educators by facilitating and monitoring students by seriously implementing the project design that has been made. Based on the results of the research listed in Table 4, the implementation of syntax four is 88%. Syntax four activities are carried out in the second to fifth meetings, students have discussions with other students

in one group and present temporary results in one class. In the second meeting, students analyze natural disasters that actually occur in the selected area, analyze the impact of natural disasters (economic problems and social problems), and analyze challenges and responses to respond to natural disasters that have occurred. After that, students begin to prepare the design of the appropriate disaster diorama.

At the third meeting, students began to make a diorama. In the process, the educator invited students to gather in groups and discuss in groups. After that, the educator also reminded the students to prepare the material presented at the next meeting. In the fourth meeting, groups one to three made a presentation on the process that had been carried out. Educators and other students provided questions, criticisms and constructive suggestions. In the fifth meeting, groups four to six made a presentation on the process that had been carried out. Educators and other students provided constructive questions, criticism and suggestions. After that, the educator provided reinforcement and motivation that could support students to complete their projects optimally. If students experience obstacles both individually and in groups, they can be conveyed directly to the educator, so that obstacles can be overcome immediately and followed up faster. The activities that were not carried out in the fourth meeting were that the educator did not display the scheduling target at the second meeting and the educator did not check the progress that had been made at the third meeting. This can be overcome by the way that the educator explains what things must be completed at the second meeting and the educator gives students the opportunity to discuss and be dynamic in the group.

Table 4. Implementation of Sintak 4

No.	Aspects Assessed	Yes	No
Session 4: Project Completion with Educator Facilitation and Monitoring (Meeting 2)	Session 4: Project Completion with Educator Facilitation and Monitoring (Meeting 2)	Session 4: Project Completion with Educator Facilitation and Monitoring (Meeting 2)	Session 4: Project Completion with Educator Facilitation and Monitoring (Meeting 2)
1.	Educators invite students to gather in groups.	1	
2.	Educators display the scheduling target carried out today, which is to collect supporting information and data.		0
3.	Educators check the progress that has been made by students in the group.	1	
4.	Educators provide direction and reinforcement that must be done by students in groups.	1	
Meeting 3	Meeting 3	Meeting 3	Meeting 3
5.	Educators invite students to gather in groups.	1	
6.	Educators check the progress that has been made by students in the group. Educators provide direction and reinforcement that must be done by students in the group.		0

No.	Aspects Assessed	Yes	No
7.	Educators ask students to prepare the material they already have to be presented at the next meeting.	1	
Meeting 4	Meeting 4	Meeting 4	Meeting 4
8.	Educators ask students to take turns making presentations.	1	
9.	Educators provide opportunities for students to make presentations.	1	
10.	Educators asked other groups who did not present to provide questions.	1	
11.	Educators provide reinforcement about natural disasters chosen by the group, the impact of natural disasters, social problems, economic problems and challenges and responses to questions and responses that have been submitted by students.	1	
12.	After the three groups finished the presentation, the educator asked the students to continue making a diorama.	1	
Encounter 5	Encounter 5	Encounter 5	Encounter 5
13.	Educators ask students to take turns making presentations.	1	
14.	Educators provide opportunities for students to make presentations.	1	
15.	Educators asked other groups who did not present to provide questions.	1	
16.	Educators provide reinforcement about natural disasters chosen by the group, the impact of natural disasters, social problems, economic problems and challenges and responses to questions and responses that have been submitted by students.	1	
17.	After the other three groups finished their presentations, the educators asked the students to continue making a diorama.	1	
	Number of syntax is performed	15	
	Percentage of implementation	88%	

Source: Research Results Data (2025)

Syntax 5: Preparation of Reports and Presentations/Publication of Project Results

The preparation of reports and presentations/publications of project results is carried out by educators by facilitating students to have the courage to present and publish their work. Based on the results of the research listed in Table 5, the implementation of syntax five is 100%. Syntax five activities were carried out in the sixth and seventh meetings, students completed the creation of presentation slides and dioramas as well as the presentation of project results. In the sixth meeting, students completed the preparation of reports in the form of presentation slides and completed the creation of dioramas. Students immediately applied constructive criticism and suggestions from educators and other students on the presentations that had been made at the previous meeting. At the end of learning, educators also conveyed motivation to students to

complete the project together to the maximum and reminded students to prepare for the presentation of results at the next meeting.

At the seventh meeting, students gather in groups and prepare everything necessary for the presentation. For the group that is presenting, they can prepare a presentation in front of the class and the group presentation is done in turn. Other students can pay attention to the group that is presenting.

Table 5. Implementation of Sintak 5

No.	Aspects Assessed	Yes	No
Syntax 5: Preparation of Reports and Presentation/Publication of Project Results	Syntax 5: Preparation of Reports and Presentation/Publication of Project Results	Syntax 5: Preparation of Reports and Presentation/Publication of Project Results	Syntax 5: Preparation of Reports and Presentation/Publication of Project Results
1.	The educator invites students to gather in groups. Students complete the presentation slide report that has been made and the completion of the diorama.	1	
2.	Educators check the progress that has been made by students in the group.	1	
3.	Educators ask students to prepare materials and presentations optimally so that presentations can run smoothly.	1	
4.	Educators invite students to gather in groups and prepare everything necessary for the presentation.	1	
5.	Educators welcome groups for presentations.	1	
6.	The educator asked the group about the analysis reports and dioramas that had been made and presented.	1	
	Number of syntax is performed	6	
	Percentage of implementation	100%	

Source: Research Results Data (2025)

Syntax 6: Evaluation of Project Processes and Results

Evaluation of the project process and results is carried out by educators and students at the end of the learning process by reflecting on the activities and results of project assignments. Based on the results of the research listed in Table 6, the implementation of syntax six is 100%. The syntax six activity is carried out at the seventh meeting. After all groups make presentations, the educator asks students to evaluate the process that has been carried out until the end of the meeting and make a joint conclusion on the evaluation that has been carried out.

Table 6. Implementation of Sintak 6

No.	Aspects Assessed	Yes	No
Syntax 6: Preparation of Reports and Presentation/Publication of Project Results	Syntax 6: Preparation of Reports and Presentation/Publication of Project Results	Syntax 6: Preparation of Reports and Presentation/Publication of Project Results	Syntax 6: Preparation of Reports and Presentation/Publication of Project Results
1.	After the entire group made a presentation, the educator asked the students to evaluate the process that had been carried out until the end of the meeting.	1	
2.	Educators and students make conclusions about the evaluations that have been carried out.	1	
	Number of syntax is performed	2	
	Percentage of implementation	100%	

Source: Research Results Data (2025)

The closing activity is an activity carried out to end the learning activity which can be carried out in the form of summaries or conclusions, assessments, reflections, feedback and follow-ups. In the first meeting, the educator conveyed motivation to the students to complete the project together in a group and conveyed follow-up information at the next meeting to gather information and consultation. In the second meeting, the educator reminded the students to make improvements to the feedback that had been submitted and show the progress that had been made in the next meeting. In the third meeting, the educator reminded the students to bring all the equipment and equipment needed to work on the diorama and prepare a presentation at the next meeting. In the fourth meeting, the educator reminded the students to be able to complete the project on time, improve the analysis and prepare the presentation. In the fifth meeting, the educator conveyed motivation, reminded the students to continue working on improvements and making a diorama. At the sixth meeting, educators conveyed motivation, reminding students to prepare analysis presentations and dioramas at the next meeting. At the seventh meeting, educators expressed their appreciation, reinforcement and made conclusions with students for the entire process that had been carried out.

Based on research at Santa Ursula High School, at the end of the meeting, educators always provide motivation, convey feedback and follow-up for the next meeting, make conclusions with students and make assessments. The closing activities that have been carried out in the research are in line with the aspects carried out in the closing activities according to Permendikbud No. 22 of 2016, namely educators together with students both individually and in groups reflect to evaluate the entire series of learning activities and the results obtained to subsequently jointly find the direct or indirect benefits of the learning outcomes that have taken place, provide feedback on the learning process and results and inform the learning closing activity plan for the next meeting.

Assessment of Student Learning Outcomes

Assessment is the process of collecting and processing information to measure the achievement of students' learning outcomes (Kementerian Pendidikan dan Kebudayaan, 2016). Based on the implementation of research at Santa Ursula High School, data on the final score of attitude, cognitive and psychomotor of each student was obtained.

Attitude Assessment

Attitude assessment is an activity carried out by educators to obtain descriptive information about student behavior.

Table 7. Final Attitude Score

Statistics	Geography	Economy	Sociology	History of Interest
N (valid)	34	34	34	34
N (missing)	0	0	0	0
Average	93,82	94,09	95,94	90,18
Minimum	92,00	88,00	91,00	88,00
Maximum	95,00	97,00	97,00	95,00

Source: Research Results Data (2025)

Based on table 7, the average attitude score of class XII Social 1 in Geography is 94, Economics is 94, Sociology is 96 and History of Interest is 90. The highest score in Economics and Sociology is 97 and the lowest score in History of Interest and Economics is 88.

Knowledge Assessment

Knowledge assessment is an activity carried out to measure students' mastery of knowledge. In this study, students made an analysis with Disaster material which was integrated with the subjects of Economics, Sociology and History of Interest. The details of the final knowledge score of class XII Social 1 are listed in table 8.

Table 8. Final Value of Knowledge

Statistics	Geography	Economy	Sociology	History of Interest
N (valid)	34	34	34	34
N (missing)	0	0	0	0
Average	97,47	96,62	98,44	92,35
Minimum	96,00	93,00	95,00	87,00
Maximum	98,00	99,00	100,00	99,00

Source: Research Results Data (2025)

Based on table 8, the average knowledge score of class XII Social 1 in Geography is 97, Economics is 97, Sociology is 98 and History of Interest is 92. Meanwhile, the average final score of knowledge in all subjects is 97. The highest score in the Sociology subject is 100 and the lowest score in the History of Interest subject is 87.

Skills Assessment

Skill assessment is an activity carried out to measure students' abilities by applying knowledge in performing certain tasks. The skill tasks carried out in this study are to

present the results of natural disaster analysis and make dioramas. The details of the final score of social class XII 1 skills are listed in table 9.

Table 9. Final Value of Skills

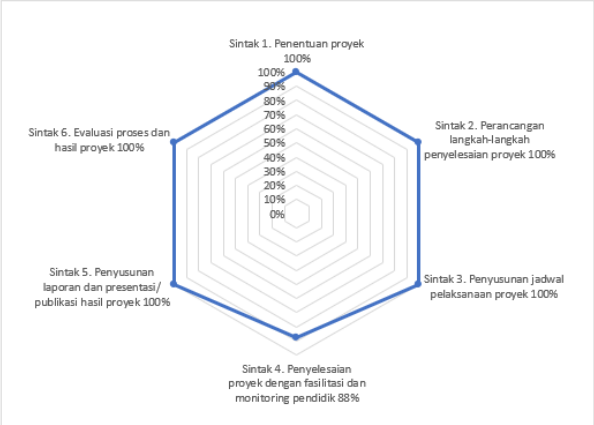
Statistics	Geography	Economy	Sociology	History of Interest
N (valid)	34	34	34	34
N (missing)	0	0	0	0
Average	95,38	94,44	96,62	94,56
Minimum	94,00	92,00	92,00	91,00
Maximum	96,00	97,00	99,00	97,00

Source: Research Results Data (2025)

Based on Table 9, the average skill score of class XII Social 1 in the Geography subject is 95, the Economics subject is 94, the Sociology subject is 97 and the History of Interest subject is 95. The highest score in all subjects is 99 in the Sociology subject and the lowest score in all subjects is 91 in the History of Interest subject.

Based on the results of the study, it shows that the planning, implementation and assessment of the PjBL model with the integration of disaster materials in grade XII Social 1 at SMA Santa Ursula Central Jakarta is running very well and optimally. The planning of the PjBL model is carried out systematically and collaboratively by educators with the integration of disaster materials in the subjects of Geography, Economics, Sociology and History of Interest. The preparation of the lesson plan is carried out with reference to Permendikbud No. 65 of 2013 which is adjusted to the needs of project-based learning. This is a strong basis for the implementation of structured, interactive and meaningful learning.

The implementation of the six syntax that has been described and analyzed in several learning meetings, so that a syntax implementation diagram was made. The implementation of the PjBL model of integrating disaster material for class XII Social 1 at Santa Ursula High School Jakarta can be seen in the following figure.



Sumber : Data Hasil Penelitian (2025)

Figure 1. Sintak Implementation

Based on the image above, the results of the study show that the implementation of the PjBL model of integrating disaster materials in class XII Social 1 at SMA Santa Ursula

Jakarta is 100% learning in the first phase about project determination, learning in the second scenario about designing project completion steps by 100% and learning in the third scenario about the preparation of project implementation schedules by 100%. The implementation in the first to third scenario has been carried out very well. Educators actively facilitate students in designing and scheduling disaster projects. This is also supported by previous research which shows that the PjBL model in integrative thematic or integrated learning is an innovative learner-centered learning and transforms the role of educators from a center of knowledge to a motivator and facilitator that allows students to work independently in completing their tasks (Ahmad, 2021).

Learning in syntax four regarding project completion with facilitator and monitoring of educators has been implemented 88%. Learning in syntax four is going well, but there has been no explicit daily scheduling target and there is no group progress check. Learning in syntax five regarding the preparation of reports and presentations/publication of project results and learning in syntax six regarding the evaluation of project processes and results has been implemented 100%. The project ended with a presentation that showed the results of collaborative work and in-depth reflection from students. Overall, the average implementation of the PjBL model syntax was 98%. This shows a very effective implementation and is consistent with learning objectives in the 21st century.

Based on the results of the research, the obstacles faced by educators and students during the implementation of learning activities are the limited time available. This results in educators facilitating students to conduct consultations outside of learning hours, such as during school breaks, after school and in between times when educators accompany the activities of the Pancasila Student Profile Strengthening Project (P5) in class X or XI. In addition, students also make dioramas outside of learning hours, such as when coming home from school, gathering with a group at the home of one of the students and students making a diorama at school during the students' holidays. The limited time available is due to the busy schedule of grade XII students to do a Try Out in the second week of March 2025, the Summative Final Assessment in the first week of April 2025 and continued with UTBK preparation activities in the fourth week of April 2025.

The assessment was carried out comprehensively covering aspects of attitude, knowledge and skills. The results obtained showed the achievement of students in the Very Good category in all aspects. In the attitude assessment had an average score of 94 in the Very Good category, the knowledge assessment had an average score of 97 in the Very Good category and the skill assessment had an average score of 95 in the Very Good category. This assessment reflects the success of the PjBL approach in improving the cognitive, affective and psychomotor abilities of students in a balanced manner.

Table 10. Final Value Range of Attitudes, Knowledge and Skills

Final Score	N	Range
Attitude	34	3,00
Knowledge	34	3,00
Skills	34	2,00
N valid (listwise)	34	

Source: Research Results Data (2025)

The assessment of students' learning outcomes has minimal variation in grades. Based on table 10, the range of attitude final score is 3, the range of knowledge final score is 3 and the skill final score range is 2. The final score of attitude has the highest score of 95 and the lowest score of 92. The final score of knowledge has the highest score of 98 and the lowest score of 95. Meanwhile, the final score of skills has the highest score of 96 and the lowest score of 94. This is a shortcoming obtained in the research that has been conducted.

The implementation of the PjBL model of disaster material integration in grade XII Social 1 at SMA Santa Ursula Central Jakarta went very well and optimally. Careful planning, almost perfect syntax implementation of 98% and the results of student assessments in attitude assessment had an average score of 94 in the Very Good category, knowledge assessment had an average score of 97 in the Very Good category and skill assessment had an average score of 95 in the Very Good category. This shows that the PjBL model is able to encourage active engagement, creativity, collaboration and a deep understanding of learning materials. The results of this study are also supported by previous research which shows that PjBL in integrative thematic can improve the quality of the learning process of students in grade III of Madrasah Ibtidaiyah An-Nizham Jambi City for the 2021/2022 Academic Year (Budi et al., 2022), can improve the ability of learning outcomes in grade IV of SD Negeri 20 Indarung Padang City (Winanda et al., 2021), can improve communication skills at Cikeas Nature School Junior High School (Karyati et al., 2024), can improve students' critical thinking skills on Earth and Solar System materials at UPT SMPN 4 Tambang (Fadzillah, 2023) and can improve critical thinking skills on the learning outcomes of History of high school students (R. Wulandari et al., 2019).

CONCLUSION

The implementation of integrated disaster education through Project-Based Learning (PjBL) in Class XII Social Studies 1 at Santa Ursula High School, Jakarta, demonstrated a high level of adherence to the planned instructional procedures, with an overall implementation rate of approximately 98%. Five of the six instructional stages achieved 100% implementation, while the project monitoring and completion stage reached 88%, indicating opportunities for improvement in instructional supervision and project management. Final student assessments across the attitude, knowledge, and skills domains consistently demonstrated high achievement levels, suggesting that the interdisciplinary project activities were successfully implemented. These findings

highlight the feasibility of integrating disaster-related learning materials across Geography, Economics, Sociology, and History through structured, collaborative, and student-centered instructional activities. However, because the study employed a descriptive research design without baseline assessments or a comparison group, the findings could not establish a causal relationship between PjBL implementation and improvements in student learning outcomes.

Future research should employ comparative or longitudinal research designs involving multiple classrooms or educational institutions to examine changes in student learning outcomes and disaster preparedness competencies over time. Subsequent studies should also establish the validity and reliability of assessment instruments, document interrater agreement, and evaluate the consistency of instructional implementation across different learning environments. From a practical perspective, teachers should strengthen project management by establishing clear instructional schedules, systematically monitoring project progress, applying transparent interdisciplinary assessment criteria, and providing constructive feedback throughout each instructional stage. Particular attention should be directed toward improving project monitoring and completion procedures to ensure consistent implementation of all PjBL stages. Replicating this instructional approach in other educational settings may provide further evidence regarding its applicability, consistency, and potential contribution to interdisciplinary disaster education.

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CONFLICT OF INTEREST

The author states that there is no conflict of interest in the preparation of this article.

AUTHOR CONTRIBUTIONS

All authors contributed to conceptualization, search and synthesis of literature, interpretation of results, manuscript preparation, and critical review of manuscripts. All authors have read and approved the final version of the manuscript.

GENERATIVE AI STATEMENT

The authors declare that Generative Artificial Intelligence (Generative AI) was used solely to assist with language refinement, grammatical correction, and improvement of manuscript readability. All scientific concepts, interpretations, literature synthesis, analyses, and conclusions were developed by the authors. All AI-assisted content was carefully reviewed, verified, and revised by the authors, who take full responsibility for the accuracy, integrity, and final content of the manuscript.

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