

DESIGNING DIGITAL RESOURCES TO SUPPORT HISTORY EDUCATION ON THE TOPIC OF WAR AND PEACE IN THE 20TH CENTURY

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Abstract. In recent years, the development of digital resources in education has become increasingly common. This trend reflects a growing need for easily-accessible learning materials for teachers and learners. This study, through a review of national and international literature and surveys of practical needs, aims to propose a process for designing and utilizing digital resources in History education at the secondary school level in Vietnam. Key findings include an analysis of theoretical perspectives, the current state of digital resource usage, and recommendations for standardized procedures and strategies to enhance teaching, learning and assessment activities. The study specifically focuses on “War and Peace in the 20th Century,” a new topic in the 11th-grade History curriculum, which requires students to synthesize knowledge about global conflicts in the 20th century. The study's feasibility was examined through experiments with 11th-grade students at several upper secondary schools in Vietnam. The use of digital resources helps students develop both general and subject-specific competencies, contributing to improvements in the effectiveness of History education in the country.

Keywords: digital resources, history education, design process, strategies, war and peace in the 20th century, secondary education.

1. Introduction

In the era of Education 4.0, research on the use of digital resources to serve the learning needs of learners anytime and anywhere is increasingly popular and necessary. Scholars in many developed countries have developed the design processes and strategies for applying digital resources in effective teaching and learning [1] to “create a digital educational environment to enhance students' ability to work independently” [2]. In Vietnam, however, surveys and interviews with 31 teachers and 282 students from a number of upper secondary schools reveal that the design of digital resources for teaching History has not yet been systematically implemented. Therefore, proposing a design process and utilization methods for digital resources for Vietnamese teachers in general and History teaching in particular, is a new and necessary approach that aligns with global trends and the current demands for General Education curriculum reform in Vietnam.

2. Content

2.1. Objectives and research methodology

Through the review of national and international literature and practical surveys, this study aims to propose a design process and utilization methods for digital resources to support History education in upper secondary schools in Vietnam. To achieve this aim, a combination of quantitative and qualitative research methods, of theoretical and experimental approaches have been utilized to ensure credible conclusions.

- Data Collection Methods

Document analysis involved identifying the research problem, conducting a literature review using keywords such as “digital resources,” “History teaching,” “digital learning materials,” and “learning material design.” Searches were performed across reputable databases (JSTOR, Google Scholar, university digital libraries) and archival centers/museums (e.g., Canada, United States) to gather relevant historical content. This analysis synthesized theoretical models and established foundational data for resource design.

Surveys were administered to Vietnamese upper secondary History teachers and students. Questionnaires collected quantitative data on perceptions, needs, and effectiveness of current digital resources in History education. In-depth interviews provided qualitative insights into practical utilization and associated challenges. This dual approach aims to present a comprehensive overview of digital technology's application in History education, facilitating the development of more effective digital solutions grounded in real-world experiences.

- Data Analysis Methods

This study employed both quantitative and qualitative data analysis methods. For quantitative data, we utilized descriptive statistics (frequency, percentage, mean) and inferential statistics (correlation analysis, variance analysis), processed using specialized statistical software. Qualitative data from interviews underwent transcription and coding using data analysis software, focusing on identifying key themes, divergent viewpoints, and emerging trends. This comprehensive analysis provides a nuanced understanding of current digital methods and tools in History education, ultimately informing the proposal of effective, practical, and feasible solutions for teachers and students.

2.2. Findings

2.2.1. Theoretical issues

- Definitions and roles of digital resources in education

Digital resources are defined as “a collection of data used in digital education processes. These may include information in the form of images, videos, audio, static and dynamic models, virtual reality objects, interactive materials, text files or other educational materials” [2]. The data represented in digital resources includes “course software, documents, learning tools, and multimedia materials that are published, accessed, and used in digital format” [1]. According to DigCompEdu (2017), digital resources are “any content published in a machine-readable format” [3]. For the purposes of DigCompEdu, a distinction is made between digital resources and data. “Digital resources, in this regard, include any type of digital content that can be immediately understood by users, whereas data needs to be analyzed, processed, and/or interpreted to be useful for educators” [3] [4]. In addition, DigCompEdu excludes hardware from this definition, which means that devices such as laptops, smartphones, tablets, and interactive whiteboards are not considered digital resources.

Drawing from these definitions, this study proposes the following perspective on digital resources in history education: they are multimedia and multi-format materials that are digitally

processed and can be stored, shared, and utilized on electronic devices, aimed at supporting history teaching and learning. The design of such resources for history education involves teachers selecting and using appropriate information technology tools to digitize and organize content for pedagogical use.

The use of digital resources in History education plays a crucial role in improving teaching and learning quality. They not only enrich the available materials but also assist teachers and students in accessing and utilizing modern technology. Many studies have confirmed the importance of digital resources in teaching and learning with technological support.

First, it can support students' self-study ability. They provide various tools and learning materials, including instructional videos, interactive exercises, e-books, and reference materials. Brush and Saye stated that using digital resources in learning encourages students to take initiative in their studies, thereby enhancing their self-learning and problem-solving skills [5]. *Second, it can improve technology skills for teachers and students.* Their integration requires the active use of technology in teaching and learning, which not only enhances digital literacy but also fosters stronger teacher–student interactions. Mishra and Koehler (2006) argue that effective integration of technology demands requires teachers to master technological knowledge, which ultimately leads to more effective teaching and learning [6]. *Third, it is flexible and accessible.* designed as websites, podcasts, short videos, etc., flexibly integrated into user-friendly platforms, helping students learn anytime, anywhere, providing students with greater flexibility in learning [7] [8]. This is especially important as online and distance learning become more common. According to Moore and Kearsley (2011), online learning allows students to access learning materials easily and conveniently, thereby improving learning outcomes [9]. *Fourth, it can enrich teaching and learning materials.* Digital resources offer a vast collection of materials, including e-lectures, educational videos, exercises, and interactive games. This expands the available teaching and learning resources, giving teachers and students more options in their educational activities [10]. *Fifth, it can support diverse teaching methods.* Digital resources enable teachers to implement various teaching methods, such as group learning, individual learning, and online learning. This flexibility helps teachers apply different instructional approaches, thereby improving teaching quality [11]. *Sixth, it can creat opportunities for personalized learning.* Digital resources provide personalized learning tools and platforms, allowing students to learn at their own pace and in their preferred style. According to Rose and Meyer (2002), personalized learning optimizes learning effectiveness while fostering students' self-study competence and time management skills [12].

- Digital resource design models in education:

In education, the design of digital resources has evolved through various design models, such as ADDIE, SAM, Dick and Carey, and ASSURE. Each model offers its own methodology and process to optimize the design and implementation of digital resources. Studies by [13], [14], [15] have highlighted the applicability of these models.

In this study, the ADDIE model (Analysis, Design, Development, Implementation, Evaluation) was selected in this study to design digital resources, supporting History education due to its flexibility and clear structure. Originally developed in the 1970s at Florida State University, this model has become a fundamental framework for designing and implementing effective educational programs (CITATION). The detailed and structured steps of the ADDIE model enable educators to easily implement and modify digital resources based on learner feedback and evaluation results, thereby improving teaching and learning quality. Furthermore, this model has been widely adopted and proven effective in previous research, providing a solid foundation for developing digital resources in History education [16].

This model follows a five-step cyclical process (Figure 1).



Figure 1. ADDIE model

Analysis identifies learning needs, objectives, and learner characteristics through data collection to ensure resources align with specific demands. *Design* structures the program, selects methods, and develops learning activities, scenarios, and support materials for effective engagement. *Development* transforms designs into products such as videos, e-learning modules, and interactive tools, which are tested and refined for quality. *Implementation* deploys these resources in practice, requiring teacher training and providing technical support for learners. *Evaluation* gathers feedback, analyzes learning data, and revises materials to enhance effectiveness. As a cyclical process, ADDIE allows analysis and design to be repeated after each evaluation stage, ensuring continuous improvement and relevance of learning resources for educational goals.

2.2.2. Findings on digital resource usage in History education

To evaluate the current state of digital resource design in history education, we undertook a comprehensive survey involving 31 teachers and 282 students from upper secondary schools across various provinces in Vietnam, including Lao Cai, Hoa Binh, Bac Ninh, Phu Tho, Vinh Phuc, Tuyen Quang, Thai Binh, and the capital city, Hanoi. The primary objective of this survey was to gather both quantitative and qualitative data to gain a holistic perspective on the design and utilization of digital resources in history teaching. The data collection methods comprised structured questionnaires and in-depth interviews to capture the perceptions, experiences, and challenges faced by teachers and students in their use of digital tools. The results are as follows:

- Types of digital resources used by teachers:

The majority of teachers reported frequent or very frequent use of digital resources for history teaching. Notably, image materials were the most utilized (93.5%), which is followed closely by videos (90.3%), text documents (87.1%), audio materials (67.8%), online quizzes (64.5%), and interactive online games (58.1%). These figures indicate a strong preference for visual and multimedia resources, which can make historical content more engaging and accessible for students. By contrast, digital museum exhibitions are significantly less favored, with only 41.9% of teachers occasionally using them and 9.7% reported never using them. This underutilization suggests a gap, possibly due to limited awareness or accessibility, or perceived complexity of incorporating these resources into lessons. Despite their potential to provide rich, authentic historical content, such resources are overlooked. As a response, our study emphasizes the importance of integrating museum materials into digital resources for history education. By prioritizing the selection of museum artifacts and documents, we aim to bridge this gap and offer teachers and students direct access to original historical materials. This approach is intended to enhance the depth and authenticity of history education, making it more immersive and impactful for learners.

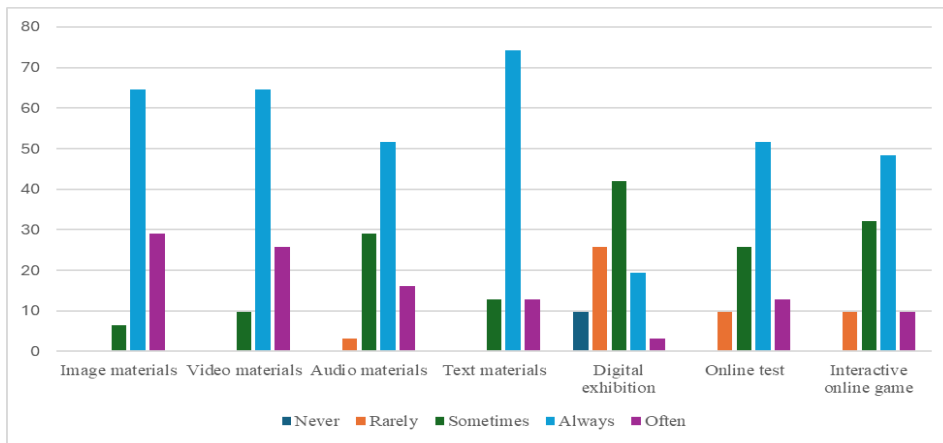


Chart 1. Frequency of using digital resources in history teaching by teachers (%)

- Ways teachers use digital resources

Survey results also reflect the reality of how teachers use digital resources for History teaching, specifically as follows. The majority of teachers reported that they frequently (or very frequently) download and edit resources according to their pedagogical ideas (90.3%); arrange resources in a logical sequence on digital platforms such as personal websites and exhibitions (70.9%); design their own digital materials to support teaching, such as worksheets and tests (67.7%); directly use available resources from websites (51.6%). These findings point to the need for design digital resources that are systematically aligned with historical contents in the curriculum by topic and to provide teachers and students with a variety of options such as questions, exercises, and games that best suit their specific lesson objectives.

- Expectations of teachers and students

The survey further captured teachers' and students' expectations for digital resources in history education (Table 1). Specifically, digital resources are organized by topics or themes according to the requirements of the History curriculum. Moreover, these resources are categorized by format, such as images, videos, audio, and text, while integrating advanced support features like digital exhibitions, interactive games, and discussion forums. This allows teachers and students to easily access, share, interact online, and implement personalized learning.

Table 1. Overview of teachers' and students' expectations for the structure of digital resources supporting history teaching (%)

Digital resources supporting history teaching	Teacher (n=31)	Student (n=282)
Resources organized by subject and subtopic within the curriculum	96.8	74.5
Digital resources are categorized by format (image, audio, video, text, etc.)	90.3	66.7
Provide enhanced support through (digital exhibitions, interactive games, discussion forums, etc.)	80.6	60.3
Free and easily accessible	90.3	62.8
Ensure accurate and reliable information	93.5	66.3
Facilitate collaborative creation and sharing	77.4	51.4
Offer tailored learning activities for different resource types	77.4	57.1
Support online interaction	80.6	51.4
Offer personalized learning experiences	80.6	51.1

2.2.3. The process of designing and suggesting methods for exploiting digital resources in History education

Based on the ADDIE design model, we propose the following process for creating digital resources to support History teaching.

Step 1: Analysis. This stage analyzes needs, content, target learners, and context. It defines objectives aligned with curriculum standards and plans delivery suited to learner characteristics. Quality criteria (accuracy, currency, objectivity) are set, with data collected from varied sources (books, newspapers, online). Materials are carefully assessed and selected.

Step 2: Design. The focus is on structuring resources and interfaces for clarity and engagement. Content is presented through text, images, video, and audio with clear language. Interactive elements (games, exercises) foster participation, while assessment tasks (questions, projects) track learning progress.

Step 3: Development. Tools are chosen based on technological platforms and resource features (interactivity, visualization). Designed content is produced in multimedia formats, tested, and corrected to ensure functionality and quality.

Step 4: Implementation. Resources are first piloted with small groups for feedback, then revised and deployed widely to integrate effectively into learning.

Step 5: Evaluation. The process and product are comprehensively evaluated. This includes reviewing each design step, assessing resource quality (content, format, effectiveness), and analyzing impacts on learning outcomes and engagement.

Following this process, we developed a digital resource for teaching World Wars history as an open-access platform. Its goal is to provide diverse, reliable materials that improve teaching and understanding of this major historical event. Supported by reputable institutions—UNESCO, the National WWII Museum (USA), the UK National Archives, the UNT Government Documents Department, the Federal Security Agency, international postal museums, and leading scholars—the platform ensures accuracy and richness of content.

The website offers a user-friendly interface with clear categories and guidance on searching, downloading, and integrating resources into lessons. Materials include images, videos, and documents organized into twelve thematic spaces: (1) films; (2) weapons and vehicles; (3) mobilizing forces; (4) friends and foes; (5) historical figures; (6) traces of war; (7) life on the battlefield; (8) wartime letters; (9) the dark side of war; (10) battlefields; (11) symbols and emblems; (12) peace and looking back. Virtual exhibitions allow interactive exploration of events and artifacts. To enhance learning, the platform offers interactive games, exercises, and project-based tasks. User feedback is emphasized for continuous improvement, ensuring relevance to teaching and learning needs.

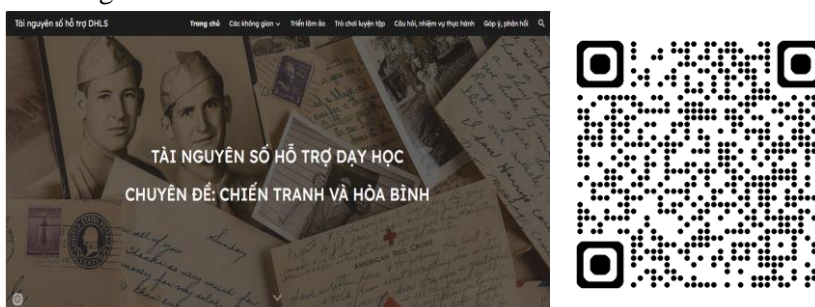


Figure 2 – 3. Screenshots and QR code of digital resources for the topic War and Peace

Depending on the purpose of use and students' learning competence, teachers can utilize digital resources to support students in learning History through the following suggestions:

First, teachers guide students to self-study using digital resources. For example, below is a student project exploring historical figures from World War II using digital resources. After researching, students create memory cards about a character that impresses them the most, highlighting key aspects such as biography, personality, role, and reasons why the character is admired or notable. Students complete and submit their work after studying with digital resources.

Second, teachers guide students in historical practice activities. For example, the topic of World War II is the subject of many famous films from different countries. Each side in the war has its own perspective on the event. Therefore, teachers can organize historical practice activities by guiding students to explore World War II through the lens of cinema. By watching films, students not only learn about history but also express their emotions and personal evaluation of the war's consequences for humanity. Below is an example of a student project introducing the content, characters, and the most impressive details after watching the film *Grave of the Fireflies* using digital resources.



Figure 4 - 5. Student products: character flashcards and film review forms after studying with digital resources

Third, teachers guide students in selecting appropriate materials from digital resources to complete their learning tasks. For example, The content on “Peace” within the digital resource War and Peace not only helps students understand the devastating consequences of war, but also nurtures a mindset of peace and a sense of responsibility for preserving peace in contemporary life. To support this aim, the resource includes a section titled The global people’s struggle for peace. Based on the learning objectives of the thematic unit, teachers guide students in exploring materials within this section appropriately.

For instance, to help students identify key aspects of international movements that supported Vietnam’s struggle for national liberation and resistance against the American war [17], teachers can instruct students to read the provided documents and design a poster with the theme “Vietnam – We stand with you!”. Through this activity, students explore the anti-war movements among various social groups in the United States—including students, youth, intellectuals, women, African Americans, religious communities, and even American soldiers—through posters, banners, and slogans. The sincere and steadfast support from these peace-loving individuals significantly contributed to the victory of the Vietnamese armed forces and people.

To obtain preliminary results on the impact of the digital resource “War and Peace” on student learning, we conducted a pedagogical experiment with 55 eleventh-grade students (from High School No.1, Lao Cai City, Lao Cai Province, and Quoc Oai High School, Hanoi). Based on the assessment criteria and product evaluation results (Table 2), learning with the digital

resource has shown positive effects on the creation of the “Historical Figure Profile Card” product by students. Students demonstrated strong abilities in gathering and processing information from the digital resource, with high percentages in the criteria for information accuracy and completeness (C01 - 100%, C02 - 96.3%). The ability to synthesize information concisely (C05 - 96.3%) and express it clearly (C06 - 87.3%) also indicates the digital resource's support for the development of students' synthesizing skills. Notably, the learning task with the digital resource encouraged students' personal engagement and creativity. A significant proportion of students effectively expressed personal opinions (C04 - 87.3%), used character images effectively (C07 - 92.7%), created unique products (C09 - 89.1%), and demonstrated personal imprint (C10 - 89.1%). This suggests that the digital resource contributed to fostering critical thinking, information synthesis skills, and the promotion of individual creativity in learning.

Table 2. Assessment criteria and results for the historical figure profile card

Criteria No.	Description	Score	Percentage of students (%) (n=55)
C01	Complete and accurate information about the character (name, place of birth, hobbies, etc.).	1	100
C02	State at least one role of the character in World War II.	1	96.3
C03	State at least one hobby of the character based on the source materials.	1	90.0
C04	Express personal opinions and feelings about the character.	1	87.3
C05	The card summarizes the information concisely, without being verbose.	1	96.3
C06	The expression is clear, understandable, and persuasive.	1	87.3
C07	Uses the character's image or a creative sketch of the character accurately.	1	92.7
C08	The illustration is beautiful, with harmonious colors and layout.	1	81.8
C09	The presentation is unique, not a direct copy of the source materials.	1	89.1
C10	Shows personal imprint (through the sketching style, selection of information, and description of feelings).	1	89.1

The initial use of digital resources has shown effectiveness in supporting students' learning activities by providing valuable information and materials. However, to teach History effectively using digital resources, teachers need to employ a variety of teaching methods and techniques, and flexibly combine different instructional formats in order to fully leverage the potential of the carefully designed digital resource set, developed according to the process proposed in this study.

2.3. Discussion

Through our experiments, we initially observed that digital resources bring many benefits to the teaching and learning process in general and History education in particular. This aligns with Badia A. (2016) [18], who affirmed that digital resources improve teaching quality. However, Wang J. emphasized the crucial role of teachers in sharing and developing digital resources [19]. This suggests that while digital resources have many advantages, their successful implementation largely depends on human factors. We did highlight this point and paid close attention to it during the implementation process for teachers using digital resources. Nevertheless, further research is

needed to consider the role of policies and learning environments in promoting the effective use of digital resources.

The ADDIE model serves as a useful framework for designing digital resources. However, El Mhouthi Abderrahim and Azeddine pointed out that the evaluation of digital resources should go beyond technical criteria to include pedagogical factors [20]. This means that when designing digital resources, both technological and educational aspects must be considered. One notable challenge is that assessing the effectiveness of digital resources is often difficult due to various influencing factors. Future research should focus on developing more effective evaluation tools. The proposed model, due to its inherent generalizability, is applicable as a digital resource design methodology in various subject areas, not exclusively within history education.

Using digital resources requires careful consideration. While they offer numerous benefits, they also pose several risks and setbacks. Wahyuningsih et al warned about copyright violations when using digital resources [21]. This highlights the need for clear regulations on copyright and the use of digital resources in education. Additionally, ensuring fair access to digital resources is a significant concern. Not all students have equal access to the internet and technology (CITATION – suggest UNESCO 2025 digital equity in education framework). Therefore, solutions must be developed to bridge the digital divide and ensure that all students have the opportunity to access digital resources.

3. Conclusion

This study demonstrates the feasibility and effectiveness of designing digital resources for History education. Applying the ADDIE model, the research introduces a structured approach to developing digital resources, particularly for the “War and Peace in the 20th Century” topic. The findings highlight digital resources as a valuable tool for enhancing the teaching and learning of History. The research results also confirm the crucial role of digital resources in meeting the diverse learning needs of students in the 4.0 era while contributing to the modernization of teaching methods for educators. However, to fully harness the potential of digital resources, further studies are needed to focus on enhancing the technological competencies of teachers and students, establishing policies that support the application of digital resources in schools, and conducting deeper research on methods for evaluating the effectiveness of digital resources.

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