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Literature Review: The Use Of Story Maps As Learning Media

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Abstract: *Story maps are a form of Geographic Information System development that combines digital maps with narrative elements, images, videos, and other multimedia. This research uses the Systematic Literature Review method to collect articles with predetermined keywords. Journal searches were conducted using the publish or perish 8 tool on the Scopus database. The purpose of this research is to find out how the utilization of the story maps platform as a learning media in the field of education. The results showed that ESRI StoryMaps is effective in increasing students' learning engagement, spatial understanding, and digital literacy, especially in geospatial disciplines such as geography and geology. In addition, this media is proven to be flexible and adaptive, although its use is still dominant in higher education and not yet evenly distributed at the primary and secondary levels.*

Keywords—component; Education, E Learning, Story Maps

1. INTRODUCTION

The development of digital technology is one of the main markers of the industrial revolution 4.0, which has brought significant changes in various fields of life. One of them is in the field of education, digital transformation in education is characterized by the widespread use of website-based digital platforms as learning media. The utilization of this technology allows teachers to convey information that is more interactive and visual, so that it can encourage the formation of learning media innovations that are not only interesting, but adaptive to student needs. One of the website-based digital platforms is story maps that can combine narrative, spatial visualization, and various digital elements in one integrated platform. Story Maps are used to present geospatial information into an interactive visual narrative, combining several features of story text, images, videos, and interactive maps [1].

Story maps are a form of Geographic Information System development that combines digital maps with narrative elements, images, videos, and other multimedia. At the beginning of the development of this media, it was utilized in the fields of geography and regional planning, but now its use has expanded to the realm of education. Story maps are utilized as interactive and contextual learning media or tools [2]. Thus, platforms such as Story Maps allow teachers to present learning materials to students by directly linking geographic locations with real contexts, so that the teaching and learning process will be more relevant and meaningful.

The use of story maps in education shows significant benefits. The use of story maps in geography learning can significantly increase student interest and understanding compared to conventional methods [3]. The ease of use of media makes the delivery of information easily understood by students, so that students are able to get immersive and fun learning. Not only for geography learning, the utilization of story maps can be applied to other subjects such as history, science, and multicultural education. Flexibility, visual appeal, digital mapping, and the ability to contain various types of content make story maps a relevant medium in various curricula and educational levels.

Digital literacy and 21st century pedagogy are demands that need to be considered by teachers to integrate digital technology into an effective teaching and learning process. Story Maps can be an option that can build active student engagement, encourage critical thinking, and develop spatial literacy. However, currently the adoption of story maps in the field of education is certainly not evenly distributed. This is because there are still many teachers who are not familiar with this technology. In addition, the limited training and practical guidelines for using web-based interactive media are still difficult for teachers to understand. Thus, it is necessary to transform the learning process to be more interactive and effective by utilizing technological developments, especially the use of web-based platforms such as story maps. Thus, a comprehensive literature review is needed to find out the effectiveness, challenges, and implementation of story maps in education. This research uses the Systematic Literature Review method to collect articles with predetermined keywords. Journal searches were conducted using the publish or perish 8 tool on the Scopus database.

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2. RESEARCH OBJECTIVES

The purpose of this research is to find out how the utilization of the story maps platform as a learning media in the field of education.

3. RESEARCH METHOD

Systematic Literature Review (SLR) method is used in this study to identify, evaluate, and interpret all relevant evidence related to the research topic in a systematic and transparent manner. SLR provides a robust approach to compiling valid scientific evidence, minimizing bias, and presenting findings based on a comprehensive review of the existing literature. This methodology adopts the guidelines developed by Kitchenham and Charters (2007) which are widely used in the Software Engineering domain. According to Kitchenham and

Charters' guidelines, SLR consists of three main phases: planning, execution and reporting.

3.1 PLANNING OVERVIEW

a. Needs Identification

The utilization of technology in the field of education is very necessary, one of which is the story map platform used for learning media. Thus, this research aims to find out how the utilization of the story maps platform as a learning media in the field of education. The article search process is carried out using the Publish or Perish 8 software tool. The Publish or Perish application is designed to assist academics and researchers in finding and analyzing the references needed to compile their scientific work [4]. In the default settings of the Publish or Perish (PoP) application, users can access reference sources from various large databases of scientific papers, such as Google Scholar, Scopus, Web of Science, Microsoft Academic, PubMed (for medical topics), and Crossref. In this study, we used search data sourced from Scopus.

b. Research Questions

Research questions are made according to the needs of the specified research topic. Table 1. Shows the research questions in this study.

Table 1. Research Questions

No	Question
1	Which locations use Story maps as learning media the most?
2	What disciplines use story maps the most?
3	What education levels use Story maps in their research?
4	What methods are used in story maps research?
5	What are the objectives and benefits of using story maps in learning?

c. Developing the Review Protocol

The preparation of the review protocol is carried out to determine the method that will be used in the implementation of the Systematic Literature Review (SLR). This protocol serves to minimize the potential bias of the researcher. In this study, we adopted the protocol developed by Kitchenham and Charters, which includes the formulation of research questions, key study search strategies, article selection criteria, article selection procedures, article quality assessment, and data extraction strategies

3.2 Review Implementation

a. Article Search

To answer the formulated research question, we conducted an article search using the keyword 'Story maps in education' on the Scopus database. In the article selection process, we set a number of inclusion and exclusion criteria. Details of these criteria are presented in Table 2

Table 2: Details of Article Criteria

Criteria	Description
Inclsion	Articles used discuss Story Maps used in the field of education Inclusion
	Articles published within the last 5 years 2020-2025
	Articles written in English
	Scopus indexed articles
Exclusion	Articles that do not discuss the use of Story maps in the field of education
	Articles that are not Open Access

b. Selection Process

The first step taken was to select articles based on titles that match the research topic, by ensuring there is no duplication of titles. Next, the abstract of each selected article was analyzed to assess its level of relevance whether it was appropriate, potentially appropriate, or not appropriate at all based on the predetermined inclusion and exclusion criteria. Articles that were deemed irrelevant or less relevant were removed, while those that were relevant or potentially relevant were analyzed further for content.

c. Evaluation of Study Quality

This section contains a checklist of quality criteria that articles must meet in order to be used as a source in this study. The quality assessment aims to evaluate in more detail the inclusion and exclusion criteria that have been applied in the search process, as presented in Table 2.

d. Data Extraction and Analysis

After going through a series of stages, 21 articles with the keyword "story maps in education" were found. Further analysis was carried out to filter out articles that were relevant and in accordance with the criteria, obtained as many as 8 articles. The details of the articles, including the author's name, title, and year of publication, are presented in Table 3. A total of 3 articles came from Q1 journals, 4 from Q2, and 1 article came from a journal that was not ranked in MasterScopus. In addition, the articles were also categorized based on the year of publication, which ranged from 2020 to 2025

Table 3. List of Relevant Articles

Ref	Author	Title	Year	Q

R1	Peace., et al	Geoscience Fieldwork in the Age of COVID-19 and Beyond: Commentary on the Development of a Virtual Geological Field Trip to Whitefish Falls, Ontario, Canada	2021	Q2
R2	Boczar & Jordan	Continuity during COVID: Critical digital pedagogy and special collections virtual instruction	2022	Q1
R3	Vojteková., et al	Evaluation of story maps by future geography teachers	2022	Q1
R4	Brown., et al	The role of teacher agency in using GIS to teach sustainability: an evaluation of a lower secondary school story mapping GIS initiative in Ireland	2024	Q1
R5	Antoniou., et al	A Journey to Salamis Island (Greece) using a GIS Tailored Interactive Story Map Application	2021	No. Rank
R6	Cocal-Smith., et al	Digital Tools for the Promotion of Geological and Mining Heritage: Case Study from the Thames Goldfield, Aotearoa, New Zealand	2023	Q2
R7	Lee	How Do Narrative-Based Geospatial Technologies Contribute to the Teaching of Regional Geography to Preservice Geography Teachers? *Journal of Geography*, *122*(4), 93-101.	2023	Q2
R8	Grossman	Tribal Collaborations in Developing Place-Based Pedagogies for Public-Facing Student Projects	2024	Q2

3.3 Reporting of Results

Once the data has been collected and analyzed, the final stage is to report the results of the review in a systematic and transparent manner. This report is usually organized in the form of a structured narrative, complemented by tables and visualizations to support interpretation. The discussion on reporting the results will be explained in section 3, namely results and discussion.

4. RESULTS AND DISCUSSION

4.1 Story Maps as Learning Media

Learning media is a part that can complement a learning activity. Learning media has various types that can be used depending on what is needed. Teachers will also be helped more by the existence of learning media so that more effective learning will be created compared to learning manually or with ordinary methods. The important role of learning media in teaching and learning activities needs to be taken into account by educators, this is because learning media has features that can provide effectiveness in ongoing learning. Learning media also provides an important role such as overcoming boring learning and teaching activities, so that students can be more comfortable and the material provided is easily captured.

One of the products of current digital developments is Storymaps developed by Esri. Storymaps is a web-based platform that allows users to create interactive stories using maps, images, text, and other multimedia to provide information and visualizations based on geographic data [5]. ArcGIS Storymaps itself was developed by Esri in 2019 and continues to be developed to date to meet the needs of users who show progress in making mapping-based stories. Currently ArcGIS Storymaps itself has been used in various contexts both education and research and many more, especially in the field of geography.

4.2 Location of the Use of Story Maps as Learning Media

Table 4. shows the utilization of Story Maps as a learning tool in seven countries spread across various regions of the world. The countries involved include Canada (R1), the United States (R2, R8), Slovakia (R3), Ireland (R4), Greece (R5), New Zealand (R6), and South Korea (R7). This information indicates that Story Maps has been used on several continents, namely North America, Europe, Oceania, and Asia. The United States stands out with two references (R2 and R8), suggesting that the use of Story Maps in education has been quite widely researched or implemented in the country. In contrast, the rest of the countries were recorded with only one reference, indicating that the study or application is still limited in the region. South Korea appears as the only example from the Asian region, which may reflect the advancement in the utilization of educational technology in that country.

While Story Maps have begun to be used in both developed and developing countries, there is still a lack of representation in regions such as Africa and South America. This provides an opportunity for further exploration into the potential use of

Story Maps in more inclusive and diverse educational contexts. Overall, this data shows that Story Maps is a dynamic learning tool that can be adapted across countries, although so far it has been unevenly distributed globally.

Table 4. Location of Story Maps Usage

No	Location	Reference
1	Canada	R1
2	USA	R2, R8
3	Slovakia	R3
4	Ireland	R4
5	Greece	R5
6	New Zealand	R6
7	South Korea	R7

4.3 Disciplines that Use Story Maps the Most

Story Maps have been used as a learning tool across a range of disciplines, with a strong dominance in the geospatial field. This can be seen in table 5. The use in Geology and Environmental Science (R1, R6), as well as Geography (R3, R4, R8), shows that the digital mapping features of Story Maps are highly relevant to learning in sciences that focus on space and the environment. Meanwhile, Regional Geography (R7) emerges as a specialized branch that reflects a more focused application to regional studies. It is also applied to a variety of other disciplines (R2, R5), demonstrating the potential of this medium to be applied across fields. This reflects the high flexibility of Story Maps as a learning medium that can be customized for interdisciplinary needs.

These findings have a number of important implications. First, the effectiveness of Story Maps in supporting geospatial learning has been proven. Second, there is a wide opportunity to develop its application in various other disciplines that may require a visual-spatial approach in the learning process. Therefore, future research should focus on exploring the potential of Story Maps in a broader learning domain, as well as developing an application model that suits the needs of the characteristics of each field of study. With this approach, the use of Story Maps in education can be optimized more comprehensively.

Table 5. Use of Story Maps in Various Disciplines

No	Science Discipline	References
1	Geology and Environmental Science	R1, R6
2	Geography	R3, R4, R8
3	Regional Geography	R7
4	Not mentioned/multiple disciplines	R2, R5

4.4 Level of Education in Story Maps Research

Most of the utilization of Story Maps media was found at the higher education level (R1, R2, R3, R5, R7, R8), which included six of the eight available references. This reflects that Story Maps are more frequently used in learning activities in the higher education environment, possibly due to the more complex technical and analytical demands that match the characteristics of education at this level. In contrast, their use at the junior high school level was only found in one reference (R4), which suggests that the use of Story Maps at the primary and secondary education levels is still not widespread. Meanwhile, one other reference (R6) did not specifically mention the level of education in question, which may indicate a general or cross-level application. These findings provide some important points to consider. First, there is a need to develop a simpler and more accessible model of using Story Maps to be applied at the primary and secondary school levels. Second, the dominance of their use in higher education shows the great potential of Story Maps as an effective learning medium for students, and opens up space for further studies on strategies to optimize their use in various fields of study in higher education.

Tabel 6. Use of Story Maps in Various Levels of Education

No	Level o Education	References
1	Higher Education	R1, R2, R3, R5, R7, R8
2	Junior High School	R4
3	Not Mentioned/general	R6

4.5 Methods of Using Story Maps

Based on the data in table 7, it can be seen that research on the application of Story Maps as a learning media is carried out with various methodological approaches. This diversity of methods reflects the complexity and flexibility of using Story Maps in education. Some studies rely on field and opensource data analysis (R5, R6, R8), which shows a tendency to utilize publicly available spatial and digital data. This approach is considered practical as it capitalizes on the easy access to information that is at the core of using Story Maps in the learning process.

In addition, there is the use of mixed methods that combine pedagogical experiments with quantitative and qualitative approaches (R3), as well as surveys oriented towards both approaches (R2), signaling an attempt to assess both measurable outcomes and subjective user experiences. Pedagogical evaluation methods (R1) and interviews (R4) were also used to capture the direct views of learning participants. Interestingly, one study (R7) applied a qualitative analysis-based phenomenographic approach, which focused on an in-depth understanding of the learning experiences shaped through Story Maps. This approach marks a shift towards research that not only evaluates effectivenes.

Table 7. Story Maps Research Methods

No	Methods	References
1	Pedagogical evaluation	R1
2	Qualitative and quantitative surveys	R2
3	Pedagogical experimentation with quantitative and qualitative approaches	R3
4	interview	R4
5	Field Data/Open Source	R5, R6, R8
6	Qualitative Analysis: Data analyzed using phenomenography	R7

4.6 Tujuan Purpose and Benefits of Using Story Maps

The use of Story Maps as a learning medium shows a diversity of purposes that reflect its great potential and flexibility in educational contexts. Most studies (R1, R2, R3, R7) focus on evaluating the effectiveness of this platform, by assessing the extent to which Story Maps are able to support the teaching-learning process. These evaluations usually cover aspects such as learner engagement, learning outcomes, as well as the ease of use of the platform in an educational setting. In addition, there are also studies that emphasize technical and innovative aspects (R5, R8), by developing GIS-based Story Maps applications or designing location-based pedagogical approaches, which show that this medium is not only used passively, but also developed to create more contextual and specific learning experiences.

On the other hand, some studies highlight psychological and behavioral factors in the implementation of Story Maps (R3, R4), such as the influence of previous experience in using mapping applications and the active role of teachers (teacher agency) in supporting learning success. This confirms that the human aspect plays an important role in the effectiveness of this media. Finally, one study (R6) explicitly targeted the improvement of digital literacy through the use of Story Maps, suggesting that this medium also serves as a tool to encourage technological mastery among students. Thus, the various objectives raised in the studies show that Story Maps have a wide range of uses, from pedagogical evaluation to digital skills development.

Table 8. Research Objectives for Using Story Maps

No	Purpose	Reference
1	Evaluate the effectiveness of the Story maps platform	R1, R2, R3,R7
2	Analyzing the influence of previous experience with mapping apps	R3
3	Evaluate the role of teacher agency	R4
4	Creating a GIS-based interactive Story Map application	R5
5	Promote the use of digital tools	R6
6	Developing place-based pedagogy	R8

5. CONCLUSION

The use of ESRI StoryMaps as a learning medium shows great potential in improving the quality of education, especially in spatially and environmentally related fields such as geography, geology, and environmental science. StoryMaps offers an interactive, visual, and contextualized learning approach, which is not only engaging for students, but also supports the strengthening of spatial thinking skills and digital literacy. Their predominant use in higher education reflects the technical and analytical complexity of the medium, although there are great opportunities to adapt and simplify them for primary and secondary education.

Studies also show that StoryMaps are utilized for a variety of purposes, from evaluating learning effectiveness, to developing innovative pedagogical approaches, to promoting digital literacy and psychological understanding of learning. The variety of quantitative, qualitative and mixed methods of research shows that this medium is flexible and can be evaluated from various scientific perspectives. However, the spread of StoryMaps' use geographically and across educational levels is still uneven, indicating the need for the development of inclusive learning models and further research to optimize its use globally and across disciplines.

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