



## Development of Grade 11 Indonesian History Question Exercises on Japanese Occupation in Indonesia (1942-1945) using the Zep Quiz Media

Ardi Tri Yuwono<sup>1\*</sup>, Andi Sebastian<sup>2</sup>, Gijsbert ter Braake<sup>3</sup>

<sup>1</sup>Pendidikan Sejarah, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Nusantara PGRI Kediri, Indonesia

<sup>2</sup>Komunikasi dan Penyiaran Islam, Fakultas Ushuluddin dan Dakwah, Universitas Islam Negeri Syekh Wasil Kediri, Indonesia

<sup>3</sup>History and Art History, Faculty of Humanities, Utrecht University, Netherlands

\* Correspondent Email: [ardiyuwono63@sma.belajar.id](mailto:ardiyuwono63@sma.belajar.id)

### ARTICLE INFO

Article history

Received: February 14, 2026

Accepted: May 16, 2026

Published: June 30, 2026

### Keywords:

Gamification; Historical Thinking Skills; Media Development; Zep Quiz.

### Kata Kunci:

Gamifikasi; Keterampilan Berpikir Historis; Pengembangan Media; Zep Quiz.

### ABSTRACT

History learning at the high school level still faces challenges in the form of a lack of media variety and low motivation for students to learn complex material, such as the Japanese Occupation of Indonesia (1942-1945). This research aims to develop a history question exercise based on Zep Quiz that is valid, practical, and potentially effective in practicing historical thinking skills of grade 11 students. The method used is Research and Development (R&D) with a 4-D (Define, Design, Develop, and Disseminate) model. The product was developed in the form of 20-tiered multiple-choice questions from cognitive levels C1 to C5 which were integrated with Zep Quiz gamification features such as avatars, leaderboards, and explanatory feedback, and were equipped with a Student Worksheet as a reflection tool. The validation results of material experts reached 95% and media experts 95.6% with the category of very feasible. The test on 36 students in grade 11-K of Madrasah Aliyah Negeri 1 Kediri City showed that all students managed to access the quiz with an average score of 78.2. The student response questionnaire showed that 94.4% felt motivated and 97.2% were interested in using similar media in the future. The theoretical implication of this research is a synergy model between gamification and historical pedagogy, while the practical implication is the availability of a ready-to-use integrated Zep Quiz Media learning package for teachers.

### ABSTRAK

Pembelajaran sejarah di tingkat Sekolah Menengah Atas masih menghadapi tantangan berupa minimnya variasi media dan rendahnya motivasi siswa dalam mempelajari materi kompleks, seperti Pendudukan Jepang di Indonesia (1942-1945). Penelitian ini bertujuan untuk mengembangkan latihan soal sejarah berbasis Zep Quiz yang valid, praktis, dan berpotensi efektif dalam melatih keterampilan berpikir historis siswa kelas 11. Metode yang digunakan adalah *Research and Development* (R&D) dengan model 4-D (*Define, Design, Develop, and Disseminate*). Produk dikembangkan berupa 20 soal pilihan ganda berjenjang dari level kognitif C1 hingga C5 yang diintegrasikan dengan fitur gamifikasi Zep Quiz seperti *avatar, leaderboard*, dan umpan balik, serta dilengkapi Lembar Kerja Peserta Didik sebagai alat refleksi. Hasil validasi ahli materi mencapai 95% dan ahli media 95,6% dengan kategori sangat layak. Uji pada 36 siswa kelas 11-K Madrasah Aliyah Negeri 1 Kota Kediri menunjukkan seluruh siswa berhasil mengakses kuis dengan rata-rata skor 78,2. Angket respons siswa menunjukkan 94,4% merasa termotivasi dan 97,2% berminat menggunakan media serupa di masa depan. Implikasi teoritis penelitian ini adalah model sinergi antara gamifikasi dan pedagogi sejarah, sementara implikasi praktisnya adalah tersedianya paket pembelajaran media Zep Quiz terintegrasi siap pakai bagi guru.





## 1. INTRODUCTION

History education has a very important role in shaping the collective consciousness as well as critical understanding of the younger generation regarding their cultural roots and national identity (Yuwono, Bukhari, et al., 2025). At the high school level, the goal of teaching history is not only to transfer the facts of the past, but also to hone historical thinking skills, such as causal analysis, interpretation, and empathy for different points of view. The material on the Japanese Occupation in Indonesia (1942-1945) is one of the important topics in the 11th grade Indonesian History curriculum which has high complexity, considering that the period was a period of military occupation full of paradoxes, which on the one hand brought suffering through *romusha* and oppression, but on the other hand became a trigger for the national movement with the dissolution of the Dutch colonial power and the start of military training to Indonesian society (Yuwono, Sebastian, et al., 2025). However, the teaching of this material often faces various challenges, such as a lack of media variety, learning methods that still tend to be one-way, and students' difficulties in understanding the dynamics and nuances of the period, which can reduce their interest and depth of understanding (Weller, 2013).

The digital revolution has transformed the educational landscape, providing opportunities to create more interactive, personalized, and engaging learning experiences. The tendency of students as a digital native generation who are familiar with technological devices opens up space for the use of game-based learning media and interactive quizzes. Research in the field of game-based learning shows that this approach can significantly improve student motivation, engagement, and memory retention (Pivec, 2004). In this context, the Zep Quiz platform emerged as an innovation. Zep Quiz allows the creation of engaging interactive quizzes with custom avatars. The use of Zep Quiz for history practice offers the potential to transform learning from a passive model into a dynamic, adaptive, and fun experience.

Previous research, such as Johannes Westberg (2026) emphasizes the importance of presenting history that is not only narrative, but also structural and analytical. This research became a philosophical basis on the importance of designing materials that can stimulate critical thinking, not just memorization. In addition, Mukhtar Issayev and Timur Apendiyev (2025) developed an Android-based history learning media (mobile learning). Their research results show an increase in interest in learning, but also reveal challenges in terms of historical content validation. Research on Game-Based Learning by Rachmat, et al. (2026) explores the use of Role-Playing Games (RPGs) for historical material of the Industrial Revolution. The research proves that there is an increase in conceptual understanding, but also identifies obstacles in the form of long development times and high technical resource requirements for teachers.

Research on the Interactive Quiz Platform by Idzham, et al. (2025) evaluated the effectiveness of Quizizz as a tool for assessing history learning. They found that the platform can increase participation as well as create a healthy competitive atmosphere, although the existing question format is still limited to multiple-choice and completely false, which is less appealing to learners. Meanwhile, research on Indonesian Curriculum by Yumi Dunbar and Peter Cave (2026) analyzes how the narrative of Japanese Occupation in Indonesia is represented in textbooks. This study found that there is a tendency for narratives that are still black and white and recommends the use of interactive quizzes so that students can more easily understand the material.



Based on the review, there is a gap in the research, namely the lack of in-depth exploration of the development of practice question banks that integrate the complexity of historical material (such as causal and multi-perspective analysis during the Japanese occupation of Indonesia) with the advantages of interactive quiz platforms such as Zep Quiz, which offers interactive quizzes that combine gamification features and custom avatars to increase student motivation and understanding. There is a controversial hypothesis that needs attention, namely that some education experts (for example, referring to the superficial criticism of gamification) argue that the use of digital quizzes that overemphasize speed and points can actually reduce a deep historical understanding to a fragmented collection of facts (Elsawah, 2025). On the other hand, proponents of well-designed digital learning argue that interactive media can serve as a bridge to understanding complexity through interactive quizzes (Ephgrave & Milligan, 2025). This research is in the middle of the debate. Based on the above background, the research problem is formulated as follows: (1) How valid is the Zep Quiz-based practice of history questions developed about the Japanese Occupation of Indonesia for 11th-grade students? (2) How practical is the Zep Quiz media for use by 11th-grade students? (3) How effective is the Zep Quiz media in training students' historical thinking skills? The significance of this research includes three things, namely: (1) Contributing to the development of game-based learning theory, especially for humanities subjects such as history; (2) Provide innovative learning media models that are easy for teachers to use, and; (3) Offer a media development framework that combines the principles of historical pedagogy with interactive quiz technology.

## 2. METHOD

This research applied the Research and Development (R&D) method and was carried out in Class 11-K, Madrasah Aliyah Negeri (MAN) 1 Kediri City. This method was chosen because the main purpose of the research is to produce a certain product, namely a history question practice medium based on Zep Quiz, as well as test its feasibility (Sugiyono, 2013). The subjects of this study consisted of 36 students in grade 11-K at Madrasah Aliyah Negeri (MAN) 1 Kediri City, who were selected through purposive sampling by considering their representation as digital natives who have access to smartphones and are familiar with gamification-based applications (Sugiyono, 2013). In addition, 27 students from class 11-A were involved as trial samples to test the validity and difficulty level of the question items before the main implementation. This separation aims to ensure that the final product has gone through initial empirical testing before being disseminated to the target class (Fraenkel, 1977).

The research instruments consist of four types: (1) Material expert validation questionnaire and media expert validation questionnaire which uses a Likert scale of 1–5 to assess product feasibility (Sugiyono, 2013); (2) A multiple-choice question bank of 20 items covering cognitive levels C1 to C5 based on Bloom's taxonomy, which has been tested for content validity and item difficulty; (3) Student response questionnaires to measure motivation, interest, and ease of use felt after using Zep Quiz products, and; (4) A semi-structured interview guide for history teachers to get qualitative feedback on the practicality of the product (Creswell & Poth, 2017). Specifically, this study adopts the 4-D Development Model (Four-D Model) introduced by Sivasailam Thiagarajan, Dorothy S. Semmel, and Melvyn I. Semmel (1974). This model consists of four main stages, namely Define, Design, Develop, and Disseminate. However, given the limitations in the scope of the research, the Disseminate stage is not carried



out comprehensively, but is only disseminated through the Learner Worksheet to Class 11-K students and is more focused on product validation up to the development stage. This model was chosen for its systematic, iterative and end-product-oriented characteristics that have been tested for feasibility.

### 2.1. Define

According to Nanzhe Wang & Louis J. Durlofsky (2025), this stage aims to analyze and formulate the policy of product development through five main analytical activities:

- a. It was carried out through observation and interviews with history teachers who teach in grade 11-K to identify problems in learning and evaluation of Japanese Occupation in Indonesia (1942-1945) materials;
- b. Examine the characteristics of students in grade 11-K as product users, including learning styles, interest in technology, and general difficulties in understanding history;
- c. Describe core competencies and basic competencies based on the Indonesian Curriculum, as well as identify indicators of historical thinking skills (such as chronological understanding, causality analysis, and perspective interpretation) that need to be achieved (Seixas & Morton, 2013);
- d. Mapping the core material of the Japanese Occupation in Indonesia (1942-1945) into coherent sub-sub-materials, such as military policy, Japanese-formed organizations, economic-social life, and its impact on national movements;
- e. Formulate operational and measurable special learning objectives based on the results of previous analysis, which will be a reference in the preparation of question items.

### 2.2. Design

Based on the results of the definition stage, product design and validation instruments are carried out, which include:

- a. Compile a matrix that describes the relationship between historical thinking skill indicators, cognitive level according to Bloom's Taxonomy, and question item numbers;
- b. Establish the format of the presentation of questions, the context of the stimulus, and the use of language that is in accordance with the level of understanding of students;
- c. Designing a validation questionnaire for subject matter experts and media experts using the Likert scale, which is guided by instrument development standards.

### 2.3. Develop

This stage includes the implementation of product design and validation, which consists of:

- a. The question items are implemented into the Zep Quiz platform, resulting in an interactive prototype;
- b. The product is validated by two subject matter experts and one media expert. The aspects and indicators of assessing the feasibility of materials and media are as follows.

**Table 1.** Aspects and Indicators of the Material Feasibility Rubric

Aspects	Indicator
Presentation of Questions	The presentation of questions is in accordance with the Learning Objectives and Flow Objectives.



	Illustrations or pictures in the question are clearly presented.
	Questions can be used both individually and in groups.
	The questions are grouped according to Bloom's Taxonomy.
	It is used as an efficient and practical evaluation tool.
	Each multiple-choice question has only one correct answer.
<b>Content Quality</b>	The questions are designed so that students can actively participate.
	The content of the questions covers the material thoroughly.
	The answer choices are arranged logically and have the appropriate level of difficulty.
	The images used in the questions have high accuracy.
	The use of terms in questions is accurate and in accordance with the material.
	The questions are designed to be communicative and easy to understand.
<b>Construction</b>	Able to arouse the curiosity of students.
	The questions are arranged according to the level of ability of the students.
	The order of the questions is presented systematically and logically.
<b>Language Use</b>	The content of the questions does not provide hidden clues to the correct answer.
	Questions about using language that is in accordance with correct and appropriate writing.
	The sentences in the questions are made simple and easy for students to understand.
	There is no ambiguity or the possibility of double interpretation in the question.

**Table 2.** Aspects and Indicators of Media Eligibility Rubric

<b>Aspects</b>	<b>Indicator</b>
<b>Platform Presentation</b>	Concept Suitability.
	Clarity of instructions for use.
	An easy-to-understand display of evaluation results.
	Presentation of interesting questions.
	Can be used individually or in groups.
<b>Content</b>	Clear answer key display.
	A harmonious color combination.
	A variety of quiz content.
	Good image or photo quality.
	Use of appropriate characters or letters.
<b>Design</b>	Creative and dynamic design.
	Well-organized layout of elements.
	Color selection that doesn't interfere with the look.
	Proper use of fonts or characters.
	Attractive and aesthetic appearance.
<b>Ease of Use</b>	Able to increase learning motivation.
	Easy and convenient application access.
	Effectiveness in use.
	Ease of using the platform.

After the data is obtained from the media and material feasibility questionnaire, the data will be processed into percentages using the Likert scale calculation technique developed by Sugiyono (2013) with the following formula.



$$P = \frac{\sum x}{\sum xi} \times 100\%$$

**Description:**

- $P$  = Eligibility.
- $\sum x$  = The number of scores obtained.
- $\sum xi$  = The number of ideal or highest scores.

After the percentage of validation results from experts is obtained, the score will be categorized according to the eligibility criteria described below.

**Tabel 3.** Material and Media Eligibility Criteria

Percentage (%)	Criteria
81-100	Highly Worth
61-80	Worthy
41-60	Quite Decent
21-40	Less Worthy
0-20	Not Eligible

Quantitative data was analyzed using the validity of the items tested using the Pearson Product-Moment correlation with a significance level of 5% and a table value of  $r$  of 0.381 for 27 respondents, while the difficulty level of the item was calculated based on the proportion of students who answered each question correctly (Arikunto, 1983). The qualitative data from teacher interviews and students' reflective notes on the Student Worksheet were analyzed thematically to complement the quantitative findings (Miles et al., 2014).

**2.4. Disseminate through Learner Worksheets**

The dissemination stage is focused on the integration of products into the Learner Worksheet as the main medium of dissemination. This strategy ensures that the product does not stand alone, but rather becomes an integral part of the learning process that 11-K students are familiar with. Disseminate steps are: (1) The researcher distributes the Digital Learner Worksheet and explains the material on the Japanese Occupation of Indonesia (1942-1945) for 20 minutes; (2) Students work on 20 multiple-choice questions in the Zep Quiz individually for 15 minutes, and; (3) A short discussion with students for 10 minutes and a discussion with the history teacher in class 11-K to get feedback.

**3. RESULTS**

**3.1. Define**

The Define stage is carried out to analyze needs and formulate a comprehensive development basis. This process results in a clear and measurable specification of product requirements as follows.

**a. Front-End Analysis**

Based on observations and interviews with history teachers in grade 11-K, two main problems were identified: (1) Low motivation of students in completing conventional history practice questions that tend to be monotonous, and; (2) Students' difficulties in analyzing the cause-and-effect relationship and diverse perspectives of the Japanese Occupation in Indonesia



(1942-1945). Teachers state that students are more likely to memorize chronology without understanding the dynamics and complexity of historical nuances (Zubaidi, 2026).

### **b. Learner Analysis**

A questionnaire survey conducted on 36 students in grades 11-K showed that they had a profile as digital natives: (1) 94% of them had access to personal smartphones, 89% were active in using digital gaming or quiz applications, and; (2) 82% stated that they are more motivated to learn using interactive media compared to textbooks. However, 75% of them admitted to having difficulty understanding the historical terms and context of Japanese policies.

### **c. Task Analysis**

The analysis of Learning Outcomes and Learning Objectives in the Indonesian Curriculum for the Japanese Occupation in Indonesia material identifies three main competencies that need to be mastered: (1) Outline the chronology and government policies during the Japanese occupation in Indonesia; (2) Analyze the social, economic, and political impacts caused by the occupation, and; (3) Evaluating the contribution of that period to the Indonesian national movement (Suyanto, 2025). Indicators of historical thinking skills according to Seixas and Morton (2013) such as historical significance, cause and effect, and perspective taking are integrated as high-level cognitive goals.

### **d. Concept Analysis**

The main material is divided into four interrelated conceptual clusters: (1) Background and Chronology of the Japanese Occupation in Indonesia; (2) Structure and Policies of the Japanese Military Occupation Government in Indonesia; (3) Organization and Mobilization (PUTERA, Jawa Hokokai, PETA, Heiho), and; (4) Historical Impact and Heritage (social gap, national consciousness, and preparation for Indonesian independence).

### **e. Specifying Instructional Objectives**

The formulation of specific, analysis-focused Learning Objectives serves as a critical guide for the next stage of Design. These goals clearly avoid the use of verbs such as “mention” or “register,” preferring terms such as “analyze,” “compare,” and “evaluate” (Tuma & Nassar, 2021). This is a strategic move to respond to the controversial hypothesis that gamification reduces the depth of analysis. By basing the design on higher cognitive goals, the product is designed to harness the appeal of gamification as a means to achieve depth of analysis, not as a substitute for it.

## **3.2. Design**

The Design stage undergoes a transformation from a conceptual specification (Define) to an operational blueprint for its products and evaluation instruments. The main result of this stage is a comprehensive design toolkit as follows.

### **a. Question Item Design**

At this stage, the researcher gives a large portion (70%) at the cognitive level C3 to C5, which is a direct translation of the analytical learning objectives that have been formulated at



the Define stage. This is an important step to address concerns that digital quizzes are only suitable for memorization testing (Zainuddin et al., 2020). With distractors designed to capture misconceptions, such as presenting a propaganda narrative of the Japanese Occupation of Indonesia as a seemingly logical answer option, these questions measure not only “what students know,” but also “how they think” about history. This approach is in line with the principles of historical evidence and historical perspective taking, where students are trained to critique narratives and differentiate perspectives (Ries & Schwan, 2023).

### b. Integration of Adaptive Feedback in Zep Quiz

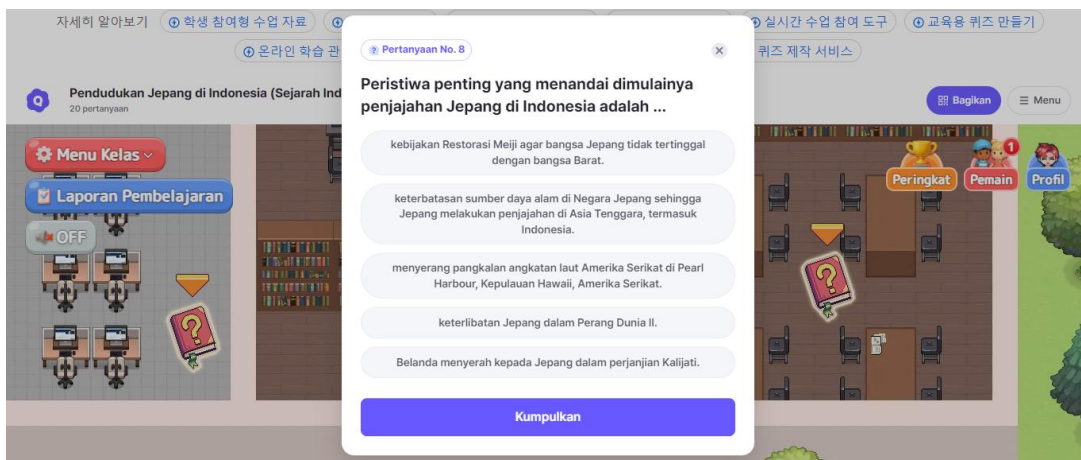


Figure 1. Multiple Choice Question View in Zep Quiz  
(Source: Personal Documentation)

As pictured 1 this mechanism transforms quizzes from a summative evaluation tool to a formative learning tool. Explanatory feedback serves as timely teaching, providing additional context and explanation when students need it most (Zeinstra et al., 2023).

### c. Learner Worksheet Design

The Learner Worksheet serves as a cognitive anchor that prevents the learning experience from becoming just answering random questions. By asking students to record the reasons behind their answer choices, the Learner Worksheet forces a metacognition process, in which students must reflect on their own way of thinking. This part of reflection further encourages the synthesis of knowledge. This design ensures that the fun element of gamification in Zep Quiz is balanced with the deep-thinking activities recorded in the Learner Worksheet, thus creating a balance between affective engagement and cognitive depth (Kroupova et al., 2024).

### d. Preparation of Validation Instruments

This preparation ensures that the evaluation of product feasibility is not subjective, but can be measured through recognized technical and pedagogical aspects. This comprehensive instrument allows validation that assesses not only the “suitability”, but also the “quality of learning” provided by the product (Eastgate et al., 2022).



### 3.3. Develop

The Develop stage is the implementation of the Design into a real product and its feasibility testing through validation by experts. This stage results in a prototype of the improved media as follows.

#### a. Results of Expert Validation and Product Revision

The initial product has been validated by two experts, namely a material expert (a historical education researcher with 15 years of experience) and a media expert (an educational technologist specializing in game-based learning). Quantitative data were analyzed using the formula proposed by Sugiyono (2013), with the following results.

Table 4. Recapitulation of Expert Validation Results

Validation Aspects	Acquisition Score	Maximum Score	Percentage (%)	Category
Subject Matter Expert Validation	76	80	95	Highly Worth
Media Expert Validation	86	90	95.6	Highly Worth

In detail, the validation results for each aspect can be seen in Table 5 and Table 6 as follows.

Table 5. Detailed Results of Material Expert Validation

Aspects	Score (1-5)	Validator's Notes
Presentation of Questions	5	The questions are in accordance with the Learning Objectives and the Flow Objectives.
Content Quality	4	Comprehensive material coverage.
Construction	5	The order of the questions is systematic from chronology to impact analysis.
Language Use	5	Language is communicative, in accordance with the rules, and unambiguous.

Table 6. Detailed Results of Media Expert Validation

Aspects	Score (1-5)	Validator's Notes
Platform Presentation	5	The concept of gamification is suitable, the instructions for use are clear.
Content	4	A harmonious combination of colors.
Design	5	Easy access and attractive appearance thus increasing motivation.
Ease of Use	5	Automated feedback is very supportive of self-learning.

The final product that has been revised is declared very feasible to be tested on students.

#### b. Limited Trial

Analysis of the validity test and the level of difficulty was carried out on 20 question items to evaluate the extent to which each item can measure the construction in question. Data collection was carried out by 27 students from class 11-A Madrasah Aliyah Negeri (MAN) 1 Kediri City, before being distributed to students in grades 11-K. This test applies Pearson's



Product Moment correlation technique between the grain score and the total score. The number of respondents in this study was 27 students, so based on the  $r$  Product Moment table compiled by Sugiyono (2013), at a significance level of 5%, the  $r$ -table value = 0.381 was obtained. If the value of  $r$  is greater than the  $r$  of the table (0.381), then the question item is declared valid. Conversely, if  $r$  counts less than or equal to  $r$  table, then the question item is declared invalid.

**Table 7.** Results of the Validity Test of the Question

Question Item Number	Calculate	Table	Remarks
1	0.673	0.381	Easy
2	0.484	0.381	Easy
3	0.411	0.381	Medium
4	0.498	0.381	Easy
5	0.809	0.381	Easy
6	0.429	0.381	Medium
7	0.411	0.381	Medium
8	0.545	0.381	Easy
9	0.582	0.381	Medium
10	0.484	0.381	Easy
11	0.712	0.381	Medium
12	0.404	0.381	Easy
13	0.786	0.381	Easy
14	0.695	0.381	Easy
15	0.402	0.381	Easy
16	0.628	0.381	Easy
17	0.338	0.381	Hard
18	0.592	0.381	Easy
19	0.809	0.381	Easy
20	0.616	0.381	Medium

Based on the analysis carried out in table 7, as many as 19 out of 20 questions or (95%) met the validity criteria, while 1 question (5%), namely question number 17, was declared invalid because the value of  $r$  calculated was below the  $r$  table. This shows that most of the questions have been able to assess the abilities of students in class 11-A well, in accordance with the expected goals. Question number 17 needs to be revised by considering validation from material experts. The difficulty level of the question items is generally very related to the purpose of the test. An analysis of the level of difficulty is carried out to determine whether a problem is included in the easy, medium, or difficult category. The value of the difficulty level is expressed in the form of proportions with a range between 0 to 1. The higher the proportion score obtained, the easier the questions are categorized for students to do.

The difficulty level of the question item is usually closely related to the purpose of the test. Analysis of the level of difficulty is carried out to determine whether a problem is included in the easy, medium, or hard category. The value of difficulty is expressed in proportion with a range between 0 and 1. The higher the proportion score obtained, the easier the questions are categorized for students to do.



Table 8. Difficulty Level Test Results

Question Item Number	Number of Students Who Answered Correctly	Difficulty Level	Remarks
1	24	0.8889	Easy
2	21	0.7778	Easy
3	17	0.6296	Medium
4	22	0.8148	Easy
5	24	0.8889	Easy
6	17	0.6296	Medium
7	17	0.6296	Medium
8	21	0.7778	Easy
9	14	0.5185	Medium
10	25	0.9259	Easy
11	18	0.6667	Medium
12	26	0.9630	Easy
13	23	0.8519	Easy
14	22	0.8148	Easy
15	24	0.8889	Easy
16	21	0.7778	Easy
17	5	0.1851	Hard
18	24	0.8889	Easy
19	24	0.8889	Easy
20	14	0.5158	Medium

The results of the analysis from Table 8 show that there is 1 question item (5%) that is included in the difficult category, 6 question items (30%) are at the medium difficulty level, and 13 questions (65%) are classified as easy. Questions that are too difficult tend to make students lose motivation because they feel unable to do them, while questions that are too easy are not able to encourage students to think critically and are less effective in distinguishing the level of ability of students. Therefore, the ideal questions are in the medium category with a difficulty index ranging from  $0.30 \leq \text{kindergarten} < 0.70$ . The final product that has been revised is declared very feasible to be tested on students. The final link of Zep Quiz is: <https://quiz.zep.us/id/play/nLwqBX>

### 3.4. Disseminate

The Disseminate stage was carried out in a limited way, focusing on the dissemination and application of the final product to the main target audience, namely 36 students in class 11-K. The dissemination strategy is carried out exclusively through the Learner Worksheet which functions as an integration tool, guide, and data collection instrument. The Digital Learner Worksheet is designed in Microsoft Word format which includes a link to Zep Quiz in the form of a QR Code as well as step-by-step technical instructions. In Microsoft Word, there is an interactive table with "Question Number", "My Answer", and "Reason" columns. Students are instructed to record the reasons behind the answer choices on a minimum of 5 questions that they find most challenging. In addition, students were also asked to fill out a response questionnaire using a Likert scale of 1-5 and an open-ended suggestion column. The results of this implementation showed that all students (100%) successfully accessed and completed the quiz. Data collected from the responses of the Digital Learner Worksheet and the Zep Quiz



dashboard showed that the average score of the Zep Quiz was 78.2 out of a scale of 100, while the average working time of the learners was 26.8 minutes. The results of the implementation are summarized in table 9 as follows.

**Table 9.** Results of Student Response Questionnaire Analysis ( $n=36$ ) to Products

Aspects Assessed	Average Score (1-5)	Key Interpretation
The Attractiveness of the Quiz Format	4.64	The avatar, leaderboard, and visual design features are very appealing to students.
Ease of Access	4.58	There are no technical obstacles.
Feedback	4.44	Can understand the wrong concept, if there is a wrong answer.
Question Difficulty Level Suitability	3.92	25% of students find the analysis questions quite challenging.
Future Use Interest	4.69	Almost all students want similar media to be used for other historical materials.

A history teacher who has been teaching for 12 years and teaching classes 11-K, gave an in-depth response through a semi-structured interview after implementation. He stated that the Digital Learner Worksheet is very practical to use because the direct link can be clicked, so students can follow the instructions without experiencing any technical confusion. What was most appreciated by him was the increase in student participation, where students who were usually passive and tend to be sleepy during conventional daily tests now become very focused and enthusiastic in doing quizzes, even competing healthily on the leaderboard. According to him, the automatic feedback that appears after each answer is very helpful for students in understanding the historical context, which is evident from the post-quiz discussions where students are able to explain the impact of *romusha* policies well. As a suggestion for development, he proposed the addition of a question that analyzes images or propaganda posters of the Japanese Occupation in Indonesia to train visual source reading skills.

#### 4. DISCUSSION

The discussion in this section is prepared based on three main research formulations, namely: (1) The validity of the Zep Quiz-based historical question practice product; (2) Practicality for grade 11 students, and; (3) Its potential effectiveness in training historical thinking skills. Each finding is interpreted through a relevant theoretical framework and compared with the results of previous research.

##### 4.1. Validity of the Zep Quiz-Based History Question Exercise Product

The validation results from material experts (95%) and media experts (95.6%) placed the developed product in the "Very Feasible" category. This very high level of validity is supported by a systematic design process at the Define and Design stages, which refers to the 4-D development model (Thiagarajan et al., 1974). The assessment of subject matter experts emphasizes the alignment between the question indicators and the historical thinking skills framework proposed by Seixas & Morton (2013), particularly aspects of historical significance, cause and effect, as well as perspective taking. These findings are consistent with research by Issayev & Apendiyev (2025), who developed an Android-based history learning medium and found that content validation is a key key to the success of digital history products. However,



the study went further by integrating stratified cognitive structures (C1 to C5) with gamification features, a combination that had not been explored much in previous studies (Zainuddin et al., 2020). Media expert validation, which reached 95.6%, confirms that Zep Quiz media, with its avatar feature, leaderboard, and explanatory feedback, provides a visually appealing and user-friendly interface for students as a digital native generation (Pivec, 2004).

## 4.2. Practicality of the Zep Quiz Product for Grade 11 Students

The practicality of this product is proven through a successful implementation involving 36 students in class 11-K MAN 1 Kediri City. All students (100%) were able to access and complete the quiz with an average completion time of 26.8 minutes and an average score of 78.2. The student response questionnaire showed that 94.4% of students felt motivated and 97.2% expressed interest in using similar media in the future. These results show a very high level of practicality. The practicality of this product is in line with the findings of Idzham et al. (2025), who evaluated the effectiveness of Quizizz for the assessment of historical learning and found an increase in student participation. However, this study complements these findings by adding the Student Worksheet as a reflection tool. The Student Worksheet serves to have students take note of the reasons behind their answer choices, which forces a metacognitive process that is often absent in purely gamification-based quizzes (Jensen et al., 2021). Interviews with history teachers also reinforce the practicality of this product. The teacher stated that the direct link and QR Code in the Student Digital Worksheet made it very easy for students to follow the instructions without technical confusion. These findings support the theory of Eastgate et al. (2022), which emphasizes that the success of digital learning media is largely determined by the ease of access and clarity of instruction.

## 4.3. Potential Effectiveness of Zep Quiz in Training Historical Thinking Skills

The study found evidence that the design of graded questions, with 70% of the questions being at the cognitive level of C3 to C5 (application, analysis, and evaluation), is able to encourage students to think more than just memorize. The explanatory feedback mechanism in the Zep Quiz, which was perceived by 88.9% of students to help them understand the wrong concept, transformed the quiz from a summative evaluation tool to a formative learning tool (Zeinstra et al., 2023). These findings empirically refute controversial hypotheses put forward by gamification critics, such as Elsayah (2025), who argue that digital quizzes that overemphasize speed and points risk reducing historical understanding to a fragmented collection of facts.

This study shows that when gamification is designed with strong pedagogical principles, including structured questions, explanatory feedback, and reflective worksheets, it can be an effective means of achieving high-level cognitive goals (Ding & Yu, 2024). In particular, students' reflective notes in the Learner Worksheet demonstrate their ability to articulate analytical thinking, for example linking *romusha* policies to their socio-economic impacts. These findings are in line with the formative feedback theory of Jensen et al. (2021), which states that timely and informative feedback can improve understanding and correct misunderstandings. Additionally, healthy competition on the Zep Quiz leaderboard creates a safe environment for academic risk-taking, where students are more willing to take on cognitive challenges (Abercrombie et al., 2022; Hübner & Pfof, 2024). This study presents a synergy model that connects the dichotomy between gamification and deep historical understanding. The model



consists of three integrated components: (1) Gamification as an affective gateway that builds initial engagement; (2) Tiered content design as a cognitive core that ensures the achievement of analytical learning objectives, and; (3) Explanatory feedback and Learner Worksheets as reflective bridges that connect the experience of play with conceptual understanding. This model is in line with the game-based learning guidelines proposed by Pivec (2004) and reinforces the argument that well-designed interactive media can serve as a bridge to understanding historical complexity (Ephgrave & Milligan, 2025).

## 5. CONCLUSION

Based on the entire series of studies using the 4-D development model, it can be concluded that the Zep Quiz-based history practice product on the Japanese Occupation in Indonesia (1942-1945) for 11th grade students meets three main criteria: (1) Declared very valid based on validation from material experts (95%) and media experts (95.6%); (2) Very practical based on limited implementation to 36 students who achieved an average score of 78.2 with 94.4% feeling motivated, as well as; (3) Potentially effective in practicing historical thinking skills as evidenced by the design of tiered questions (70% at the cognitive level C3 to C5) and explanatory feedback which was felt to be beneficial by 88.9% of students. The theoretical implication of this study is the proposed synergy model between gamification and historical pedagogy that refutes the assumption that digital quizzes only reduce the understanding of history to fragmented facts, while the practical implication is the availability of a ready-to-use integrated learning package consisting of a Zep Quiz link containing 20 multiple-choice questions complemented by a Learner Worksheet as a reflection tool. The limitations of this study include the dissemination stage which is limited to only one class at Madrasah Aliyah Negeri (MAN) 1 Kediri City, the absence of experimental causality measurements on the improvement of learning outcomes, dependence on technological infrastructure, and the reliability and differentiating power of questions in depth. Therefore, recommendations for further research include experimental research with a pretest-posttest control group design to measure empirically the significance of improving historical thinking skills, as well as wide-scale dissemination through the history teacher community or learning resource sharing platforms so that the benefits of Zep Quiz media can be felt by more students.

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