

## Implementation of the Discovery Learning Model Assisted by Wordwall Games Media in History Learning

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### ABSTRACT

This study examines the planning and implementation of the Discovery Learning model assisted by Wordwall Games media in history learning and identifies the obstacles encountered during its implementation in class XI F1 of SMA Negeri 1 Sungai Rumbai. The study used a descriptive qualitative approach. The research informants consisted of the history teacher and students of class XI F1. Data were collected through classroom observation, interviews with the teacher and students, and documentation in the form of photographs and videos. Data were analyzed through data collection, data reduction, data presentation, and conclusion drawing. The findings show that the learning design was prepared by aligning the six Discovery Learning stages stimulation, problem statement, data collection, data processing, verification, and generalization with the historical material on the Proclamation of Indonesian Independence and the Rengasdengklok Event. Video was used at the stimulation stage, while Wordwall Games, particularly Match Up and Speaking Cards, was integrated mainly into verification and reinforcement activities. Classroom observations and interviews indicate that students became more involved in observing, asking questions, searching for information, discussing, answering questions, cooperating with peers, and expressing their understanding. Students generally responded positively because the game-based activities made history learning more varied and enjoyable. However, several temporary obstacles were identified, including limited time, unstable internet connectivity, initial difficulty operating Wordwall, and challenges in classroom management. These obstacles were addressed through teacher guidance, clearer instructions, and time management. The study recommends careful preparation of digital media, technical demonstrations before the game, and effective time allocation so that all Discovery Learning stages can be implemented optimally.

**Keywords:** Discovery Learning, Wordwall Games, History Learning

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### INTRODUCTION

Education is one of the sectors affected by digital advancements, which have encouraged the integration of technology into the learning process (Aeni et al., 2022). In the modern era, teachers are expected not only to master subject matter and teaching methods but also to use a range of technologies, from traditional to modern tools, to support student learning. Integrating modern technology can significantly increase student engagement, particularly when combined with active learning frameworks (Afrilianto & Susilo, 2023).

The utilization of technology is a crucial competency for teachers. Digital media can present information through coordinated verbal and visual representations, which can support learners' understanding when the materials are appropriately designed (Mayer, 2009). Technological advancements have positively influenced the educational landscape, particularly by enhancing the learning process (Aeni et al., 2022). Technology can be optimized

across various stages of instruction—from designing teaching materials and conducting learning activities to developing diverse learning media—especially in the creation of interactive, engaging, and innovative resources. Collaborative active learning models paired with interactive media play an essential role in 21st-century history education ([Zulkarnain & Lestari, 2023](#)).

One method of applying technology in education involves integrating digital platforms that combine educational elements with gaming, thereby teaching skills while achieving learning objectives. Wordwall Games is one such tool that can be employed ([Hasanah et al., 2023](#)). The use of this medium aligns with learning models that position students as the central figures in the learning process, encouraging them to be more active—whether through group collaboration or independent task completion ([Sadriati, 2025](#)). Interactions between teachers and students, as well as among students themselves, are crucial to the learning process as they foster the development of students' social and intellectual capabilities ([Harefa et al., 2024](#)). Furthermore, learning models can integrate diverse learning resources that deepen students' understanding of the material, while assessment and feedback mechanisms enable students to track their progress and address any remaining shortcomings. Incorporating Discovery Learning supported by interactive digital games has been shown to boost both conceptual understanding and motivation ([Widiastuti & Suardana, 2023](#)).

Meanwhile, advancements in educational technology offer opportunities to create more engaging, interactive, and student-centered learning experiences through innovative approaches and digital media ([Husnita et al., 2023](#)). Previous studies have demonstrated the potential of integrating the Discovery Learning model with Wordwall as a digital learning medium to support the learning process. [Pitaloka \(2024\)](#), for example, investigated the implementation of Discovery Learning assisted by Wordwall in elementary school IPAS learning. Employing a quantitative experimental design, the study found that Discovery Learning supported by Wordwall was more effective than Discovery Learning supported by picture-based media in improving students' knowledge of IPAS. These findings suggest that the integration of a discovery-oriented learning model with an interactive digital platform such as Wordwall can contribute positively to students' learning outcomes. In secondary education contexts, implementing interactive discovery models effectively increases student engagement during history lessons ([Handayani & Rahmadani, 2022](#)).

Similarly, [Septentriwati et al. \(2024\)](#) examined the use of Discovery Learning combined with Wordwall in classical guidance services to improve students' emotional regulation abilities. Using a mixed-method approach involving eighth-grade junior high school students, the study reported an improvement in students' ability to regulate their emotions following the implementation of Discovery Learning assisted by Wordwall. This finding indicates that the combination of Discovery Learning and Wordwall has potential beyond conventional academic instruction and may also facilitate the development of students' broader competencies.

Despite these findings, previous studies leave several aspects insufficiently explored. [Pitaloka \(2024\)](#) primarily examined the effectiveness of Discovery Learning assisted by Wordwall in improving students' IPAS knowledge using a quantitative experimental approach. In contrast, [Septentriwati et al. \(2024\)](#) focused on students' emotional regulation within the context of classical guidance services and employed a mixed-method design. Thus, existing research has predominantly emphasized measurable improvements in particular learning

outcomes or competencies. Less attention, however, has been given to the learning process itself, particularly to how students become actively engaged throughout the different stages of Discovery Learning when supported by an interactive digital medium.

Furthermore, limited research has specifically investigated the integration of Wordwall Games into the stages of Discovery Learning to foster student activeness in History education, particularly in the context of Indonesian history. Student activeness in this context extends beyond academic achievement and encompasses students' active involvement in identifying problems, asking questions, expressing ideas, seeking and processing information, participating in discussions, solving problems, verifying their understanding, and drawing conclusions. Platforms like Wordwall also offer versatile functions as interactive verification and evaluation tools in history classrooms (Yulia & Febriani, 2022). Accordingly, a research gap remains concerning how the integration of Discovery Learning and Wordwall Games can facilitate and stimulate students' active participation throughout the learning process.

This gap is particularly relevant to the instructional context observed in Grade XI F1 at SMA Negeri 1 Sungai Rumbai. Preliminary observations indicated that History instruction remained predominantly conventional and teacher-centered, with lectures and individual assignments being the primary instructional practices and limited use of varied learning media. Consequently, some students tended to participate passively by simply recording information provided by the teacher, while opportunities to express ideas, ask questions, engage in discussion, and independently seek and process information remained limited. Classroom interaction was also relatively constrained because the existing instructional practices did not sufficiently encourage students to take an active role in constructing their own understanding. This condition reflects a discrepancy between the expectation of student-centered learning, which emphasizes active participation and independent knowledge construction, and the observed classroom practice, which remained largely teacher-directed.

Against this background, the present study offers novelty in terms of its research focus, context, and methodological perspective. Rather than examining the effectiveness of Wordwall solely in terms of improvements in learning outcomes or specific competencies, this study seeks to explore in depth how the Discovery Learning model assisted by Wordwall Games is implemented to foster student activeness throughout the History learning process. The study is situated at the senior high school level, specifically among Grade XI F1 students at SMA Negeri 1 Sungai Rumbai, and focuses on Indonesian history, particularly the topic of the Proclamation of Indonesian Independence. This context distinguishes the present study from previous research that focused on elementary-level IPAS knowledge or students' emotional regulation in junior high school guidance services.

The novelty of this study also lies in the way Wordwall Games is integrated into the Discovery Learning process. Rather than being used solely as an assessment tool at the end of instruction, Wordwall Games is incorporated as an interactive learning medium that supports students in testing, reinforcing, and validating the knowledge they have constructed during the discovery process. Its use is connected to the stages of observing and identifying problems, collecting and processing information, verifying findings, and drawing conclusions. In this way, Wordwall Games functions not merely as a digital assessment platform but as an integral component of an interactive, discovery-oriented learning process. Utilizing Wordwall systematically helps reinforce students' retention of historical concepts across secondary

education ([Suryani & Utami, 2024](#)).

Therefore, this study is expected to provide a more comprehensive understanding of the implementation of Discovery Learning assisted by Wordwall Games in fostering active, interactive, and student-centered History learning. More specifically, the study seeks to complement existing research by highlighting the processes and forms of student activeness that emerge as learners engage in each stage of Discovery Learning. The findings are expected to contribute to the development of History learning practices that provide students with greater opportunities to participate actively, construct knowledge independently, collaborate with peers, and develop a deeper and more meaningful understanding of historical events.

## **RESEARCH METHOD**

This study employs a descriptive qualitative approach. This approach was selected because the research aims to understand and describe the learning process as it naturally unfolds in the classroom, rather than to test statistical hypotheses. The study was conducted at SMA Negeri 1 Sungai Rumbai, Dharmasraya, West Sumatra, during the even semester of the 2025/2026 academic year.

The research informants consisted of the history teacher and students from class XI F1. The study designated the history teacher, Mr. APD, and a number of selected students as informants. The student informants included VM, MKQ, ASB, MIR, FAP, VLS, AAD, and TTA. The class comprised 28 students, consisting of 9 males and 19 females. The researchers selected these students based on specific criteria, identifying those who best understood or had experienced the phenomenon under study.

Data collection was carried out through observation, interviews, and documentation. Data collection was carried out through observation, interviews, and documentation. Prior to data collection, the researcher obtained permission from SMA Negeri 1 Sungai Rumbai to conduct the study in Grade XI F1. The researcher also explained the purpose, procedures, and activities involved in the study to the school and the participating students. Participation was voluntary, and the students were informed that the data collected would be used solely for research purposes and that their personal information and identities would be kept confidential.

Observations focused on the implementation of the Discovery Learning stages and student participation during history lessons. Interviews were conducted with the history teacher and students to gather information regarding their experiences, responses, and the difficulties they encountered. Documentation included photographs and videos of the learning process, as well as relevant classroom records.

Data analysis followed the interactive qualitative process outlined in the research: data collection, data reduction, data presentation, and conclusion drawing, consistent with the qualitative data analysis framework described by [Miles et al. \(2014\)](#). Data obtained from observations, interviews, and documentation were compared and organized based on three research foci: planning, implementation, and obstacles. Data credibility was strengthened through source triangulation and the comparison of information obtained from observations, interviews, and documentation.

## **RESULTS AND DISCUSSION**

### ***Designing a Discovery Learning Model Assisted by Wordwall Games for History Instruction***

The planning of the Discovery Learning process, supported by Wordwall games, begins with the preparation of activities and instructional media tailored to the history curriculum. The lesson focuses on events surrounding the Proclamation of Indonesian Independence, including the Rengasdengklok Incident. This plan aligns each stage of Discovery Learning with concrete student activities and the selection of relevant digital media.

The first stage, stimulation, was implemented through the use of historical videos. Students were guided to observe the videos carefully and record important information related to the historical events presented. The use of video at this stage was intended to provide an initial stimulus that could attract students' attention and activate their prior knowledge before they engaged in further inquiry. This approach is consistent with the principles of Discovery Learning, in which stimulation is intended to create an initial condition that encourages students to investigate a problem rather than immediately receiving a complete explanation from the teacher. The use of visual and digital media can also support this process by presenting historical events in a more concrete and engaging form (Mayer, 2009). In this study, the video therefore functioned not merely as supplementary material but as an entry point for students to construct questions and explore historical information independently. The finding is consistent with the broader principle of Discovery Learning that students should be encouraged to observe and investigate learning materials before formulating their own understanding.

The second stage, problem statement, was designed to encourage students to identify questions and problems arising from their observations of the video. The questions raised by students included the differences in perspectives between the younger and older generations and the background of the Rengasdengklok Incident. This stage reflects the central principle of problem-oriented history learning, in which students are encouraged to question, interpret, and reconstruct the meaning of historical events rather than merely reproduce information provided by the teacher. Research on problem-posing in history education emphasizes that students can become active participants in historical inquiry when they are given opportunities to formulate questions and examine historical causality from their own perspectives. Thus, the emergence of questions concerning the Rengasdengklok Incident in this study indicates that the stimulation stage provided a meaningful basis for students to formulate problems that guided the subsequent learning process.

The third stage, data collection, was conducted through group activities in which students gathered relevant information from videos, textbooks, and other learning resources. Students were encouraged to search for information that could help them answer the problems identified in the previous stage. This activity corresponds with the Discovery Learning principle that learners should have opportunities to collect information from relevant sources in order to examine the problems or hypotheses they have formulated. In the present study, group-based information gathering also created opportunities for students to communicate and exchange information with their peers. The teacher functioned primarily as a facilitator by providing guidance when students experienced difficulties rather than directly supplying all of

the answers.

The fourth stage, data processing, involved students organizing, comparing, discussing, and connecting the information they had collected with the problems identified during the problem statement stage. Through group discussion, students attempted to determine which information was relevant to answering the questions concerning the events leading to Indonesian independence and the Rengasdengklok Incident. This process is consistent with the Discovery Learning framework, in which collected information is processed and interpreted so that students can identify relationships and construct an understanding of the concepts under investigation. The findings also demonstrate the constructivist character of the learning process because students were not positioned merely as recipients of historical information; instead, they actively interpreted and connected information through interaction with their peers and learning resources.

The fifth stage, verification, was supported by the use of Wordwall Games. Two Wordwall game formats were used in the learning activities: "Match Up" and "Speaking Cards." The Match Up activity required students to match historical information with the appropriate answers, whereas Speaking Cards provided opportunities for students to respond to questions orally. The use of Wordwall at this stage was intended to provide students with an opportunity to check and reinforce their understanding after collecting and processing information. Therefore, the games were not treated as activities separate from the Discovery Learning model but were integrated into the verification stage as an interactive mechanism for examining students' understanding.

The use of Wordwall in this study is supported by previous research demonstrating its potential as an interactive learning medium. [Hasanah et al. \(2023\)](#), for example, found that Wordwall had a significant influence on students' interest in History learning at SMA Negeri 5 Pontianak. Their findings suggest that the interactive characteristics of Wordwall can contribute to students' interest and engagement in History lessons. Similarly, [Aeni et al. \(2022\)](#) developed Wordwall-based educational games as learning media and emphasized their potential to support teachers' technological pedagogical content knowledge and students' understanding of learning materials. These findings support the use of Wordwall as an interactive medium in the verification stage of the present study. In addition, [Septentriwati et al. \(2024\)](#) demonstrated the applicability of Discovery Learning combined with Wordwall in supporting students' development in a different educational context. [Agusti & Aslam \(2022\)](#) likewise reported that Wordwall can be used as an interactive learning medium, although their study examined learning outcomes in elementary science rather than History.

The sixth and final stage, generalization, was implemented collaboratively through the formulation of conclusions by the teacher and students. Students were encouraged to articulate the main points they had discovered throughout the learning process and relate them to the historical problems discussed earlier. This activity corresponds with the generalization stage of Discovery Learning, in which students formulate conclusions based on the information and evidence they have processed and verified. In the present study, the collaborative formulation of conclusions also provided students with an opportunity to communicate their understanding and reflect on the learning process. Rather than simply receiving conclusions from the teacher, students participated in articulating the historical concepts they had constructed.

**Table 1** Integration of Discovery Learning Stages and Wordwall Game Activities

| <b>Discovery Learning Stage</b> | <b>Key activities</b>                                       | <b>Media</b>                                  |
|---------------------------------|-------------------------------------------------------------|-----------------------------------------------|
| Stimulation                     | Watching videos and noting down important information       | Historical video as an initial stimulus       |
| Problem Statement               | Identifying historical questions and issues                 | Teacher questions and student responses       |
| Data Collection                 | Gathering information from videos, books, and other sources | Learning resources                            |
| Data Processing                 | Group discussion and information analysis                   | Group work                                    |
| Verification                    | Answering and matching questions through a game             | Wordwall matching game and conversation cards |
| Generalization                  | Formulating conclusions based on the learning process       | Teacher and student reflection                |

### ***Implementation of the Discovery Learning Model Assisted by Wordwall Games Media in History Lessons***

Based on research conducted on May 22, 2026, the implementation of the Discovery Learning model assisted by Wordwall Games media at SMA Negeri 1 Sungai Rumbai was carried out in a single learning session, divided into three stages: preliminary activities, core activities, and closing activities. The steps for the preliminary activities are as follows:

#### ***Preliminary Activities***

The teacher begins the lesson by greeting the students and inviting them to pray together, creating a calm atmosphere that helps them prepare to learn. The teacher then asks how they are doing to build good communication and a relaxed, enjoyable classroom atmosphere in which students feel comfortable participating. After checking attendance to encourage discipline and responsibility, the teacher poses two questions to introduce the topic: “What do you know about the Proclamation of Indonesian Independence?” and “When and where did the Proclamation of Independence take place?” The teacher then explains the learning objectives and indicators so that students understand the direction and targets of the lesson, before providing a general overview of the events leading up to the Proclamation of Indonesian Independence and the Rengasdengklok incident.

#### ***Core Activities***

##### ***Stimulation***

At the stimulation stage, the teacher engages students by showing an educational video about the events leading up to the Proclamation of Indonesian Independence and the Rengasdengklok incident. The video is screened to capture students' attention and provide an initial overview of the material to be studied. Through the video, students can visualize the key figures involved, the prevailing situation, and the sequence of events surrounding the path to the Proclamation of Indonesian Independence. This transforms historical material—previously understood only through verbal explanations or reading—into something that can be visually observed.

While the video plays, the teacher asks students to pay attention to information they deem important. Students are guided to take notes on details such as the names of figures, the

timing of events, the background of the Rengasdengklok incident, and events related to the Proclamation of Independence. The teacher does not provide all the information upfront but instead allows students to gain an initial understanding through observation. In this way, students become actively involved in the learning process from the start rather than simply waiting for the teacher's explanation.

After the video concludes, the teacher poses several preliminary questions related to its content, such as:

- a) What caused the Rengasdengklok incident?
- b) Who were the figures involved in the incident?

These questions serve to gauge the students' attention and initial understanding of the material. They also encourage students to recall the information they saw and heard while watching the video. Students then begin to offer answers based on their individual understanding.

These activities reveal that students are beginning to show curiosity about the material. Some students start to notice the connections between different events and attempt to understand the reasons behind them. Students also begin to identify aspects they do not yet understand, sparking a desire to learn more about the events depicted in the video. This sets the stage for the teacher to guide students toward the next Phase of Learning: Formulating the Problem or Issue to Be Discussed.

Based on observations during the activity, the use of video in the stimulation phase helped create a more engaging initial learning atmosphere. Students appeared more focused on observing the material because the historical information was presented in visual form and through a chronological sequence of events. Observing, taking notes, and answering prompt questions also demonstrated that students were beginning to engage in the learning process. Thus, the stimulation phase serves as the initial step to build students' attention and curiosity before they are directed to identify problems and seek further information regarding the historical material being studied.

#### Problem Statement (Problem Statement or Identification)

In the problem statement phase, after students watched a learning video about events leading up to the Proclamation of Indonesian Independence and the Rengasdengklok Incident, the teacher provided an opportunity for them to express questions, opinions, or anything unclear from the video.

During the activity, students began to raise questions based on the information they gained from the video. One question that arose was why there were two groups leading up to the Proclamation of Independence: the young and the old. These questions indicate that students are beginning to notice the differing views among the figures involved in the process leading to independence. Students are not simply accepting the information presented but are beginning to question the reasons behind these differences.

The questions raised by students then become issues discussed in the lesson. The teacher provides additional explanations regarding the background to the emergence of the youth and older groups, particularly regarding differing views regarding the timing and method of implementing the Proclamation of Independence. This situation creates a more open learning process because students have the opportunity to express their thoughts without

simply waiting for the teacher to explain.

Based on observations during the activity, students are beginning to be encouraged to participate in defining learning problems. Students are beginning to ask questions. The teacher, at this stage, plays more of a role as a guide, helping students clarify problems, rather than as the sole source of answers. This indicates that the learning process is shifting from receiving information to identifying and formulating problems based on what students have observed.

#### Data Collection

During the data collection stage, students begin searching for and gathering information related to the issues identified in the previous stage. The teacher directs students to utilize various available resources, such as previously viewed instructional videos, notebooks, textbooks, and other learning materials relevant to the topic. The teacher then divides the students into four groups of seven; this step aims to facilitate the process of searching for and collecting information relevant to the lesson. Through group activities, students can collaborate, discuss, exchange information, and assist one another in locating the necessary data.

#### Data Processing

During the data processing stage, students work in groups to process the information obtained during data collection. The teacher guides them in reviewing their notes and the sources they used, then selecting information relevant to the topic under discussion. Students categorize information about the figures involved, identify the timing of the events, analyze the background of the Rengasdengklok incident, and examine the causes and effects of the event. Through these activities, students learn to evaluate information before using it rather than accepting everything they find at face value. The results of this process provide a foundation for the subsequent verification stage.

#### Verification

During the verification stage, students check the accuracy of the discussion results and findings obtained in the previous stage. Wordwall Games are used to help them test their understanding of the material. Instead of simply receiving answers from the teacher, students draw on their group discussions to determine the correct answers in the games.

The first game, "Match Up," focuses on events leading up to the Proclamation of Indonesian Independence. The teacher prepares the game in Wordwall by pairing descriptions of historical events with their corresponding dates. After opening the game, groups take turns dragging and dropping the available options to form the correct pairs. Before selecting an answer, students discuss their choices and share their opinions, while those who understand the material help group members who are still having difficulty. Throughout the activity, the teacher observes how students collaborate and address any problems that arise. Once all pairs have been matched, students review the results displayed by Wordwall. The events and dates used in the game are presented in Table 2.

**Table 2** Match-up Game Questions

| Events                                                                              | Answer          |
|-------------------------------------------------------------------------------------|-----------------|
| Soekarno, Hatta, and Radjiman Wedyadiningrat met Marshal Terauchi in Dalat, Vietnam | August 14, 1945 |
| BPUPKI was dissolved and PPKI was formed                                            | August 7, 1945  |
| The United States dropped the first atomic bomb in history on the city of Hiroshima | August 6, 1945  |
| The Netherlands surrendered in Java                                                 | March 8, 1945   |
| Soekarno, Hatta, and Radjiman Wedyadiningrat returned to Indonesia                  | August 12, 1945 |
| Soekarno read the proclamation text                                                 | August 17, 1945 |
| Japan surrendered unconditionally to the Allies                                     | August 15, 1945 |
| Establishment of BPUPKI                                                             | April 29, 1945  |
| The city of Nagasaki was hit by an atomic bomb dropped by the Allies                | August 9, 1945  |
| Soekarno and Hatta were taken to Rengasdengklok by the youth group                  | August 16, 1945 |

After “Match Up,” the activity continues with “Speaking Cards.” The teacher prepares this Wordwall game with questions about the chronology, causes, and effects of the Rengasdengklok incident, then explains the rules to the students. The group that achieved the best result in “Match Up” is given the opportunity to answer the questions displayed on the cards. Students in that group who can answer raise their hands and respond verbally in their own words. The questions include “What was the purpose of abducting Soekarno and Hatta to Rengasdengklok?”, “Where is Rengasdengklok located, and why was it chosen?”, “Why is this event often referred to as a ‘political abduction’?”, and “What was the outcome of the negotiations between the ‘youth faction’ and the ‘older faction’?” Because students must explain their answers rather than select from provided options, the teacher can assess the depth of their understanding. Taking turns also helps students build confidence in expressing their opinions and practise organizing their answers so that others can understand them.

The teacher provides feedback on students’ responses and explains the correct information when an answer is inaccurate or incomplete. Once the game ends, the teacher and students revisit the key questions raised during the activity and bring together the information discussed to develop a more comprehensive understanding of the historical material. To reinforce verification, the teacher may also replay relevant segments of the instructional video when students do not yet fully understand an answer or issue. Students can then compare their reasoning with the information in the learning resources and check whether their conclusions align with historical facts.

#### Generalization (Drawing Conclusions)

In the generalization stage, the teacher and students draw conclusions based on the entire learning process that has taken place. Conclusions are not simply stated by the teacher; instead, students are first given the opportunity to articulate their understanding of the material. The teacher guides students to recall the issues discussed, the information gathered, and the results of any verification or proof conducted during the lesson.

Students then convey the core concepts using their own words. During this activity, the teacher invites several students to present their conclusions and subsequently reinforces the points they have made. If any information is inaccurate, the teacher corrects it and provides additional explanation. The teacher also links the material back to the initial problem posed at

the start of the lesson, allowing students to see that the issue has been resolved through the learning process they undertook.

The generalization stage is crucial for ensuring that students do not merely go through the motions of the learning activities but actually gain a solid understanding of the material. Students are given the chance to restate the knowledge they have acquired in their own words, while the teacher plays a role in reinforcing correct concepts and rectifying any misunderstandings.

### ***Challenges in Implementing the Discovery Learning Model Assisted by Wordwall Games Media***

Implementing the Discovery Learning model supported by Wordwall Games in history lessons is an effort to create a student-centered learning process, thereby fostering critical thinking skills and student engagement in independently discovering concepts. However, the implementation of this model is not without challenges faced by students during the learning process.

#### ***Teacher Challenges***

Based on an interview with Mr. ADP the history teacher, the challenges encountered in implementing the Discovery Learning model primarily relate to the execution of the lesson. The teacher explained that, in practice, oversights can occur, meaning not all learning stages are fully carried out according to the Discovery Learning syntax. Although the syntax is systematically structured based on scholarly study, there is a possibility that certain stages might be skipped during implementation due to human factors. Furthermore, the teacher faces challenges in optimally managing and controlling the classroom. This was evident when the activity of answering game questions—intended to be done in turns—occurred simultaneously, resulting in a noisier classroom atmosphere. Nevertheless, these challenges did not cause significant issues for the overall learning process; instead, they simply became part of the dynamic spirit of classroom instruction.

Based on the interview, the solution adopted by the teacher to address these challenges involves deepening their understanding of the model, particularly regarding each stage or syntax of the learning process. The teacher needs to study and recall the sequence of the syntax to ensure all stages are fully implemented during the lesson. Additionally, the teacher needs to improve classroom management skills so that learning activities proceed in a more orderly and focused manner. In implementing Discovery Learning, the teacher should act as a facilitator guiding the learning process rather than the central figure delivering material. By providing students with more opportunities to discuss, ask questions, express opinions, and discover information independently, the learning experience becomes more active and student-centered.

#### ***Student Challenges***

Several challenges are faced by students during the history learning process when using the Discovery Learning model supported by Wordwall Games. ASB faced the challenge of limited time allocated to complete the Wordwall games. This time constraint made her feel rushed when reading questions and selecting the correct answers, inducing nervousness and panic due to the fear of not finishing the game. Meanwhile, FAP encountered issues with

unstable internet connectivity; this disruption caused the Wordwall games to run slowly, hindering her ability to access the game, answer questions, and participate optimally in learning activities. MIR also faced challenges with an unstable internet connection while accessing the Wordwall games; the resulting lag forced her to wait before she could answer questions or proceed with the game. Additionally, VLS faced difficulties during the initial stage of using the Wordwall games, as she did not yet understand how to play—specifically regarding the drag-and-drop mechanism for placing answers in the correct positions.

Based on interviews with the students, it can be concluded that the obstacles encountered during the implementation of the Discovery Learning model assisted by Wordwall games were generally unrelated to their understanding of the history subject matter; instead, they were primarily influenced by technical aspects and the execution of the lesson. The challenges included time constraints for completing the game, unstable internet connectivity, and a lack of initial understanding regarding how to use the Wordwall games. Time constraints caused students to feel rushed, nervous, and panicked when answering questions. Meanwhile, internet connectivity issues hindered smooth access to the game, slowing down the process of answering questions. Furthermore, at the beginning of the media's use, some students struggled to understand how to operate the game's features. Nevertheless, these obstacles were temporary and could be overcome through teacher guidance and the students' own adjustment to using the learning media, thus overall.

#### *Resource-Related Constraints*

Regarding the implementation of the Discovery Learning model assisted by Wordwall Games in History learning, the resource-related constraints identified in this study were primarily associated with supporting facilities and the technical requirements of digital media rather than with the Discovery Learning model itself. Three main constraints were identified. First, the use of Wordwall Games requires a stable internet connection. When the school network is slow or unstable, students may experience difficulties accessing the activities, including prolonged loading times and interruptions during the games. This finding is consistent with previous research showing that limited internet connectivity and inadequate digital infrastructure remain important barriers to the implementation of technology-based learning in Indonesian schools. Practical challenges in game-based history instruction often stem from technical and operational constraints during implementation ([Pratama & Wibowo, 2023](#)). A systematic review of information-technology-based social science learning in Indonesia also identified inadequate technological infrastructure and limited access to facilities as institutional challenges in implementing digital learning. Similarly, research on Wordwall use has reported limited internet access and technical problems as challenges that can affect its implementation in classroom learning.

Second, the free version of Wordwall places restrictions on the number and range of activities that teachers can create. This limitation may reduce the variety of game-based activities available during instruction and consequently affect teachers' flexibility in designing interactive learning experiences. Previous research on Wordwall has similarly identified restrictions on free features and access to premium game formats as practical challenges for teachers who seek to develop varied digital learning activities. A systematic review of Wordwall-based learning media has also identified limitations of the free version as one of the

constraints in implementing Wordwall in educational settings. Thus, the limitation observed in the present study is consistent with previous findings concerning the technical and functional constraints of using Wordwall as a digital learning platform.

Third, the implementation of digital learning requires teachers to have access to appropriate devices and adequately prepared digital learning materials, including instructional videos, Wordwall activities, and supporting lesson content. The preparation of these resources requires additional planning and technological competence from teachers. Previous studies have similarly reported that teachers may face difficulties in preparing and implementing digital learning media because of limited technological skills, insufficient preparation time, and inadequate supporting facilities. A systematic review of technology-based social science learning in Indonesia identified teachers' digital skills and experience in using technology-based learning media as important challenges, while institutional challenges included the provision of technological infrastructure and training. Research on the implementation of digital learning media has likewise found that limited facilities and teachers' ability to explore and prepare digital media can hinder the optimal implementation of technology-supported instruction.

These findings are also relevant to the implementation of Discovery Learning itself. Although Discovery Learning encourages students to actively explore, collect, process, and verify information, its implementation requires adequate learning resources and careful classroom management. Previous research on the implementation of Discovery Learning has identified limited facilities, insufficient learning resources, and time constraints as factors that may affect the implementation of the model. Other research has also reported that teachers may experience difficulties in guiding students during data processing, managing classroom activities, and facilitating the process of drawing conclusions when implementing Discovery Learning. Therefore, the obstacles identified in the present study suggest that the successful implementation of Discovery Learning assisted by Wordwall Games depends not only on the suitability of the instructional model but also on the availability of supporting infrastructure, teacher preparedness, and adequate digital resources.

## **CONCLUSIONS**

The implementation of the Discovery Learning model, supported by Wordwall Games, has proven effective in enhancing students' enthusiasm for and understanding of the topic of the Proclamation of Indonesian Independence. At each stage of the Discovery Learning process, students are given the opportunity to engage actively through activities such as observation, expressing opinions or asking questions, gathering information, discussion, and verifying the information obtained. Throughout this process, Wordwall Games serves as a supporting tool that facilitates learning through engaging educational games, thereby boosting student participation. Beyond fostering conceptual understanding, this model also cultivates critical thinking, communication, and collaboration skills. Despite challenges such as time constraints and varying levels of student readiness, the implementation of the Discovery Learning model assisted by Wordwall Games was found to support students' active participation in History learning in Grade XI F1 at SMA Negeri 1 Sungai Rumbai. The integration of historical videos, group-based inquiry activities, and interactive Wordwall Games provided opportunities for

students to observe, formulate questions, collect and process information, verify their understanding, and formulate conclusions collaboratively. These findings indicate that the model has potential to support more active, interactive, and student-centered History learning and may therefore be considered for further development in similar instructional contexts.

However, this study has several limitations that should be considered when interpreting the findings. First, the data were collected within a limited research period and focused on the implementation observed in Grade XI F1 at a single school. Second, the study did not involve a comparison or control group; therefore, the findings cannot be used to establish the superiority of Discovery Learning assisted by Wordwall Games over other instructional models or media. Third, the study employed a descriptive qualitative approach, with the findings based on observations, interviews, and documentation rather than quantitative measurements of learning outcomes or statistical tests of effectiveness. Consequently, the findings primarily describe how the model was implemented and how student activeness was manifested within the specific classroom context studied. The results should therefore be interpreted as contextual evidence of the model's potential rather than as a generalizable claim of effectiveness. Future research involving multiple classes or schools, longer implementation periods, and comparative or mixed-method designs could provide further evidence regarding the effectiveness and broader applicability of Discovery Learning assisted by Wordwall Games in History education.

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