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Web-based worksheets to improve student learning outcomes: A design and implementation

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Abstract

The purpose of this study is to design web-based worksheets as a solution to improve learning outcomes of Indonesian history in senior high school. This study adopted Plomp's model and experimental design to analyze the improvement of learning outcomes. Nine experts and 35 eleventh-grade students (aged 16.60±0.51 years) participated voluntarily consisting of males (n_1=16) and females (n_2=19). The implementation of this web-based worksheet was conducted with blended learning that lasted for 6 weeks. Data were collected through questions in the worksheet and then analyzed by descriptive, percentage, and t-tests. The findings showed that the experts' assessment of the web-based worksheet obtained an average of 88.41. The implementation showed that students' learning outcomes improved after using the worksheet (n=35; t=27.664; MD=31.46; $sig.$<0.05; pre-test 57.71±6.90 and post-test 89.17±4.57). There was no significant difference in learning outcomes between male and female students (t=1.824; MD=2.734; $sig.$>0.05; post-test 87.69±4.83 and 90.42±4.05). This worksheet can be used to overcome the limitations in learning Indonesian history, which has a positive impact on students' learning outcomes. A wider participant base with more complex learning materials, design, and appearance is needed for future research.

Keywords: Blended learning, Educational technology, History, Senior high school, Web, Worksheets.

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Contents

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Contribution of this paper to the literature
The development of web-based worksheets for history education has been relatively underexplored in existing research. In the context of the digital age, integrating such technologies offers significant opportunities to overcome educational challenges and enhance student learning outcomes.

1. Introduction

Technology support is crucial to education to realise learning in the twenty-first century with training programs designed to generate professional teachers (Matos, Pedro, & Piedade, 2019). Teachers as facilitators must be skilled in developing, designing, and presenting various forms of interesting and fun media to arouse students' interest in obtaining meaningful learning outcomes. In other words, the presence of technology can provide positive benefits in education, changing the way students learn and interact, both during and outside the course schedule (Zen & Ariani, 2022).

In the current era, the implementation of blended learning is the optimal solution to addressing the diverse needs of educational institutions (Rafiola, Setyosari, Radjah, & Ramli, 2020). Its implementation and success in integrating technology have been documented, including its accessibility, integration of engaging multimedia, and flexibility in use (Johnson et al., 2016). The integration of face-to-face and online learning modalities, collectively referred to as "blended learning," has been identified as a pivotal strategy to enhance students' learning skills, critical thinking abilities, and autonomous learning aptitudes (Garrison & Vaughan, 2008). According to the study by Bonk & Graham (2012), students have the opportunity to expand their intellectual horizons and enhance their understanding of salient issues through the utilization of the application in question. However, the integration of these technologies into teaching methodologies remains a challenge, primarily due to the limited awareness among teachers and students regarding the available applications (Rafiola et al., 2020).

The accessibility of educational resources through internet networks connected to smartphones and computers or laptops facilitates the dissemination of information (Nurhasanah, Masitoh, Arianto, & Ayubi, 2022). This phenomenon transcends conventional limitations imposed by time and space, thereby facilitating uninterrupted access at any moment (during and outside the designated course schedule) (Mohammadi et al., 2018). Consequently, professional teachers must employ diverse programs or applications to design and develop innovative and interactive learning media (Doloksaribu & Triwiyono, 2020). One such application is the utilization of web-based worksheets. Web-based worksheets are the digital equivalent of printed worksheets, created through the conversion of the former into the latter through computer technology. These worksheets can be accessed through computer devices connected to the internet, which contain instructions regarding the material and tasks that students must complete in the form of digital learning (MacMillan, 2004).

There are limited studies reported on the utilization of web-based worksheets in Indonesian history learning for senior high school students. Several studies have previously explored the efficacy of videos and web modules in enhancing critical skills in students (Febliza, Afdal, & Copriady, 2023). These modules have been utilized in various instructional settings, including library workshops, classroom presentations, and distance learning courses (MacMillan, 2004). Additionally, research has been conducted on the development of web-based elementary school students' character (Marini et al., 2021), and web-based simulations to improve understanding in high school students (Michaloudis & Hatzikraniotis, 2017). The implementation of project-based learning models utilizing web-based worksheets for undergraduate students (Muchlis, Priatna, & Dahlan, 2021) has been demonstrated. Furthermore, web-based modules for participation on socio-scientific issues among secondary school students (Wu, Hsu, Zhang, & Ho, 2022) have been developed. Finally, research has been conducted on mental health in web-based college students (Levin, Haeger, Pierce, & Twohig, 2017). Studies related to web-based worksheets with the application of blended learning in learning Indonesian history for senior high school students are still rare. This is a particularly salient concern that merits rigorous study to support and enhance learning in the current digital era.

Therefore, we present a solution to support the implementation of blended learning by designing and producing web-based worksheets on learning Indonesian history and assessing their effectiveness in improving students' learning outcomes. Furthermore, an analysis will be conducted to determine the discrepancy in learning outcomes between male and female students following the utilization of this worksheet.

2. Materials and Methods

2.1. Study Design and Participants

This study aims to develop web-based worksheets to facilitate the learning of Indonesian history. Two research designs will be employed: R&D, which utilizes the "Plomp model" (Plomp & Nieveen, 2013), and experiments, which will analyze the improvement and differences in learning outcomes between male and female students. A total of nine experts participated to assess the worksheets before implementation, namely material (n_1=3), media (n_2=3), and language (n_3=3) experts. The experts are lecturers and practitioners with professors and doctoral qualifications who have experience in related fields for at least five years. The involvement of these experts was carried out after obtaining their written approval (Ref. No. 4407/UN35.9/AK/2022). Subsequently, 35 eleventh-grade senior high school students (aged 16.60±0.51 years) participated in the implementation of the worksheets, comprising males (n_1=16) and females (n_2=19). The students were enrolled in second year at a public high school in Lima Puluh Kota District, West Sumatra, Indonesia. The students were social science majors who were enrolled in various courses, including those in sociology, geography, economics, and history.

2.2. Procedures and Instruments

2.2.1. Preliminary Research

This stage establishes the initial foundation for the design of web-based worksheets. It commences with the identification of worksheets that have been utilized by students in their learning of Indonesian history. The objective of this study is to develop worksheets that align with established expectations and address the limitations currently encountered in the learning process of Indonesian history for eleventh-grade senior high school students. Consequently, a curriculum and student analysis was conducted to align the aforementioned elements with the worksheets that were to be designed. Curriculum analysis comprises fundamental competencies in the domain of

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Indonesian history for eleventh-grade senior high school students. The purpose of curriculum analysis is to ensure that the design, structure, and components of the web-based worksheet are aligned with the curriculum utilized for eleventh-grade senior high school students. Concurrently, student analysis endeavors to align the characteristics of students with the worksheets to be designed, encompassing cognitive abilities, learning achievement, learning motivation, and attitude skills.

2.2.2. Prototyping Phase

This stage is carried out by designing web-based worksheets with the subject matter "Japanese Occupation in Indonesia," which consists of compiling a worksheet content framework, designing learning content, and creating worksheet products. The content framework includes (a) designing the components of the web-based worksheet. (b) Formulating the title of the web-based worksheet based on the basic competencies, indicators, and subject matter (Japanese Occupation in Indonesia). (c) Choosing various multimedia as supporting information for the material on the web-based worksheet. (d) Determining the assessment to measure learning outcomes and (e) finding additional information to strengthen students' understanding. Learning content design includes (a) mapping the variety of presentations of worksheet content and materials (video, text, and animation). (b) Finding supporting references in the worksheet materials and (c) arranging the order of display of worksheet content and materials. Then, the worksheets are packaged in a web form with an attractive, simple, and practical appearance.

The designs presented in this study were developed through the utilization of the website www.liveworksheets.com, which was designed with the objective of converting students' worksheets in printed form (in formats such as doc, pdf, jpg, or png) into electronic and online formats. Subsequently, an assessment was conducted by independent experts in the domains of material, media, and language. These experts were tasked with providing commentary on the evaluation of the designed worksheets as illustrated in Table 1. The comments were revised before their implementation with students.

Table 1. Expert assessment instruments

Material experts (*n*=3)	**Media experts (*n*=3)**	**Language experts (n=3)**
Compatibility: a. Presentation of material according to the curriculum. b. Presentation of material according to basic competencies. c. Presentation of material in accordance with learning objectives.	Contents: a. The main title and sub-material are easy to understand. b. Student identity column. c. Basic competencies that students must achieve. d. Study guide. e. Supporting information. f. Instructions for the activity. g. Structured activity steps	Language rules: a. Good and correct use of Indonesian. b. The use of language is easy to understand. c. Use of words and selection of appropriate terms.
Accuracy: a. The presentation of the material is structured. b. The material is presented systematically. c. Completeness of material coverage. d. The presentation of the material contains clear concepts and definitions. e. The presentation of the material contains data and facts. f. Questions are presented based on the content of the material.	Graphic: a. The cover appearance reflects the contents of the material. b. Worksheet layout. c. Selection of font type and size. d. Spacing settings. e. The combination of colors and layout used. f. Image presentation. g. The video quality is clear and easy to access. h. Suitability of the video to the material. i. A combination of text, images and videos. j. Background design. k. Placement of illustrations does not interfere with text, images and videos. l. Display of material in Microsoft Power Point.	Sentence: a. Correctness of sentence structure. b. Sentence effectiveness.
Encouraging students' curiosity: a. Presentation of materials and questions can encourage students' curiosity. b. Presentation of materials and questions can encourage students' ability to ask questions. c. Presentation of materials and questions can encourage students' critical thinking skills. d. Presentation of material can motivate students to learn. e. Presentation of material can make it easier for students to learn independently.	Technical: a. Easy to operate. b. Accessible with a laptop and a smartphone.	Suitability to students': a. Communicative language presentation. b. Language presentation according to cognitive development. c. The language presentation is easy to understand, making it easier to learn independently.

Note: Alternative answers: score 5 (very feasible), score 4 (feasible), score 3 (quite feasible), score 2 (less feasible), and score 1 (not feasible).

2.2.3 Assessment Phase

Web-based worksheets that have been assessed and declared feasible by experts are then subjected to an evaluation of their effectiveness in improving student learning outcomes. This stage encompasses the collection of pretest, application, and post-test data. The pretest stage is designed to assess the students' initial aptitude for the web-based worksheets. The application stage entails the utilization of web-based worksheets by students. This

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application employs a blended learning approach, integrating diverse methods, strategies, and combinations of technology-assisted learning media (Morton et al., 2016). Students utilize these media to engage in independent learning, both during and outside the course (Prahmana, Hartanto, Kusumaningtyas, & Ali, 2021). These implementation steps are related to students' learning activities and experiences (Ramsay, 2001).

In addition, the post-test stage is intended to evaluate the efficacy of web-based worksheets in enhancing students' learning outcomes following their utilization. The present study's experimental design entailed six meetings which were conducted with a frequency of once per week for approximately six weeks, including the collection of pretest and post-test data. The first week was dedicated to the collection of pretest data, the second to fifth weeks were allocated for the implementation, and the sixth week was designated for the post-test data collection. The instrument for assessing student learning outcomes was obtained through knowledge tests in the form of objective questions and questions in web-based worksheets.

2.3. Statistical Analysis

The assessments provided by the experts were then subjected to a quantitative analysis with the classification ranging from 81-100 indicating "very feasible," 61-80 indicating "feasible," 41-60 indicating "quite feasible," 21-40 indicating "less feasible," and 0-20 indicating "not feasible." The data characteristics of students' learning outcomes after using web-based worksheets were analyzed with descriptive statistics with the classification being scores of 91-100 (excellent), 81-90 (good), 70-80 (fair), and <70 (poor). A paired sample t-test was employed for the analysis to analyze the effectiveness of web-based worksheets in improving students' learning outcomes. Subsequently, the differences in learning outcomes between male and female students' following the implementation of web-based worksheets were subjected to an independent sample t-test analysis. The analysis was conducted using SPSS software version 28.0.

3. Results

3.1. Description of Web-Based Worksheet

The subject matter focuses on the Japanese occupation in Indonesia. The web-based worksheet display has been designed to facilitate browsing through the links provided. This display consists of four sub-materials, which collectively encompass four meetings (see Table 2). This web-based worksheet is also equipped with interactive questions, the editing of which is facilitated by the link www.liveworksheets.com (see Figure 1).

Table 2. Materials in web-based worksheets

Materials	Contents	Links
First material: The arrival of Japan in Indonesia	Japanese occupation material	https://www.google.co.id/books/edition/Japanese_Occupation_in_Indonesia/JxwAEAAAQBAJ?hl=en&gbpv=1&dq=japanese+occupation+di+indonesia&printsec=frontcover
	Video of Japan's arrival in Indonesia	https://www.youtube.com/watch?v=s7p05PWp1t0
	Map of Japan's arrival welcomed by the Indonesian people	https://id.scribd.com/document/523571621/Japan-Arrival-Map-To-Indonesia-1941
	Image of the arrival of Japan being welcomed by the Indonesian people	https://suciptoardi.wordpress.com/2019/09/25/japan-in-indonesia-enthusiasm-and-ambition/
Second material: Movement organizations during the Japanese occupation	Image of Indonesian youth military training	http://indonesia-zaman-doeloe.blogspot.com/2018/11/trainan-military-for-the-militaryyouth.html
	HEIHO poster image	http://satriotomo-gombal.blogspot.com/2016/10/perjuangan-heiho-antara-jepang-dan.html
	Image of Ir. Soekarno (First President of Indonesia)	https://cpanel.net/?utm_source=cpanelwhm&utm_medium=cplogo&utm_content=logolink&utm_campaign=404referral
	Image of Sutan Syahrir	https://www.70yearsindonesiaaustralia.com/kerjatoko-dan-pekerja-anggaran/prime-minister-sutan-syahrir-l62ng
	Image of PETA organization	https://www.google.com/search?q=Image+organization+MAP&source=lmns&bih=754&biw=1536&rlz=1C1CHBF_enID1063ID1064&hl=en&sa=X&ved=2ahUKEwixq-Xr24aAAxXfrGMGHRHlDewQ_AUoAHoECAEQAA
Third material: Japanese mobilization and oppression in Indonesia	Japanese educational videos during the Japanese occupation	https://www.youtube.com/watch?v=C33xOOChYZM&t=19s
	Video of the oppression of Romusha during the Japanese occupation	https://www.youtube.com/watch?v=oZdKPMg25uo
Fourth material: Indonesian people's resistance against Japan	Image of the resistance of the people of Singaparna	https://www.kompas.com/stori/read/2021/11/05/140000179/perlawanan-rakyat-singaparna?page=all
	PETA resistance image in Blitar	https://bertuahpos.com/berita- latest/historical-notes-14-february-rebellion-map-blitar.html

This web-based worksheet is also equipped with a flowchart that describes the sequence of processes in the application or system so that it is easily understood by students. The flowchart encompasses a hyperlink to the website www.liveworksheets.com, the student's unique identifier, instructional guidelines for learning, the sequence of activities, and the submission of completed tasks. The initial page corresponds to the worksheet cover, encompassing the primary title and subject matter, visual representations of material, sub-material, and class. The

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subsequent page relates to identity, encompassing student identity, fundamental competencies, and learning objectives. In this section, students are prompted to enter their names and respective classes. The third page contains learning instructions, activity steps, and learning videos. In the event of any difficulties, students are instructed to access the provided link, which will direct them to the YouTube platform. The fourth page of the activity is a continuation of the preceding activity, wherein students are instructed to complete the answer column after observing the prerequisite video. Subsequently, the learning material is presented in the form of a PowerPoint presentation which can be accessed by clicking, swiping left or right. Maps are displayed according to the material that contains interactive questions or exercises as indicated on the fifth page and subsequent pages. Students can match, move, and select one correct answer. For a more thorough examination of this topic (see Figure 2).

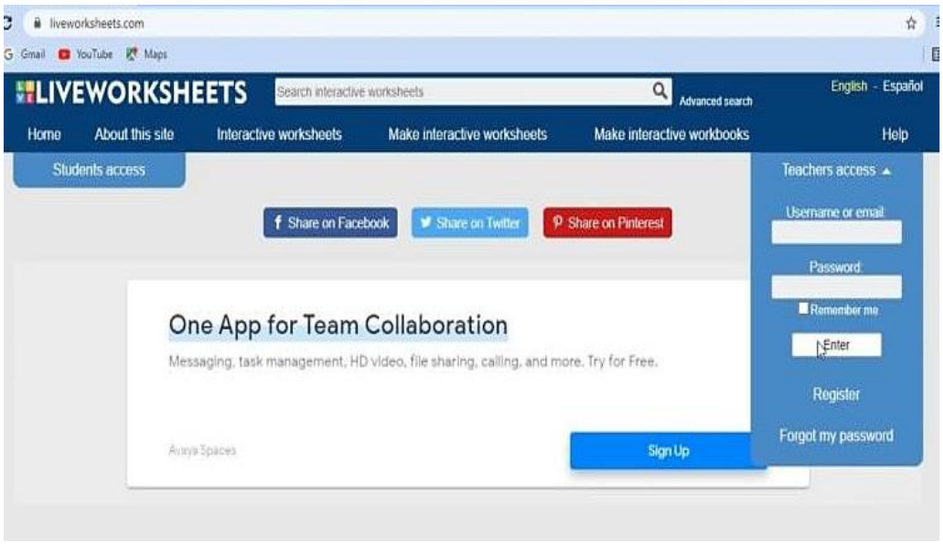

Figure 1a. Menu live worksheets, b) Make interactive.

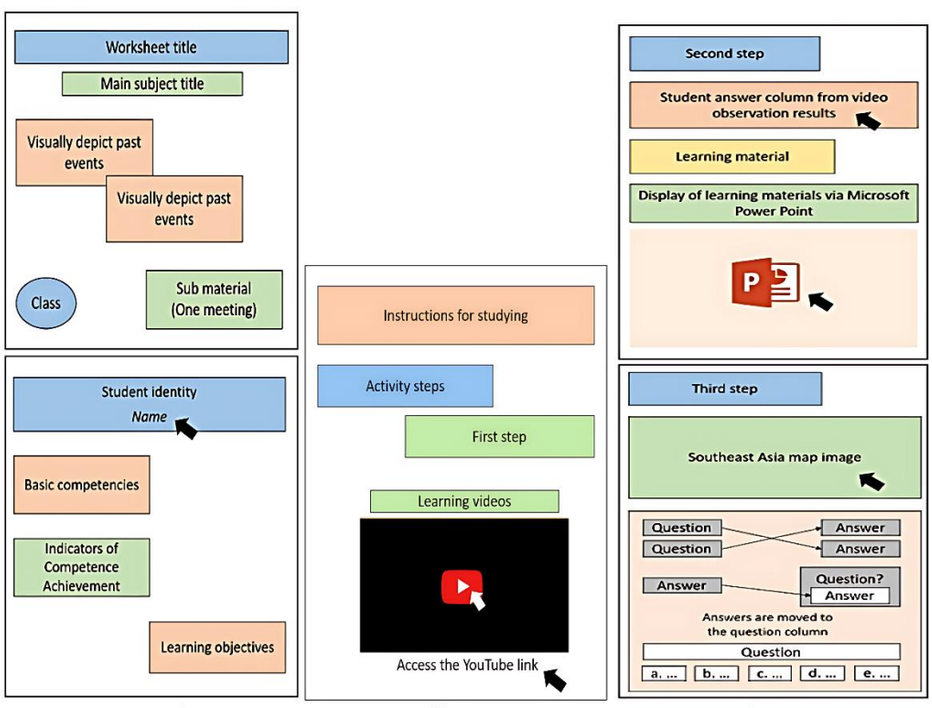

Figure 2a. Views one and two, b) Views three, and c) Views four and five.

3.2. Expert Assessment

The assessments from the experts are presented in Table 3. Revisions were made following comments from media experts related to the prototype, including the addition of the author's name, font size and type, and setting the assessment score.

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Table 3. Expert assessments on the worksheet

Experts	Aspects	Percentage	Average
Material (*n*=3)	Compliance	93.33	87.78
	Accuracy	86.67	
	Encourage students' curiosity	83.33	
Media (*n*=3)	Contents	85.71	85.24
	Graphic	80.00	
	Technical	90.00	
Language (*n*=3)	Language rules	93.33	92.22
	Sentence	90.00	
	Suitability to students	93.33	
Average		88.41	

3.3. Implementation

The analysis of the description of the learning outcome data of students after using web-based worksheets, both for male and female students is presented in Table 4. The results of the requirements testing are given in Table 5.

Table 4. Summary of description of student learning outcome data

Gender	*N*	Data	Min.	Max.	*M±SD*	Classification	Range ($\dot{x}$)	
							Pre-post	Post
Male	16	Pre	50.00	70.00	58.13±6.29	Poor	29.56	2.734
	16	Post	80.00	95.00	87.69±4.83	Good		
Female	19	Pre	50.00	70.00	57.37±7.52	Poor	33.05	
	19	Post	80.00	95.00	90.42±4.05	Good		
Male and female	35	Pre	50.00	70.00	57.71±6.90	Poor	31.46	
	35	Post	80.00	95.00	89.17±4.57	Good		

Table 5. Summary of data analysis requirements

Gender	*N*	Normality				Homogeneity			
		Kolmogorov-Smirnov		Shapiro-Wilk		Levene	df.1	df.2	*Sig.*
		Statistic	*Sig.*	Statistic	*Sig.*				
Male	16	0.211	0.055	0.903	0.091	1.224	1	33	0.277
Female	19	0.195	0.054	0.902	0.054				

Note: *Sig.*> 0.05 (normal and homogeneous).

The findings of the effectiveness test demonstrated that the implementation of web-based worksheets was effective in enhancing Indonesian history learning outcomes (*sig.*< 0.05) (see Table 6). This is evidenced by the average learning outcomes in the pre-test data of 57.71±6.90 (poor) and post-test of 89.17±4.57 (good), with a difference of 31.46. Subsequent analysis of the learning outcomes of male and female students revealed no statistically significant differences (*sig.*< 0.05) (see Table 7). The average learning outcomes in the post-test data for male students were 87.69±4.83 (good), while those for female students were 90.42±4.05 (good).

Table 6. Summary of effectiveness analysis

Data	*Df*	*M±SD*	SEM	*T*	*Sig.* (2-tailed)
Pre-post	34	31.46±6.72	1.137	27.664	0.000

Note: *Sig.*< 0.05 (significant).

Table 7. Summary of analysis of differences in learning outcomes based on gender

Gender	Data	*Df*	Mean difference	SED	*T*	*Sig. (2-tailed)*
Male and female	Post	33	2.734	1.499	1.824	0.077

Note: *Sig.*< 0.05 (significant).

4. Discussion

The purpose of this study is to design and develop web-based worksheets as a solution to improve Indonesian history learning outcomes in senior high schools. The worksheets obtained expert assessments that averaged 88.41, thus indicating a category of feasibility. The implementation of web-based worksheets has been demonstrated to enhance student learning outcomes (*n*=35; *t*=27.664; *MD*=31.46; *sig.*< 0.05; pre-test 57.71±6.90/poor and post-test 89.17±4.57/good). The study revealed no statistically significant differences in learning outcomes between male and female students (*t*=1.824; *MD*=2.734; *sig.*> 0.05; post-test 87.69±4.83/good and 90.42±4.05/good). This finding suggests that the web-based worksheet can function as a solution to support blended learning in senior high schools. The present findings are consistent with the conclusions of preceding studies which have indicated the pivotal role of technology in contemporary education, particularly with regard to enhancing access, enhancing learning efficiency, and preparing students for the digital era (Aremu & Efuwape, 2013). Consequently, the efficacy with which learning materials and learning processes and methods are employed by students will have a direct impact on their learning outcomes (Rafiola et al., 2020). In this regard, the independent and collaborative learning experience of students can be facilitated with blended learning. According to Garrison and Kanuka (2004), blended learning has been proven to improve student understanding, because it is combined with simulations, thereby providing frameworks that can cultivate students' problem-solving abilities (Kirkley & Kirkley, 2005). The web-based worksheets designed and developed are equipped with links in the learning and designed as interesting as possible to produce innovative and interactive learning. The materials presented in this worksheet come from various relevant sources, consisting of four sub-materials that can be explored using the links provided. This web-based worksheet is also equipped with a flowchart, student identity, learning instructions, activity steps, and finish-submit. The storyboard includes cover, identity, activities and exercises. A study by Prabjandee (2023) found that interactive worksheets are a solution that allows teachers to create several online assignments, quizzes, games, or tests, which are subsequently graded automatically.

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A study by MacMillan (2004) reported that web-based worksheets provide benefits in terms of flexibility, interactivity, and cost-effectiveness. In addition to fostering positive learning outcomes, the utilization of these worksheets has been shown to alleviate teachers' workload (Kılıçkaya, 2017). The employment of this web-based worksheet has been demonstrated to enhance teaching and learning activities, thereby facilitating effective interaction between students and teachers and augmenting student activity and learning achievement. Additionally, students with limited digital literacy skills can enhance their competencies and collaborate with their groups beyond the designated course schedule (Kasraie & Alahmad, 2014).

The integration of technology into modern education has been shown to facilitate novel approaches to learning and instruction, enhance accessibility, personalize the educational experience, and equip educators with a suite of innovative tools and resources (Suartama, Setyosari, & Ulfa, 2019). One of the primary functions of technology in the educational sector is to facilitate enhanced access to information. These resources allow users to delve more profoundly into specific subjects, access multimedia presentations, and even enroll in online courses (Alnedral, Ihsan, Mario, Aldani, & Sari, 2023; Handayani, Myori, Komaini, & Mario, 2023). This pedagogical approach has been shown to enhance comprehension and broaden perspective, as evidenced by numerous studies (Ramsay, 2001).

Blended learning, a combination of online and in-person instruction, offers numerous advantages for the educational process. This approach integrates diverse learning models and styles, leveraging multimedia resources and technological tools to enhance the learning experience. The advantages of blended learning for students include the ability to learn at their own pace, attain effective learning outcomes, increase interaction, satisfaction, and learning experience, and reduce costs and time (Trujillo Maza, Gómez Lozano, Cardozo Alarcón, Moreno Zuluaga, & Gamba Fadul, 2016; Wichadee, 2017). In such cases, the roles of parents and teachers are of particular significance. Teachers function as facilitators while parents play a pivotal role in motivating their children (Borup, Chambers, & Stimson, 2019). Furthermore, the web-based worksheets, which have been meticulously designed, serve to facilitate innovative learning. This assertion is consistent with the findings reported in the study by Valiathan (2002), which identified six components of blended learning: face-to-face classroom learning, self-learning, technology and information, tutorials, collaboration, and evaluation.

Blended learning is defined as a learning method that combines face-to-face and online learning (Morton et al., 2016). Blended learning has been demonstrated to offer a degree of flexibility and opportunities for students to thrive in academic and professional contexts (Trujillo Maza et al., 2016; Wichadee, 2017). The utilization of these worksheets has been demonstrated to enhance knowledge, foster collaboration, and enrich the learning experience for students (McQuiggan, McQuiggan, Sabourin, & Kosturko, 2015). In this process, the teacher functions as a facilitator, motivator, innovator, and evaluator (Chen, Yang, & Xie, 2022). Consequently, teachers are compelled to adopt a creative and innovative approach in the design and development of learning media to achieve educational objectives in this contemporary era (Muller, Dangur, & Benyamin, 2019).

These web-based worksheets have been assessed by experts before being implemented. According to Rubio, Berg-Weger, Tebb, Lee, and Rauch (2003), expert validation is a data collection technique that is used to assess the feasibility, accuracy, and suitability of product development. The validation of this study's findings is conducted by experts in their respective fields, including material, media, and language experts. The lecturers and practitioners possess professorships and doctoral qualifications, in addition to a minimum of five years of experience in related fields. The objective of this validation process is to provide constructive feedback to ensure the accuracy and validity of the worksheets prior to their implementation. As stated by Almanasreh, Moles, and Chen (2019), content validity is a pivotal component in the realm of product development, as it signifies the precision with which the instrument employed to gauge the concept under scrutiny is effective. In essence, content validity signifies the extent to which an instrument encompasses all pertinent aspects of the concept being evaluated.

5. Limitations

The stages and implementation of this worksheet have been attempted to the best of our ability. However, some limitations need to be reported for future improvements. This web-based worksheet only focuses on one subject matter, namely the Japanese occupation in Indonesia. Therefore, future research needs to add other materials to make it more complex. This worksheet is only specialized for eleventh-grade senior high school students, so it cannot be used for other levels and classes. Then, a wider audience with more refined subject matter, designs and appearance is also needed for future research.

6. Conclusion

A product in the form of a web-based worksheet for learning Indonesian history has been successfully developed. This worksheet represents a digital rendition of a printed worksheet that has been converted into an electronic form using computer technology. This worksheet can be accessed through a computer device connected to the internet, which contains instructions on tasks that students must complete in the form of digital learning exercises. This worksheet contains materials for studying Indonesian history. These materials can be accessed through the internet or electronically, and they have been designed to facilitate more effective and engaging learning. This product has met the requirements before the implementation with an overall expert assessment indicating a high degree of feasibility (88.41). The implementation demonstrated a significant increase in student learning outcomes following the utilization of the worksheet (n=35; t=27.664; MD=31.46; $sig.$< 0.05; pre-test 57.71±6.90/poor and post-test 89.17±4.57/good). The study revealed no statistically significant difference in learning outcomes between male and female students (t=1.824; MD=2.734; $sig.$> 0.05; post-test 87.69±4.83/good and 90.42±4.05/good). In conclusion, this web-based worksheet can be utilized by eleventh-grade senior high school students to optimize the implementation of blended learning. This study is expected to overcome the limitations in learning Indonesian history by presenting worksheets equipped with links for their learning. Participants involved must possess a more extensive array of refined learning materials, designs, and displays to facilitate further research in this area.

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