



Development of the *Bacapeta* Learning Media Platform to Support Students' Geospatial Technology Learning

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Accepted: January 03th 2026. Approved: May 08th 2026. Published: May 14th 2026

ABSTRACT

The spatial literacy skills and mastery of geospatial technology among senior high school students in Indonesia remain relatively low, as indicated by limited use of Geographic Information Systems (GIS) technology in learning and low academic achievement in mapping materials. This condition requires innovation in learning media to facilitate concrete learning experiences aligned with the demands of 21st-century Geography learning. This study used the Research and Development (R&D) method with the ADDIE model, comprising the analysis, design, development, implementation, and evaluation stages. This study used a mixed-methods approach, using instrument questionnaires to assess the feasibility and validity of the learning media. This study aimed to determine the feasibility level and validity level of the developed learning media. The results of the study showed that the average feasibility score for the learning media from media experts was 88%, with a very valid qualification, while the score from material experts was 90.4%, with a very valid qualification. The trial results of the *Bacapeta* web-based learning media also obtained scores of 97.5% from teachers, indicating a very feasible response, and 93.4% from students, with a very feasible qualification. These results indicate that the *Bacapeta* web is feasible for use in the learning process to support the spatial literacy abilities of senior high school students.

Keywords: learning media, *Bacapeta*, spatial literacy, geospatial technology

INTRODUCTION

Geospatial technology literacy has become an important tool in 21st-century Geography learning [1]. However, in reality, the understanding of senior high school students in Indonesia regarding spatial literacy and mastery of geospatial technology is still classified as very low [2]. This is evidenced by the tendency of senior high school students to respond passively when teachers ask them to convey information and identify spatial ideas from maps [3]. The utilization of GIS (Geographic Information System) technology in Geography learning at schools has become a key factor in improving geospatial technology literacy among Indonesian senior high school students [4].

The low mastery of geospatial technology literacy among senior high school students, based on research conducted by S. Salam [5], showed that 52% of students had sufficient geospatial literacy ability, while 38% were categorized as low to very low. This was indicated by students who struggled to solve spatial problems. In addition, based on research by Khorriunnisa [6], approximately 62% of students had low geospatial ability, as measured by spatial thinking indicators. A similar study was also conducted by Buana [7], who stated that 50% of students were categorized as very poor in their spatial thinking ability scores, while,

according to Santoso [3], the geospatial literacy ability of 36 senior high school students at SMAN 1 remained low.

The facts on the field show that GIS technology is still not widely and optimally utilized in Geography learning in schools. In addition, the field data show that students' spatial literacy remains relatively low. As stated by a Geography teacher at a senior high school, students' literacy skills have become more difficult to achieve. This is evidenced by the results of the midterm and final examinations on GIS or mapping questions, which remain below the Minimum Completeness Criteria (MCC). Based on the final school examination data, Geography scores on questions measuring spatial literacy remained low [8]. This phenomenon is also reflected in the results of the TKA (*Tes Kemampuan Akademik*; Academic Competency Test) trial in the Geography field, especially in spatial thinking, which remained low.

Students' spatial literacy is not limited to the use of textbooks but also to the direct use of geospatial technology. According to Edgar Dale's theory [9], the widest base of the cone explains the importance of students' direct experiences. If students' learning experiences are more concrete, the greater the understanding achieved. According to Edgar, students

can absorb only 10% through reading experiences, whereas in simulations or performances, they have a high absorption rate of 90%. Therefore, based on this percentage, it is known that concrete learning experiences carried out by students have a higher percentage than abstract ones.

Nowadays, spatial mapping skills, achieved through mastery of GIS technology, have become an output of competent senior high school graduates [10]. Considering the complexity and difficulty of GIS materials and learning practices when studied independently within a short period by senior high school students, additional learning hours outside school are required, such as through GIS tutoring or online guidance. Geography has abstract concepts, especially regarding students' understanding of spatial aspects. This condition prevents students from yet understanding natural phenomena, particularly spatial and regional materials, resulting in limited understanding of the natural phenomena around the school environment and affecting their understanding of the area surrounding their place of residence [11].

Similar studies have previously been conducted, such as those carried out by [12], [13], [14], [15], [16], to develop materials and teaching resources for GIS learning and encourage students' spatial thinking skills. However, these studies still focused on the development of text-based teaching materials, which may potentially cause student boredom. Therefore, in this study, the

researchers adopted a different perspective by developing the first GIS web application specifically designed for senior high school students in Indonesia. The *Bacapeta* web offers various interactive features, including learning videos, materials, a map repository, discussion forums, and mentors. These features were designed to overcome the complexity of geospatial technology, thereby encouraging students' spatial skills. The development of this media is still rarely found in previous Geography media research and development studies, making it a novelty in the development of digital learning media innovation. Therefore, this study aimed to develop the first web-based learning media for GIS learning at Senior High Schools (SMA).

RESEARCH METHOD

This study was a Research and Development (R&D) project using the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). ADDIE is a systematic research and development model widely implemented to achieve and optimize educational goals comprehensively [17]. In addition to being systematic, the ADDIE model guides the development of learning media that are aligned with learning needs and objectives. The ADDIE Research and Development model was adopted from Robert Maribe Branch using the Input, Process, and Output approach. The description of each step in each phase is provided in Table 1.

Table 1. Development Using the IPO Concept

Model Stage	Input	Process	Output
Analysis	<ol style="list-style-type: none"> 1. Analisis kurikulum 2. Analisis kebutuhan siswa 3. Analisis Materi 	<ol style="list-style-type: none"> 1. Preparing questionnaires and instruments 2. Interviewing and observing the school 3. Collecting data regarding the school, students, and teachers (need assessment) 4. Evaluating progress 	<ol style="list-style-type: none"> 1. Observation results 2. Results of curriculum, material, and media analysis
Design	<ol style="list-style-type: none"> 1. Formulating and planning the concept of the learning media (materials, content, and tools) 2. Preparing media expert and material expert validation instruments 	<ol style="list-style-type: none"> 3. Designing <i>Bacapeta</i> as a web-based learning media platform (design, layout, and materials) 4. Evaluating progress 	<i>Bacapeta</i> Web-Based Application
Development	<ol style="list-style-type: none"> 1. <i>Bacapeta</i> web application design 2. Material content for learning 	<ol style="list-style-type: none"> 1. Developing the <i>Bacapeta</i> learning media 2. Conducting media and material validation 3. Revising the media and materials if necessary 4. Evaluating progress 	<ol style="list-style-type: none"> 1. Validated product 2. Validation result data
Implementation	<ol style="list-style-type: none"> 1. <i>Bacapeta</i> web-based application product 2. Limited trial scenario 	<ol style="list-style-type: none"> 1. Preparing questionnaires for teachers and students 2. Conducting a limited field trial on the research subjects 3. Evaluating progress 	<ol style="list-style-type: none"> 1. Responses to the questionnaires 2. Photo documentation

Model Stage	Input	Process	Output
Evaluation	Responses to the questionnaires from teachers and students	1. Collecting responses from teachers and students 2. Evaluating progress at each stage	Teacher and student response data

Data collection techniques included a needs assessment and validation tests, including validation of media and learning materials. In addition, user trials involving students and teachers were conducted using a closed-ended questionnaire. The needs assessment was conducted at SMA Modern Al-Rifa'ie. This study was conducted at SMA Modern Al-Rifa'ie involving 65 students from Class X 1 and X 4, along with one Geography teacher. The research sample was selected using random sampling without considering specific strata or criteria. The sample size was calculated using the Slovin formula with a 10% margin of error.

$$n = \frac{N}{1+Ne^2}$$

Data analysis in this study used a mixed-methods approach to complement and strengthen the results from more comprehensive data. Descriptive data analysis was conducted on open-ended questionnaires, while quantitative analysis was conducted on closed-ended questionnaires, such as material expert validation and media expert validation. The researchers used a Likert scale for both material and media validation, as shown in Table 2.

Table 2. Likert Scale [18]

Score	Assessment
4	Strongly Agree/Highly Appropriate
3	Agree/Appropriate
2	Disagree/Inappropriate
1	Strongly Disagree/Highly Inappropriate

The scores contained in the Likert scale were used to describe the response data toward the developed media. These responses received points for

each material indicator and media usability indicator, as presented in Table 3.

Table 3. Feasibility Criteria [18]

No	Percentage (%)	Qualification	Description
1	81-100	Highly Valid/Highly Feasible	Can be used without revision
2	61-80	Valid/Feasible	Can be used with minor revisions
3	41-60	Fairly Valid/Fairly Feasible	Can be used but requires revisions
4	21-40	Less Valid/Less Feasible	Can be used but requires revisions
5	0-20	Invalid/Inappropriate	Cannot be used and requires total revision

The data analyzed by the validators and the responses from the research subjects were then converted into percentages using the following formula:

$$\text{Average Score} = \frac{\text{Total Score Obtained}}{\text{Maximum Achievable Score}} \times 100\%$$

RESULTS AND DISCUSSION

1. Analysis Stage

The first stage in this study was the analysis stage. This stage was conducted through a needs analysis to identify problems in the learning process. Therefore, this stage included three main components: analysis of student characteristics, analysis of the curriculum, and analysis of the learning media implemented at SMA Modern Al-Rifa'ie. Based on the observations, 90% of students experienced difficulties with mapping, remote sensing, and Geographic Information System (GIS) materials. This was evidenced by students' examination scores on these materials, which were categorized as low and below the Minimum

Completeness Criteria (MCC). Interviews with the Geography teacher also showed that students still had difficulty with GIS materials, as evidenced by low examination results in spatial aspects. This is in line with studies by several previous researchers indicating that the spatial thinking ability of senior high school students in Indonesia remains low [19], [20], [6], [3], [21]. In addition, based on the needs analysis, 87% of students considered textbooks less effective for GIS learning, while 56% preferred digital learning media.

SMA Modern Al-Rifa'ie implemented the *Merdeka Curriculum* in the learning process. The Learning Outcomes (*Capaian Pembelajaran*; CP) of the *Merdeka Curriculum* in conceptual understanding require students to identify, understand, think critically, and analyze the basic concepts of Geography, maps, and related materials in spatial terms. In addition, in process skills, students are expected to be able to read and write about the basic concepts of Geography, maps, and geosphere

phenomena, and to work collaboratively or independently using self-produced products, such as maps or other learning tools.

Based on surveys and interviews, students had not yet achieved the objectives of the *Merdeka Curriculum*; therefore, there was a gap between the curriculum's expectations and reality in the field. This is consistent with the study conducted by Darmawan [22], which found that students still lacked the ability to analyze spatially. Yessyca [23] also stated that students still had low spatial thinking ability. This condition was caused by the learning media used by teachers in this material, which primarily consisted of Microsoft PowerPoint and assignments on student worksheets (Lembar Kerja Siswa; LKS). Meanwhile, Suasti [24] stated that Microsoft PowerPoint was less effective in improving students' spatial thinking ability. In addition, Yessyca [23] stated that the use of learning media in the form of printed books alone had not influenced students' spatial thinking abilities, resulting in difficulties with spatial visualization. Based on the results of the needs analysis, a web-based learning media was developed that students can access anytime, anywhere, to support Geography learning, especially

in mapping, remote sensing, and GIS materials. According to Nurhidayati [25], attractive learning media can motivate students to achieve learning objectives. The *Bacapeta* web was developed as an innovative learning medium with features and ease of use that can train students' spatial thinking skills. This aligns with the study by Sabandar [20], which stated that web-based learning media can positively affect students in the learning process.

2. Design Stage

This design stage was required to design the developed learning media. This stage was important because it represented the initial step in designing the development of learning media [26]. The researchers designed *Bacapeta*, including its content, content sequence, initial appearance on the *Bacapeta* website, and available features. This design process was carried out to ensure that each piece of content and visual element conveyed the provided information harmoniously. In addition, the design of learning media can improve teaching effectiveness and students' understanding, and provide meaningful learning experiences.

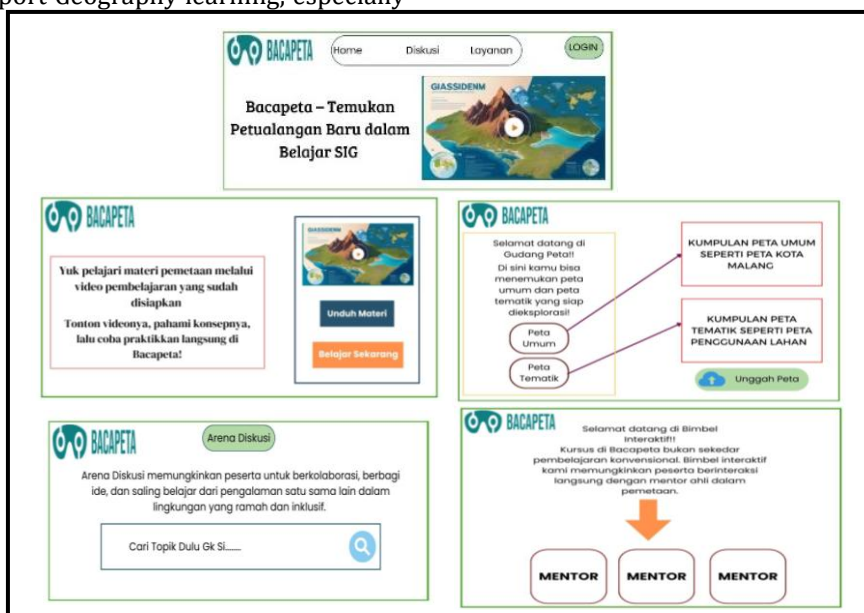


Figure 1. Bacapeta Story Board

The figure shows that the *Bacapeta* web was planned using a storyboard. A storyboard is a visualization of ideas for a media project, thereby providing an overview of the resulting media [27]. The selection of a storyboard was based on its ability to illustrate the development and design process for the learning media being created. This is consistent with the study by [28], which stated that storyboards are widely used to create frameworks for interactive website-based learning media.

The UI/UX design for the *Bacapeta* web was created in *Figma*. *Figma* was selected because it allows users to create interfaces collaboratively in real time. In addition, *Figma* can facilitate the design of website-based application prototypes. This is in line with the study conducted by Wardhanie [29],

which stated that *Figma* has comprehensive features commonly used for designing projects in the fields of UI/UX, web design, and other related fields.

3. Development Stage

The next stage was the development stage, which involved developing the *Bacapeta* web media based on the plans designed in the previous stage. *Bacapeta* was equipped with a range of attractive, interactive features to support the learning of geospatial technology among senior high school students. The provided features included learning videos, materials, a map repository, discussion forums, and mentors. These features were provided to support and facilitate students' learning in geospatial technology.

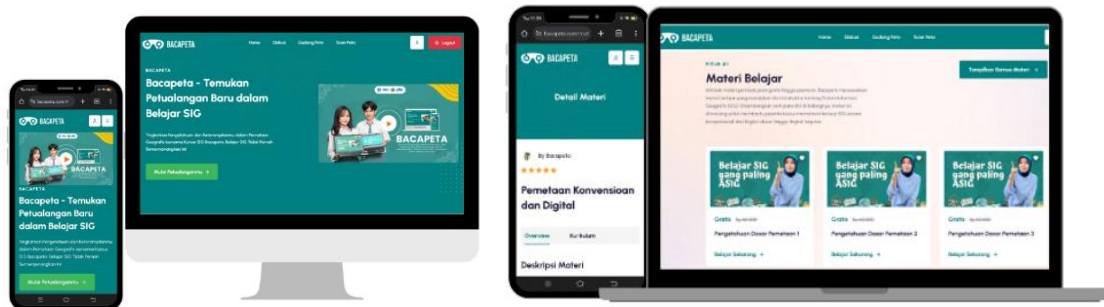


Figure 2. Bacapeta Website Platform

The first features provided on the *Bacapeta* web were the video and material features. Through these features, students could access learning videos and GIS materials. Based on the study conducted by [30], videos can help strengthen students' visual memory, making information easier to remember and retain for longer periods. This is in line with Edgar Dale's Cone of Experience theory, in which the use of videos is considered better than the use of images and audio. Therefore, students will

experience learning more directly, especially in spatial materials. In addition, the use of videos can train students' spatial ability and improve their spatial skills [31]. In addition to videos, there is a teaching materials feature to help students access materials whenever and wherever they need them. According to [32], structured and focused digital teaching materials can improve Geography learning, especially in GIS concepts.

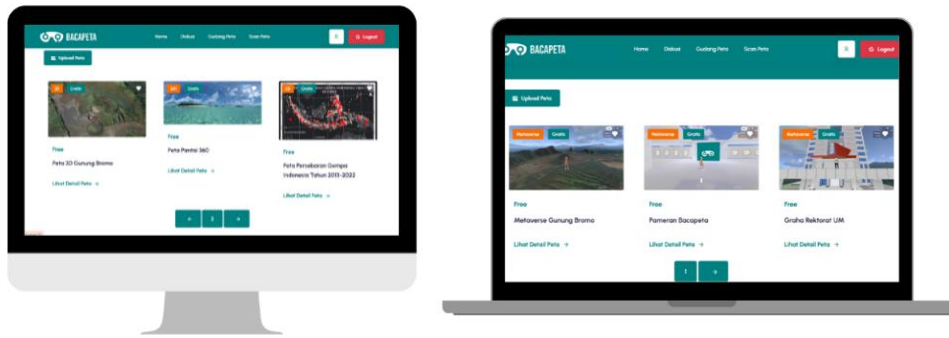


Figure 3. Map Repository Feature

The next feature was the map repository feature. This feature can support learning by providing maps of different scales. In addition, users can also upload maps they have created through this feature. The availability of various map types in the map repository can facilitate and improve students' conceptual understanding [15]. The map repository contains a collection of user-created maps, categorized into thematic and general maps. The provided thematic maps have varying scales, ranging

from small-scale to large-scale maps. Through this exploration, students are indirectly encouraged to think spatially. Based on the study conducted by [33], thematic maps with varying scales can encourage students to develop spatial thinking ability. In addition, Zhao [34] stated that maps categorized by scale can help students think spatially implicitly, for example, by comparing scales to understand data generalization.

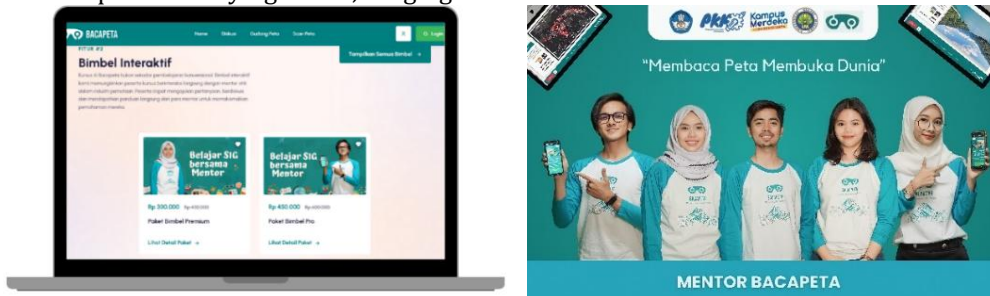


Figure 4. Bacapeta Interactive Online Tutoring Feature

Another feature students can access is the discussion forum. This feature enables senior high school students to interact in real time with other users; therefore, it can support GIS learning by encouraging collaborative discussions about spatial data. Through this feature, students can exchange ideas, discuss concepts, and work on spatial problem-solving. Thus, this feature can improve

students' geographical problem-solving skills and spatial literacy. The last feature provided by *Bacapeta* is the mentor feature. Through this feature, users can select mentors to guide them in GIS learning, both online and offline. In addition, the researchers conducted validation to assess the validity of the *Bacapeta* web through media expert validation and material expert validation.

Table 4. Results of Media and Material Validation

Media			Material		
Aspect	Indicator	Percentage (%)	Aspect	Indicator	Percentage (%)
Media Components	Attractiveness of appearance	85	Content Feasibility	Relevant to the curriculum	83.3
	Suitability between the title and the content of the learning media			Clarity of the material	
	Clarity of instructions			Suitable for senior high school students' needs	
	Completeness of learning media components			Completeness of the material	
	Attractiveness of the <i>Bacapeta</i> web media design			Questions provided were aligned with the designed competencies	
Display Organization	Ease of use of the <i>Bacapeta</i> web	87.5	Language	Using informative and communicative language	75
	Font type and size were easy to read			Suitability between cognitive level and language	
	The layout was appropriate and attractive			Clarity of language selection	
Interactivity	Images were aligned with the material concepts	87.5	Visualization	Images were aligned with the learning materials	100
	Videos were aligned with the material concepts			Videos were aligned with the learning materials	
Overall Assessment	Questions were aligned with the presented materials	91.7	Soal Evaluasi	Questions were aligned with the materials	83.3
	Suitability with the answer keys			Suitability with the answer keys	
	Questions were adjusted to the students' abilities			Suitable to students' abilities	
Average Criteria		88	Average Criteria		90.4
		Highly Valid			Highly Valid

Based on the table, the overall average media validation percentage was "Highly Valid". The media expert validation was conducted by a lecturer from Universitas Negeri Malang, who had qualifications in the field of media, to assess the feasibility of the developed learning media. Based on the feasibility qualification according to Sugiyono [18], validation results categorized as highly valid indicate that the developed learning media meet high-quality

standards and are feasible for use in the learning process. Thus, the validation results provide evidence of the readiness of the developed learning media for use by students. This is also in line with Kursumajanto and Utami [35], who stated that validation results ranging from 80-90% indicate good suitability and quality, and that the media can already be used to support the learning process.

The table also shows that the average material validation percentage overall was “Highly Valid,” at 90.4%. The material validation was conducted by a Geography lecturer from Universitas Negeri Malang who had expertise in the spatial field. Material validation is a crucial step in developing media that is more effective, high-quality, and aligned with

students’ needs and expectations. This is in line with the study conducted by Wiguna [36], which stated that validation results categorized as highly valid indicate that the material aspects in terms of content, language, visualization, and evaluation have demonstrated suitability.



Figure 4. Support from the Regional Disaster Management Agency and the Department of Education and Culture of Malang City

The figure shows that the *Bacapeta* web not only underwent media expert and material expert validation, but also received support from the Department of Education and Culture of Malang City and the Regional Disaster Management Agency (*Badan Penanggulangan Bencana Daerah*; BPBD) of Malang City, because spatial literacy is a very important ability for senior high school students. In addition, spatial literacy can support students’ understanding of space, which is closely related to the real world [37]. The Regional Disaster Management Agency (BPBD) was interested in and supported *Bacapeta* because it offers substantial benefits for the spatial literacy of senior high school students. *Bacapeta* also received support from the Department of Education and Culture of Malang City. *Bacapeta* received this support because spatial literacy must be given attention, especially in

Geography learning, since spatial aspects are the distinguishing characteristics that differentiate Geography learning from other subjects.

4. Implementation Stage

After conducting the validation, the next stage was implementation. This stage aimed to determine the level of satisfaction and feasibility of the developed learning media in supporting mapping, remote sensing, and GIS learning at the senior high school level. The product trial was conducted at SMA Modern Al-Rifa’ie involving 65 tenth-grade students and one Geography teacher. During the implementation process, teachers and students showed high enthusiasm, especially when students were given time to explore the *Bacapeta* web, including the materials, the map repository, and discussions through the provided discussion forum feature.



Figure 5. Field Trial Implementation

The figure shows the enthusiasm of students and teachers during the implementation process of the *Bacapeta* web at the school. The teacher at SMA Modern Al-Rifa’ie provided strong support to the researchers and showed interest in the developed learning media. Therefore, after introducing the *Bacapeta* web to students, the researchers distributed questionnaires to students and teachers to assess the feasibility and satisfaction levels regarding the developed learning media. The findings from the implementation stage showed that

the use of the *Bacapeta* web provided greater satisfaction for students in the learning process than conventional media. In addition, students’ understanding of the materials strengthened because it was supported by visualizations, learning videos, and other interactive features on the *Bacapeta* web, thereby fostering students’ spatial thinking.

5. Evaluation Stage

The final stage was the evaluation stage. ADDIE has several stages of evaluation; however, in this study, only the Level 1 evaluation was conducted

to assess students' and teachers' responses and satisfaction levels toward the developed learning

media. The results of the students' and teachers' responses are shown in Table 5.

Table 5. Result of Teacher Trial

Aspect	Indicator	Percentage (%)	Criteria
Usefulness	Using <i>Bacapeta</i> increased learning motivation	91.7	Highly Valid
	Facilitated students in learning GIS materials		
	This media assisted teachers in delivering GIS materials		
Practicality	<i>Bacapeta</i> was very easy to access	100	Highly Valid
Presentation	Images and videos were aligned with the materials	100	Highly Valid
	Evaluation was aligned with students' abilities		
	Supported GIS learning		
	Materials were presented systematically		
	Materials were aligned with the intended learning objectives		
Language	The language used was easy to understand	100	Highly Valid
Average		97.5	Highly Valid

Based on the assessment results presented in the table, the media overall fell into the "Highly Feasible" category, with an average score of 97.5%. Therefore, this learning media can be considered feasible to use. After the teacher completed the testing stage, the researchers also asked students to test the media. A learning product is considered feasible when it has fulfilled feasibility standards

from various aspects, thereby making it suitable for use in the learning process [38]. Based on the teacher's assessment, *Bacapeta* was feasible for learning because it aligned with the learning objectives and assisted teachers in the learning process. To determine users' responses or perceptions, namely, students' responses toward the *Bacapeta* media, the results are shown in Table 6.

Table 6. Results of Student Trial

Aspect	Indicator	Percentage (%)	Criteria
Usefulness	Using <i>Bacapeta</i> helped students learn GIS	93.8	Highly Valid
	You understood GIS materials more easily using <i>Bacapeta</i>		
	<i>Bacapeta</i> increased your enthusiasm for learning GIS		
	<i>Bacapeta</i> was able to foster spatial thinking ability		
Practicality	<i>Bacapeta</i> was easy to access	93.6	Highly Valid
	<i>Bacapeta</i> materials were easy to access		
	<i>Bacapeta</i> was attractive, thereby providing a new learning experience in studying GIS		
Presentation	Videos and images were aligned with the learning materials	91.2	Highly Valid
	Videos and teaching materials were easy to access		
Language	The language used was easy	96.2	Highly Valid

Aspect	Indicator	Percentage (%)	Criteria
	to understand		
	Average	93.4	Highly Valid

Based on the table of student responses, the *Bacapeta* learning media was categorized as “Highly Feasible,” with a score of 93.4%. This proves that *Bacapeta* can be used in the learning process. According to Anjani [39], if a product is categorized as feasible, it can assist students in learning instructional materials. Based on the students’ responses, *Bacapeta* was highly feasible for students to use because it could assist them with GIS learning, which is considered complex and requires a longer learning duration than regular classroom learning. This media had a design preferred by both teachers and students, in terms of presentation, usefulness, and language use. This is consistent with the study conducted by Magdalena [40], which stated that good learning media are learning media that can attract students’ attention.

The results of the study showed that the *Bacapeta* web was feasible to use in the learning process. This was because the *Bacapeta* web was aligned with the students’ needs analysis. In addition, the available features supported the learning process, thereby contributing to the feasibility of the developed *Bacapeta* web. This is in line with the study conducted by Izzaturrahma [41], which stated that videos can assist the learning process overall and obtained a very good percentage. In addition, the study conducted by Hamid [42] showed that videos improved and accelerated the understanding process of the concepts being delivered. In addition, as stated by Wijayanti [43], the map repository feature can help students analyze a place and understand spatial variations in a particular area through maps at various scales.

The developed *Bacapeta* web-based learning media supported learning aligned with curriculum needs. The developed learning media were proven to be valid and feasible, with validity and feasibility levels above 80%; therefore, they were very well accepted by users. This is consistent with the study by Kursumajanto [35], which found that media with validation scores and feasibility levels above 80% can be categorized as high quality and feasible for use in the learning process. In addition, the integration of interactive features such as videos, structured materials, a map repository, discussion forums, and mentors can optimally support students’ spatial literacy compared to conventional learning media. This is in line with the findings of Cendikia [30], which stated that the use of visual- and video-based media can strengthen visual memory and improve students’ conceptual understanding compared to textbooks. This study also provides a practical contribution by showing that the ADDIE approach was effective in developing technology-based Geography learning media.

The developed learning media not only yielded a product but also generated empirical findings that can serve as references for future innovations. Thus, the developed learning media was not only technically superior but also made theoretical and practical contributions to the development of learning innovations, particularly in the context of technology-based Geography learning. In addition, the developed learning media was not limited to a single region, but could be used and accessed by students throughout Indonesia. Thus, the developed learning media can contribute to advancing digital learning and 21st-century education.

This study not only had strengths but also several limitations, including the mentor feature, which students could not yet access. The mentors provided in this learning media included both online and offline mentors; however, the developed media had not yet been able to provide mentors, either online or offline. In addition, the developed media was limited to testing the validity and feasibility levels by teachers and students. Therefore, future researchers can conduct further research and development through effectiveness and practicality testing. In addition, future researchers can also add mentors who can be accessed by students both online and offline. Therefore, future researchers have significant opportunities to develop website-based learning media by improving several features and conducting tests of effectiveness and practicality.

CONCLUSION

The development of *Bacapeta* as a web-based application was feasible and relevant in supporting GIS learning among senior high school students. Through the ADDIE stages, *Bacapeta* was designed based on needs analysis, curriculum, and student characteristics. It was equipped with features such as materials, videos, a map repository, discussions, and interactive guidance, which strengthened concrete learning experiences. The media validation results showed 88%, while the material expert validation results showed 90.4%, indicating a highly valid category. Meanwhile, the field trial conducted by teachers showed 97.5%, and students showed 93.4%, both categorized as highly feasible. Therefore, overall, this study achieved its objective of developing the *Bacapeta* web media, which was valid and feasible for use in the learning process. Nevertheless, the availability of mentors remains a consideration for further development. Overall, *Bacapeta* has the potential to become an innovative and sustainable solution in geospatial learning at the senior high school level in Indonesia.

ACKNOWLEDGMENTS

The authors would like to express their gratitude to the Undergraduate Geography Education Study Program, Faculty of Social Science, Universitas Negeri Malang, and SMA Modern Ar-Rifa'ie for their support in completing this study. The researchers also would like to express their gratitude to Belmawa, the Ministry of Higher Education, Science, and Technology (*Kementerian Pendidikan Tinggi, Sains, dan Teknologi*; Kemendikisaintek) (2383/E2/DT.01.00/2023) for providing funding during the development process of this media, as well as to all parties who supported the completion of this article.

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