

USE OF STORYMAP IN DISASTER MITIGATION BASED ON LOCAL WISDOM (Case Study: Sapuran District, Wonosobo Regency, Central Java)

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ABSTRAK

Wonosobo, yang dikenal dengan topografi dataran tingginya dan potensi pariwisata yang signifikan, menonjol sebagai daerah yang kaya akan kearifan lokal dan lokasi strategis, sehingga memperoleh julukan "The Soul of Java." Julukan ini mencerminkan kekayaan budaya dan alam Wonosobo yang unik, menjadikannya destinasi menarik dengan potensi pariwisata yang besar. Namun, keindahan alam daerah ini juga disertai dengan risiko bawaan, terutama ancaman bencana alam. Rendahnya tingkat pendidikan dan kesadaran masyarakat terhadap risiko ini menunjukkan perlunya alat edukasi yang efektif dan mampu menjangkau seluruh lapisan masyarakat. Salah satu solusi yang menjanjikan adalah pengembangan Story Map, yang dapat mengubah informasi kompleks menjadi format yang menarik dan mudah diakses. Story Map menggabungkan peta dengan narasi teks, gambar, dan elemen multimedia, menjadikannya media yang efektif untuk mendidik masyarakat. Proses dimulai dengan mengumpulkan informasi rinci tentang kearifan lokal dari Kecamatan Sapuran, dengan fokus pada situs budaya dan tradisi yang signifikan. Informasi ini kemudian disaring secara hati-hati untuk memastikan akurasi dan relevansi. Selanjutnya, dibuat peta yang secara visual merepresentasikan persebaran situs kearifan lokal di seluruh wilayah Wonosobo. Peta ini kemudian diintegrasikan ke dalam sebuah Story Map yang dirancang agar menarik secara visual dan interaktif. Story Map ini tidak hanya menampilkan kekayaan warisan budaya daerah, tetapi juga mencakup informasi penting tentang risiko bencana dan kesiapsiagaan. Dengan menyajikan informasi ini dalam format yang menarik, Story Map bertujuan meningkatkan kesadaran masyarakat, mendorong apresiasi budaya, dan meningkatkan kesiapsiagaan terhadap bencana. Pendekatan ini memastikan bahwa baik penduduk maupun pengunjung dapat mengakses informasi penting dengan cara yang informatif dan menyenangkan, sehingga mendorong ketangguhan dan keterlibatan lebih besar terhadap warisan unik Wonosobo.

Kata Kunci: Kebencanaan, Kearifan Lokal, ,Story Map, Potensi Pariwisata, Wonosobo

ABSTRACT

Wonosobo, known for its highland topography and significant tourism potential, stands out as a region deeply enriched by local wisdom and strategic location, which has earned it the moniker "The Soul of Java." This branding reflects Wonosobo's unique cultural and natural attributes, making it an attractive destination with immense tourism potential. However, the region's natural beauty also comes with inherent risks, particularly the threat of natural disasters. The local community's limited education and awareness about these risks highlight the urgent need for an effective educational tool that can reach all societal layers. A promising solution is the development of a Story Map, which can transform complex information into an engaging and accessible format. Story Maps combine maps with narrative text, images, and multimedia elements, making them an effective medium for educating the public. The process begins with collecting detailed information on local wisdom from the Sapuran District, focusing on significant cultural sites and traditions. This information is then carefully filtered to ensure accuracy and relevance. Next, a map is created to visually represent the distribution of these local wisdom sites throughout Wonosobo. This map is integrated into a Story Map, designed to be both visually appealing and interactive. The Story Map not only showcases the rich cultural heritage of the region but also includes crucial information about disaster risks and preparedness. By presenting this information in an engaging format, the Story Map aims to enhance community awareness, promote cultural appreciation, and improve disaster readiness. This approach ensures that residents and visitors alike can access important information in a manner that is both informative and enjoyable, thereby fostering greater resilience and engagement with Wonosobo's unique heritage.

Keywords: Disaster Preparedness, Local Wisdom, Story Map, Tourism Potential, Wonosobo

I. Introductions

As one of the countries in the Pacific Ring of Fire region, Indonesia is located in the Pacific Ocean Basin surrounded by areas that often experience earthquakes and volcanic eruptions, known as the Pacific Ring of Fire (Fakhri, 2022). Based on the Law of the Republic of Indonesia Number 2004 Year 2007 concerning disasters, "A disaster is an event or series of events that threaten and disrupt people's lives and livelihoods caused by either natural factors or non-natural factors and human factors, resulting in human casualties, environmental damage, property losses, and psychological impact." Wonosobo has a highly undulating topography, with steep slopes in some areas and high rainfall, which are triggers for disasters (Nugraha, Rochaddi, & Rifai, 2015).

The definition of disaster according to Law Number 24 Year 2007 is as follows: "Disasters are events or series of events that disrupt people's lives and livelihoods caused by natural and/or non-natural factors and human factors, resulting in human casualties, environmental damage, property losses, and psychological impacts." Mitigation efforts need to be carried out to recognize disaster-prone areas and increase the capacity of people living in disaster-prone areas to reduce the consequences of the disaster itself (Wekke, 2021). Mitigation efforts need to be done to minimize disaster risk. One form of disaster risk mitigation can be done with local wisdom, which needs to be studied further because until now, the people of Sapuran Subdistrict still preserve local wisdom that is believed to reduce the danger of disasters that occur in their village. (Sartini, 2004) expressed the opinion that local wisdom is a community awareness of the concept of life that functions in regulating community life, which is sacred to profane. This is proof that Wonosobo is rich in diverse cultural and natural tourism (Arizona, 2021).

A media that can be accessed by all levels of society is necessary to facilitate public understanding and provide educational value for the importance of disaster mitigation in Sapuran District. This local wisdom-based disaster mitigation has not been widely known by the general public, so the geographic information system method in the form of Storymap in this study can be a solution to disseminating local wisdom information. Additionally, this can be an attraction for domestic and foreign tourists. Storymap is a story map about the object studied in a simple way that contains an interactive map with a combination of text, images, and other contexts (Farida, Chintya, & Mutiarasari, 2018). The existence of this Storymap, which contains text, images, videos, maps, and other additional information, provides new insights into the digitization of the mapping world (Remington, Battersby, & Kevin, 2013). The making of this Storymap starts with collecting information related to local wisdom in Sapuran District, then filtering the information, followed by making a map of the distribution of the location of the local wisdom tradition and packaged with an attractive Storymap design.

Technology is developing rapidly and massively, as well as in the geospatial field with the existence of digital maps. Map utilization information can be optimized in educating the public. One of the implementations in this study is to train landslide disaster preparedness. Geographic Information Systems can integrate maps with database information, images, and are able to convert conventional maps into smart maps that can assist in more complex spatial analysis (Hongchun & Yinghua, 2012). According to Gistut (1994), Geographic Information System is an auxiliary system in making spatial decisions and integrating between phenomena and location description, which includes hardware, software, and organizational structure.

The rapid development of technology has made a lot of changes, both positively and negatively. One of the negative impacts is the reduction of cultural values. Currently, many of the younger generation prefer to play gadgets rather than gather together with the surrounding community, thus making the cultural values around them fade. Culture is the development of the work of a group of people regarding life that will be passed down to each generation as a form of strengthening character (Hamdani, 2021). Based on Law Number 32 of 2009, Article 1, paragraph (30), states that local wisdom is noble values that apply in the community life system to, among others, protect and manage the environment sustainably. It is hoped that through this research, the community will be more aware of the conditions around them, both in terms of disaster mitigation and preserving local culture by encouraging the sophistication of information technology.

II. METHODS

2.1. Implementation Materials

The implementation of this research uses secondary data, data obtained from official sources and agencies. The materials used are as follows.

- 1) Spatial data and attributes of the administrative boundaries of Wonosobo Regency and the administrative boundaries of Wonosobo sub-districts.

- 2) Indonesian earth map of Wonosobo Regency Scale 1:25,000 in shapefile format obtained from <https://tanahair.indonesia.go.id/portal-web>
- 3) Coordinate data of local wisdom distribution in Sapuran sub-district, interview data with village officials, and questionnaire data with a total of 50 respondents.

2.2 Research Location

The research location is in Wonosobo Regency, one of the districts in Central Java. Its geographical location is at 70°11'20" to 70°36'24" south latitude (LS), and 109°44'08" to 110°04'32" east longitude (BT), with an area of 98,468 hectares (984.68 km²). This research location was chosen because Sapuran District is one of the sub-districts in Wonosobo Regency that often experiences disasters but until now there is still a lack of public awareness of the importance of disaster mitigation as an effort to minimize casualties. This is evidenced by the casualties that occur every year in Wonosobo Regency so this research is worth doing as an effort to educate the public about the importance of mitigation but in addition to that, it still preserves the local wisdom in the area with storymap media.

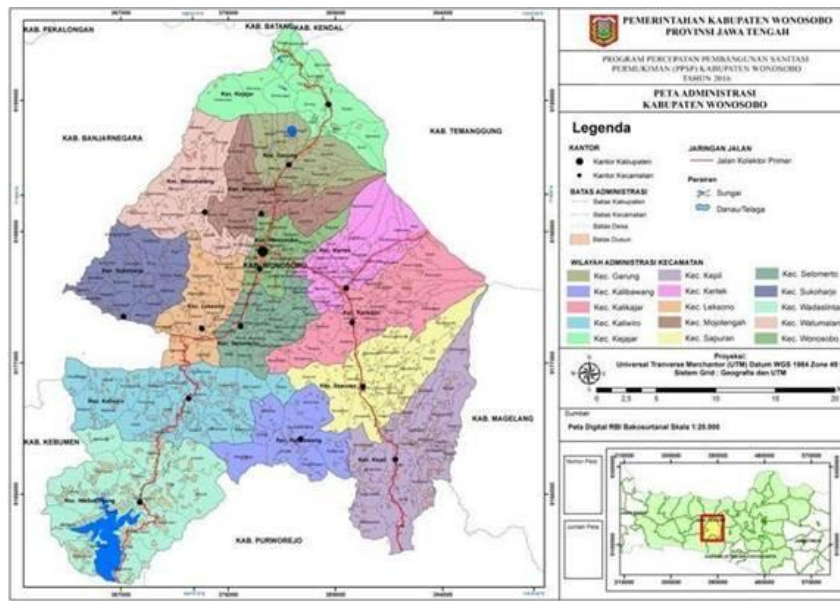


Figure 1. Administrative Map of Wonosobo Regency

2.3. Flowchart

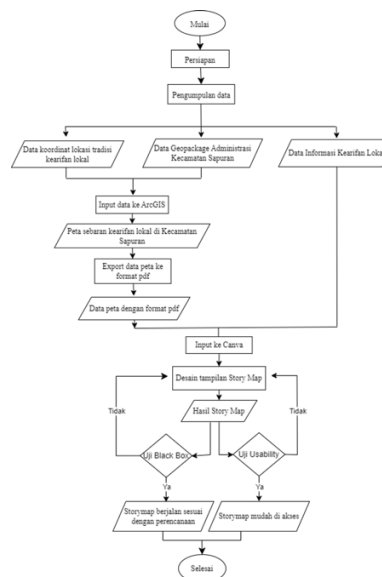


Figure 2. Flowchart

III. RESULTS AND DISCUSSION

3.1. Results of Local Wisdom-Based Storymap Utilization

The making of this Storymap aims to present a map of the distribution of location points and a brief story about the history of the local wisdom culture that is still preserved today in the Wonosobo Regency area, precisely in the Sapuran District area. This Storymap maker is made using the canva website with the process of layouting, color grading, and interesting storytelling to create a Storymap that is easily understood by the general public.

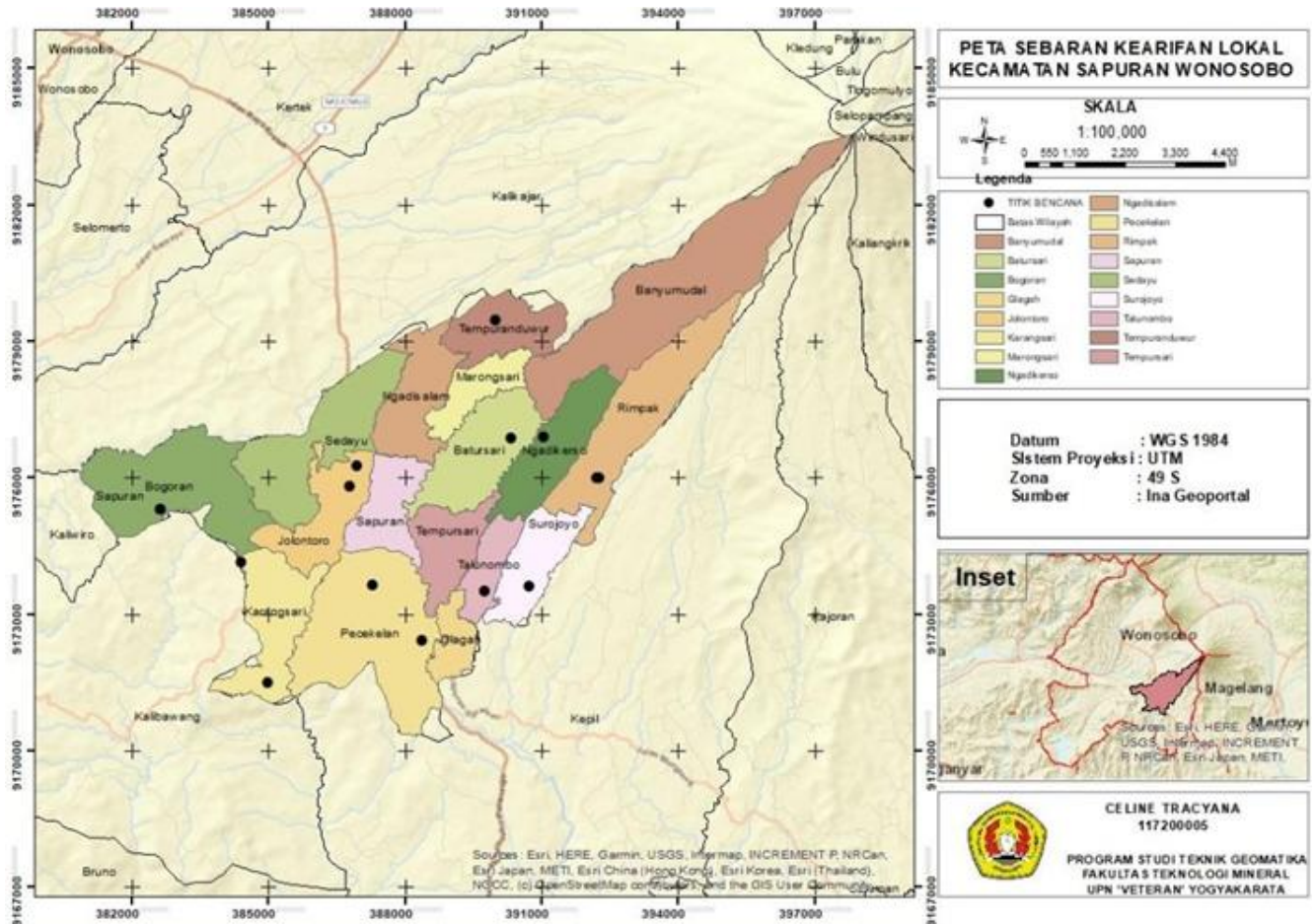


Figure 3. Local Wisdom Distribution Map of Sapuran Sub-District, Wonosobo

Sapuran sub-district in this case does not yet have a map of the distribution of local wisdom related to natural disasters that occur. So, in this design a distribution map was created. Figure 3 displays the results of the distribution map of the data that has been tested for accuracy by taking coordinate points directly at the research location. From the results of the study, it was found that only some villages in Sapuran District still have local wisdom in disaster mitigation. Therefore, the existing local wisdom must be preserved. One of the efforts is to digitize it through a story map. This underscores the importance of preserving these traditions to help communities continue to mitigate the impact of natural disasters. Preservation of local wisdom is critical not only for maintaining cultural heritage but also for enhancing disaster preparedness. One potential method for this preservation is through digitization, such as creating a story map that can capture and share this information more widely.

The local wisdom distribution map includes specific point symbols that indicate the precise locations where these practices are still observed in each village. These points represent significant places within the community, such as elder or ancestral graves, village fields, and village hall offices. These sites are traditionally used for activities related to local customs and beliefs that are integral to disaster mitigation efforts. By visually identifying these points, the map not only highlights the importance of these cultural practices but also helps in making them accessible to a broader audience. Through this effort, the rich traditions of disaster preparedness based on local wisdom can be passed down to future generations while promoting greater awareness of their value in contemporary disaster management strategies.

3.2. Storymap Result

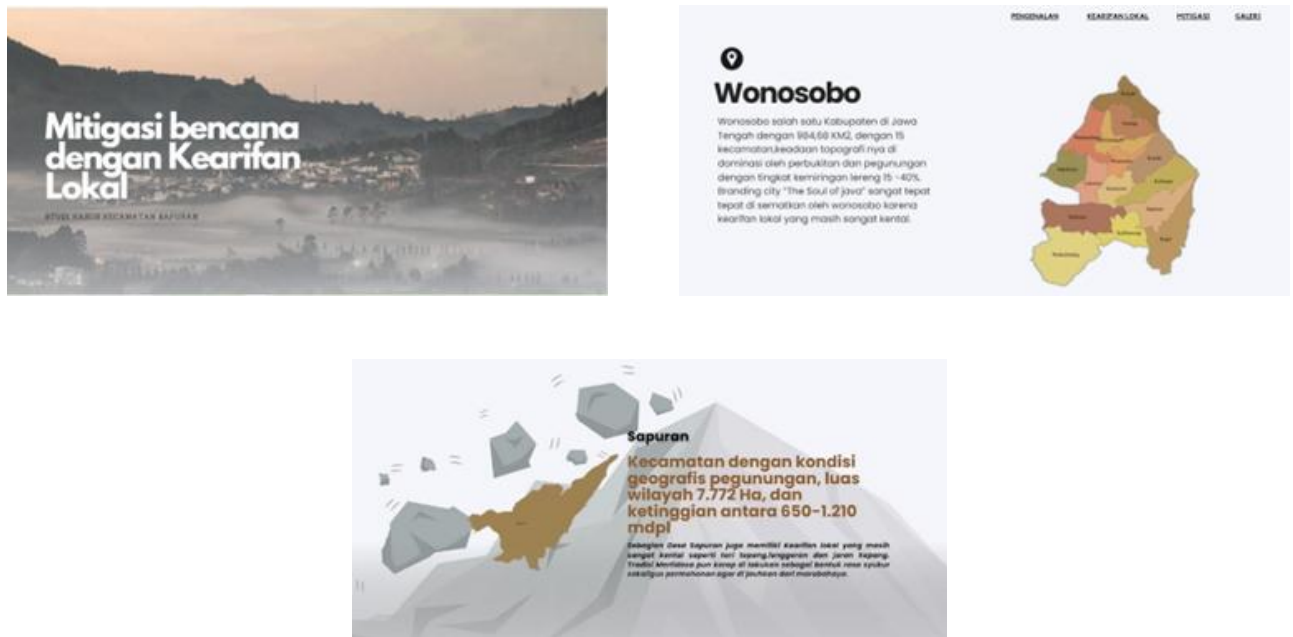


Figure 4. Interface of the Introduction Page and Menu

On the front page of the Storymap there is a photo of the appearance of the Wonosobo area with a title and includes the location of the area with the aim that people understand where the location is and what will be discussed on the website. On the next page there are several menus that can be selected according to the wishes of the menu, namely the introduction menu, local wisdom, mitigation, and gallery, each menu can be clicked and directed directly to the page to be addressed, one example in Figure 4 is the introduction menu which contains a background or introduction to the Wonosobo region and its geological conditions which are told briefly with a graphic image of the Wonosobo region and the name of each village.



Figure 5. Display of Local Wisdom Menu

The Storymap page in Figure 5 shows the local wisdom menu where on this page contains a number that shows the order with other functions as well as a button to scroll up to the menu page, the story of local wisdom in the village which is equipped with a location point and a symbol of the shape of the village with the aim of making the display more attractive and easier to find out the location where the local wisdom is carried out.

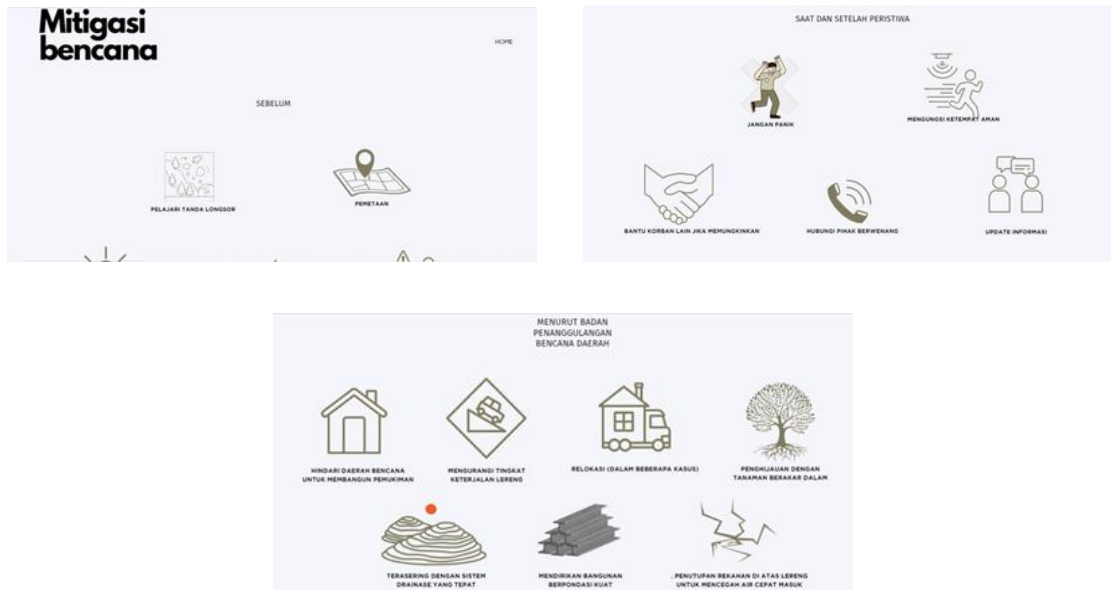


Figure 6. Disaster Mitigation Menu Display

The next page shows the mitigation menu which is notified in Figure 6 (a) shows the mitigation that is done before the disaster occurs. Then in Figure 6 (b) shows disaster mitigation during and after the event and continued in Figure 6 (c) shows the correct mitigation based on Regional Disaster Management Agency regulations. This page aims to educate the public about the importance of good and correct mitigation according to government regulations in order to reduce disaster victims when there is an unwanted disaster.

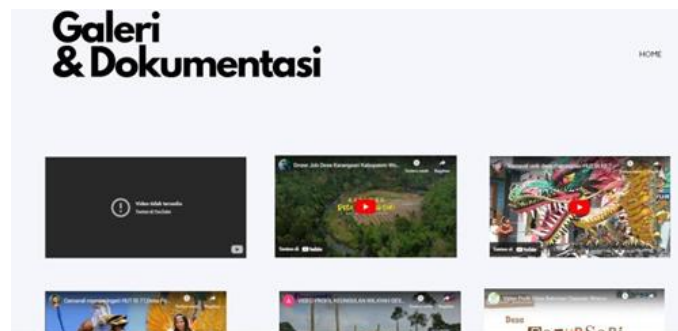


Figure 7. Gallery and Documentation Menu Display

In the Storymap that the author made, there is a gallery menu that contains documentation from each village when holding events related to local wisdom. In addition to performing dances, there are also traditions that some villages also carry out, namely pilgrimages to ancestral graves and eating together reading chicken ingkung. The next menu as the closing page of the website is the gallery menu which contains videos during the implementation of local wisdom and location documentation.

3.2. Stability Scale and Black Box Test Results

Usability can be used as a benchmark for a system in terms of effectiveness, efficiency, and satisfaction (Folmer 2004). There are 5 usability attributes based on website usability evaluation, namely:

- 1) Learnability Is an increase in the ease of users in learning the website to fulfill basic tasks in using the website.
- 2) Efficiency Is an increase in speed in completing tasks after learning the website.
- 3) Memorability Is the ease with which users can access the website even though it has not been used for a long time.
- 4) Errors Is the large number of errors made by users and their fixes so that users can easily overcome existing problems.
- 5) Satisfaction Is a brief explanation of user satisfaction in accessing the website

Table 1. Stability Test Questions

No.	Question
1.	I think I will use this system again
2.	I find the system complicated to use
3.	I find the system easy to use
4.	I need help from other people or technicians in using this system.
5.	I feel that the features of this system work properly.
6.	I feel there are many inconsistencies in the system.
7.	I feel others will understand how to use this system quickly
8.	I feel the system is confusing
9.	I feel there are no obstacles in using this system
10.	I need to familiarize myself first before using this system

Table 2. Percentage of Questionnaire Results

Rating Scale	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Strongly Agree	44%	2%	44%	14%	34%	6%	40%	2%	42%	16%
Agree	50%	0%	54%	22%	66%	10%	54%	2%	44%	36%
Undecided	4%	12%	2%	12%	0%	22%	4%	6%	12%	10%
Disagree	4%	64%	0%	32%	0%	42%	2%	68%	2%	20%
Strongly Disagree	0%	22%	0%	20%	0%	20%	0%	22%	0%	18%

Based on the results obtained from the respondents' average answers, a score of 74.4% was achieved for the overall evaluation of the website creation process. This score reflects the respondents' perception of the website's usability and effectiveness, and when referenced against the SUS (System Usability Scale) grading scale, the 74.4% score falls into the "Good" category. The SUS is a widely recognized tool used to measure the usability of systems, websites, or products, with scores ranging from 0 to 100. A score above 70 generally indicates that the system is user-friendly, functional, and meets the expectations of its users. In this case, the 74.4% score not only indicates that the website meets a generally positive user experience but also highlights specific areas where users felt satisfied with its overall design and usability.

Breaking down the score further, it can be inferred that the website performed well in various aspects such as ease of navigation, clarity of information, and overall user interaction. A score in this range often reflects that users find the website relatively intuitive to use, with minimal friction or confusion when interacting with it. However, while the score is classified as "Good," it also suggests that there is still room for improvement. Enhancements in specific areas, such as improving responsiveness or streamlining certain features, could potentially elevate the website's performance into the "Excellent" category on the SUS scale. Nonetheless, achieving a score of 74.4% is a strong indication that the website has successfully addressed the core needs of its users and can serve as a solid foundation for future developments.

IV. CONCLUSION

Based on the design that has been done and the analysis of the results obtained, several conclusions can be drawn from this research. First, this research succeeded in producing a Map and Storymap that maps the distribution of local wisdom location points that are still practiced by local communities today. The map not only displays the locations visually, but also provides in-depth narratives about each tradition, so that users can understand the cultural and historical context surrounding each local wisdom. Through this approach, the resulting Storymap is able to become an interactive and informative educational tool in introducing and preserving local wisdom values for the wider community, including the younger generation.

Second, the results of the usability evaluation of Storymap conducted using the System Usability Scale (SUS) method provide quite satisfactory results. The value obtained from the SUS test is 74.4, which according to the SUS Grade Scale falls into the good predicate category. This indicates that the Storymap has a relatively high level of ease of use, where users feel comfortable in accessing, understanding, and interacting with the content presented. This score indicates that Storymap successfully meets both functional and aesthetic expectations in terms of interface, and is able to offer a pleasant

and efficient user experience. With these results, Storymap can be said to be feasible enough to be introduced more widely, and has the potential to continue to be developed to be more attractive and accessible.

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