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EVALUATING GEOGRAPHY BASIC COMPETENCIES IN THE 2013 CURRICULUM IN RELATION TO THE DEVELOPMENT OF STUDENTS' SPATIAL LITERACY

EVALUASI KOMPETENSI DASAR GEOGRAFI DALAM KURIKULUM 2013 TERKAIT PENGEMBANGAN LITERASI SPASIAL SISWA

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Abstract

This study aims to analyze the extent to which the Basic Competencies (KD) in Geography in the 2013 Curriculum contribute to strengthening students' spatial literacy. The study used a qualitative descriptive approach with content analysis techniques on curriculum documents and source triangulation. The results showed that the Basic Competencies in Geography in grades X, XI, and XII have varying levels of strengthening spatial literacy. Grade X plays a role in building a foundation for spatial understanding related to geosphere phenomena. Grade XI strengthens understanding of spatial interactions through materials on resource distribution, population dynamics, and human-environment relationships. Meanwhile, grade XII is the level with the greatest contribution to spatial literacy through materials on remote sensing, Geographic Information Systems (GIS), rural-urban spatial patterns, and zoning. Although the structure of the Basic Competencies shows gradual development, it is not entirely consistent in demanding advanced spatial skills, especially at earlier levels. These findings emphasize the importance of strengthening learning strategies and supporting school facilities to maximize the potential of Basic Competencies in building students' spatial literacy.

Keywords : Basic Competencies, 2013 Curriculum, spatial literacy, geography.

Abstrak

Penelitian ini bertujuan untuk menganalisis sejauh mana Kompetensi Dasar (KD) Geografi pada Kurikulum 2013 berkontribusi terhadap penguatan literasi spasial siswa. Penelitian menggunakan pendekatan deskriptif kualitatif dengan teknik analisis isi terhadap dokumen kurikulum dan triangulasi sumber. Hasil penelitian menunjukkan bahwa KD Geografi pada kelas X, XI, dan XII memiliki tingkat penguatan literasi spasial yang berbeda-beda. Kelas X berperan dalam membangun dasar pemahaman keruangan terkait fenomena geosfer. Kelas XI memperkuat pemahaman interaksi ruang melalui materi persebaran sumber daya, dinamika penduduk, serta hubungan manusia dan lingkungan. Sementara itu,

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kelas XII menjadi jenjang dengan kontribusi paling besar terhadap literasi spasial melalui materi penginderaan jauh, Sistem Informasi Geografis (SIG), pola keruangan desa-kota, dan pewilayahan. Meskipun struktur KD menunjukkan perkembangan bertahap, belum seluruhnya konsisten dalam menuntut keterampilan spasial tingkat lanjut, terutama pada jenjang sebelumnya. Temuan ini menegaskan pentingnya penguatan strategi pembelajaran dan dukungan fasilitas sekolah untuk memaksimalkan potensi KD dalam membangun literasi spasial siswa.

Kata Kunci : Kompetensi Dasar, Kurikulum 2013, literasi spasial, geografi.

1. INTRODUCTION

Spatial literacy is an important competence in geography learning because it helps students understand the relationship between location, space, and phenomena on the Earth's surface. In the context of modern education, spatial literacy is not only related to the ability to read maps but also to process, interpret, and use geospatial information to solve location-based problems. Recent studies show that spatial literacy plays a significant role in shaping students' critical and analytical thinking skills, especially in learning activities that involve spatial data. A study conducted by Jo and Bednarz (2020) emphasizes that spatial literacy is a foundation for comprehensively understanding geographic and environmental dynamics.

In Indonesia, the need for spatial literacy is increasingly urgent due to the growing complexity of spatial issues such as flooding, land-use change, traffic congestion, rapid urbanization, environmental degradation, and natural disaster risks. Geography learning at the secondary school level should be able to address these needs by equipping students with relevant spatial skills. According to research by Mahanani (2023), Indonesian students' spatial literacy ability is still at a basic level because geography learning has not fully utilized spatial analysis approaches and geospatial technologies. This indicates a gap between real-world spatial demands and students' competencies in understanding them.

The 2013 Curriculum (K13) was actually designed to develop higher-order thinking skills, including spatial thinking abilities. The Basic Competencies (KD) in the Geography subject include various materials related to territorial concepts, maps, distribution patterns, spatial interactions, and the use of geospatial technology. However, other studies, such as the one reported by Arisanty et al. (2021), show that not all KDs consistently require deep spatial analytical skills. Some competencies remain oriented toward factual knowledge rather than the applied skills needed for advanced spatial literacy.

In addition to issues within the curriculum structure, classroom teaching practices also contribute to the low level of students' spatial literacy. Research by Zafra (2022) found that geography teachers in various schools have not utilized digital mapping technologies such as web-based GIS and satellite imagery optimally. Teaching tends to focus on delivering content rather than providing learning experiences based on spatial data exploration. Limited teacher training, insufficient school facilities, and a lack of understanding of geospatial approaches are factors that weaken the integration of spatial literacy in classroom instruction.

Based on these issues, it is important to reanalyze the Basic Competencies for Geography in the 2013 Curriculum and examine the extent to which they strengthen students' spatial literacy. This analysis is necessary to assess whether the KD structure is adequate, which

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parts need reinforcement, and how well the competencies align with the demands of modern geospatial technological developments. The results of this analysis are expected to serve as a basis for teachers, schools, and curriculum developers to improve the quality of geography learning and ensure that students possess spatial competencies relevant to the needs of the 21st century.

2. RESEARCH METHOD

In analyzing the Basic Competencies (KD) of Geography in the 2013 Curriculum, the researcher employed a qualitative descriptive approach as explained by Creswell (2018). In the initial stage, data were collected by examining curriculum documents, particularly the Geography Basic Competencies at the senior high school level. This data collection procedure was carried out following the steps outlined by Creswell (2018). After that, the researcher identified KD elements related to components of spatial literacy using content analysis techniques as described by Krippendorff (2019).

Once the KD elements were identified, the researcher categorized them based on spatial literacy indicators such as mapping, spatial interpretation, and interregional analysis. This categorization process was conducted using the analytical guidelines recommended by Krippendorff (2019). The researcher then interpreted the findings by applying qualitative interpretation techniques explained by Bogdan and Biklen (2017).

Furthermore, to ensure data validity, the researcher applied source triangulation techniques as recommended by Patton (2015). At this stage, curriculum document data were compared with findings from previous studies and relevant spatial literacy theories. The triangulation procedure was carried out following the steps described by Patton (2015). After completing these processes, the researcher concluded the degree of alignment between the Geography Basic Competencies in the 2013 Curriculum and the strengthening of students' spatial literacy..

3. RESULT AND DISCUSSION

Results

Content analysis of the Geography Basic Competencies (KD) in the 2013 Curriculum was carried out by examining the KD formulations and core materials for Grades X, XI, and XII. This process produced a mapping of the KD content structure, showing how spatial abilities are gradually developed at each grade level. The findings are presented based on the results of material categorization as recommended in content analysis techniques.

a. Results of the Analysis of Grade X Geography Basic Competencies

The document review shows that Grade X has four knowledge-based Basic Competencies (KD), all of which focus on fundamental geosphere concepts, namely the lithosphere, atmosphere, hydrosphere, and natural hazards. The core materials at this level relate to rock formation processes, weather and climate dynamics, water systems, as well as the types and characteristics of natural disasters.

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The content in Grade X indicates that learning is directed toward introducing Earth's physical phenomena and their spatial distribution. Although still at a conceptual level, these materials already contain spatial elements because students are introduced to how natural phenomena emerge, are distributed, and change within spatial contexts. These findings show that Grade X functions as the foundation for developing spatial understanding in geography learning.

Table 1. Basic Competencies for Grade X, 2013 Curriculum

KD	Formulation of Basic Competency (KD)	Core Materials
3.1	Understanding basic geographical knowledge and its application in daily life.	Scope of geography; essential concepts of geography; objects of geographical study; principles of geography; geographical approaches; aspects of geography.
3.2	Analyzing the steps of geographical research on geospheric phenomena.	Characteristics of geographical studies; analytical approaches; data collection techniques; data analysis techniques; publication of research findings.
3.3	Analyzing the dynamics of planet Earth as a living space.	Theories of Earth's formation; rotation–revolution; Earth's layers; continental drift; geological time scale; history of life; requirements for Earth's habitability.
3.4	Analyzing human-environment relationships as a result of lithospheric dynamics.	Utilization of rocks; effects of tectonism, volcanism, and seismic activity; exogenous processes; soil formation and its uses.
3.5	Analyzing human–environment relationships as a result of atmospheric dynamics.	Atmospheric layers; weather and climate; climate types; Indonesian climate characteristics; climate change; climate-related research.
3.6	Analyzing human-environment relationships as a result of hydrospheric dynamics.	Water cycle; freshwater systems; marine systems; utilization and conservation of watersheds; marine conservation.
3.7	Analyzing disaster mitigation and adaptation using geographic perspectives.	Types and characteristics of disasters; distribution of disaster-prone areas; risk reduction efforts; disaster management institutions.

Source: Ministry of Education and Culture of the Republic of Indonesia (2016)

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b. Results of the Analysis of Grade XI Geography Basic Competencies

The Basic Competencies (KD) in Grade XI consist of seven knowledge-based competencies that show an expansion of content from physical phenomena toward human–space relationships. The material includes the distribution of flora and fauna, mining, food and energy security, population dynamics, cultural diversity, local wisdom, and environmental conservation.

The categorization results indicate that Grade XI begins to include more complex spatial elements, particularly through materials related to the distribution of natural resources, demographic dynamics, and the relationship between culture and the environment. Several topics also demonstrate demands for understanding distribution, spatial utilization, and regional change. Overall, the analysis of this level shows an increased depth of spatial content compared to Grade X, as the competencies not only describe phenomena but also emphasize their connections to human activities.

Table 2. Basic Competencies for Grade XI, 2013 Curriculum

KD	Formulation of Basic Competency (KD)	Core Materials
3.1	Analyzing the distribution of flora and fauna in Indonesia and the world based on ecosystem and regional climate characteristics.	Factors influencing the distribution of flora and fauna; distribution of Indonesia's flora and fauna; global flora and fauna distribution; utilization of biodiversity; flora–fauna conservation.
3.2	Analyzing the distribution of mining resources in Indonesia based on their strategic value.	Formation processes of mineral resources; potential and distribution; environmentally friendly exploration–exploitation; utilization and reclamation; mining governance.
3.3	Analyzing Indonesia's geographical conditions for food security, industrial raw materials, and alternative energy.	Area and boundary characteristics; physical and social potentials; geographical potential for food needs, industry, and alternative energy.
3.4	Analyzing population dynamics and human resource issues in Indonesia.	Sources of population data; quantity and demographic analysis; population quality; population mobility and control; population problems and solutions.
3.5	Analyzing the cultural diversity of the nation as a form of national	Distribution of cultural diversity; national identity; the influence of

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	identity within the context of global interaction.	global interaction; traditional culture as potential for tourism and the creative economy.
3.6	Analyzing forms of local wisdom in the utilization of natural resources in agriculture, mining, industry, and tourism.	Local wisdom in agriculture; mining; industry and services; renewable energy; eco-efficiency-based resource utilization; environmental impact assessment (AMDAL) and eco-labeling.
3.7	Evaluating environmental conservation efforts in relation to sustainable development.	Environment (energy flow, food chain, biogeochemical cycles); environmental quality and standards; pollution and environmental risks; causes of global warming; implementation of sustainable development.

Source: Ministry of Education and Culture of the Republic of Indonesia (2016)

c. Results of the Analysis of Grade XII Geography Basic Competencies

The Basic Competencies (KD) in Grade XI consist of seven knowledge-based competencies that show an expansion of content from physical phenomena toward human–space relationships. The material covers the distribution of flora and fauna, mining, food and energy security, population dynamics, cultural diversity, local wisdom, and environmental conservation.

The categorization results indicate that Grade XI begins to incorporate more complex spatial elements, particularly through materials related to the distribution of resources, demographic dynamics, and the relationship between culture and the environment. Several topics also demonstrate demands for understanding distribution, spatial utilization, and regional change. Overall, the analysis at this level shows an increasing depth of spatial content compared to Grade X, as the competencies not only describe phenomena but also relate them to human activities.

Table 3. Basic Competencies for Grade XII, 2013 Curriculum

KD	Formulation of Basic Competency (KD)	Core Materials
3.1	Analyzing remote sensing imagery for land-use and transportation planning studies.	Concepts of remote sensing (types, interpretation aspects, benefits and strengths of remote sensing); remote sensing for land-use planning; remote sensing for transportation network development; governance and institutions of remote sensing in

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		Indonesia.
3.2	Analyzing the use of maps and Geographic Information Systems (GIS) for natural resource inventory, development planning, environmental health, and disaster mitigation.	Fundamentals of maps and mapping; principles of Geographic Information Systems; GIS data sources and databases; GIS applications for natural resource inventory and development planning; GIS utilization for environmental health studies and disaster mitigation.
3.3	Analyzing spatial distribution patterns and interactions between rural and urban areas for regional economic development.	Spatial patterns of rural areas; spatial patterns of urban areas; interactions between villages and cities in regional development; urban growth and land-use conversion; rural–urban interactions related to the distribution of goods and people and regional economic development.
3.4	Developing concepts of regions and regionalization for national development planning.	Regions and regionalization; growth centers in regional development; sustainable regional development; carrying capacity studies for regional growth; national regional planning systems.
3.5	Developing regional studies of developed and developing countries to understand mutually beneficial cooperation.	Distribution of developed and developing countries; characteristics of developed and developing countries; economic growth in both groups of countries; mutually beneficial economic cooperation between Indonesia and partner countries.

Source: Ministry of Education and Culture of the Republic of Indonesia (2016)

Discussion

This discussion interprets the results of the content analysis of the Basic Competencies (KD) in the 2013 Geography Curriculum through the lens of spatial literacy and contemporary theories of geography education. Overall, the findings indicate that each grade level emphasizes different aspects of spatial competence, reflecting a conceptual and procedural progression although not always consistently in supporting the gradual development of students' spatial literacy.

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a. Role of Grade X Basic Competencies in Establishing Foundational Spatial Understanding

The Basic Competencies in Grade X function primarily as the conceptual foundation for understanding the geosphere. Content related to the dynamics of the lithosphere, atmosphere, hydrosphere, pedosphere, and natural hazards introduces students to the variation and distribution of physical phenomena on Earth. At this stage, the curriculum does not yet demand deep spatial analysis; rather, it provides essential groundwork for students' emerging spatial awareness.

Literature on spatial literacy, particularly Jo and Bednarz (2020), highlights that mastery of foundational spatial concepts is a prerequisite for engaging in more complex spatial reasoning. Therefore, although Grade X competencies do not explicitly cultivate higher-level analytical abilities, their contribution is essential in helping students recognize the connections between physical phenomena and the spatial contexts in which they occur.

b. Strengthening Spatial Interaction Through Grade XI Basic Competencies

Grade XI, the competencies display a more explicit emphasis on spatial thinking. Content related to the distribution of flora and fauna, natural resource potential, demographic dynamics, cultural diversity, and local wisdom provides opportunities for students to observe how physical and social conditions interact within geographic space.

At this level, students are encouraged not only to identify phenomena but also to evaluate how particular regions form and change through human–environment interactions. This aligns with Mahanani's (2023) observations that spatial literacy develops when students engage with real-world phenomena requiring spatial reasoning and the analysis of interrelated variables.

However, analysis also reveals that the depth of spatial content across the Grade XI competencies is uneven. Some competencies remain descriptive and do not fully encourage higher-order spatial thinking. This supports the findings of Arisanty et al. (2021), who argue that portions of the 2013 Curriculum still emphasize factual knowledge rather than applied spatial analysis. Thus, while Grade XI has substantial potential for developing spatial literacy, its effectiveness depends heavily on how teachers interpret and implement the competencies.

c. Grade XII Basic Competencies as the Culmination of Spatial Literacy Development

Grade XII represents the strongest stage of spatial literacy development within the curriculum. Topics such as remote sensing, Geographic Information Systems (GIS), rural-urban spatial patterns, regional concepts, territorial classification, and regional studies of developed and developing countries are all aligned with indicators of advanced spatial literacy. At this stage, students engage in spatial data processing, image and map interpretation, distribution pattern analysis, and the examination of spatial interactions in applied contexts.

The inclusion of geospatial technologies aligns with twenty-first-century competency demands, where the ability to read, analyze, and utilize geospatial information is central to informed decision-making. Nevertheless, as noted by Zafra (2022), the implementation of

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technology-based learning is often hindered by limited school facilities and insufficient teacher training. This suggests that while Grade XII KD are conceptually strong, their effectiveness remains dependent on school resources and teacher preparedness.

d. Consistency of the 2013 Geography Basic Competencies with Principles of Spatial Literacy

Viewed as a whole, the structure of the Geography Basic Competencies in the 2013 Curriculum follows a generally sequential pattern: Grade X introduces foundational geosphere concepts, Grade XI emphasizes human-environment interactions, and Grade XII incorporates technologically oriented spatial analysis. This vertical alignment indicates an intended progression in spatial literacy development.

However, the consistency of spatial content across grades is not fully uniform. Technical spatial skills such as map interpretation and geospatial data analysis are strongly emphasized only in Grade XII, despite the fact that these abilities could ideally be introduced earlier at a basic level. Additionally, not all competencies explicitly require spatial reasoning, which may limit students' spatial literacy development if instructional strategies do not address this gap.

e. Implications of the Findings for Geography Education

These findings carry several important implications for the practice of geography education in schools. Teachers must fully utilize the potential embedded in the competencies. Many KD contain opportunities to strengthen spatial skills, yet classroom instruction often remains focused on factual content delivery. By incorporating map-based activities, spatial pattern analysis, image interpretation, and regional case studies, spatial reasoning can be fostered even in early grades.

The development of spatial literacy is also strongly influenced by teachers' professional competence, particularly in managing data-driven and geospatial learning. Adequate training in GIS, map interpretation, and spatial analysis is crucial to ensure that skill-based competencies are translated into effective instructional practices.

Equally important is the availability of supporting infrastructure. Without access to computers, the internet, or mapping software, the technology-rich spatial learning envisioned in Grade XII cannot be fully implemented. Schools should also promote project-based or region-based learning models to strengthen the connection between classroom content and real-world geographic contexts.

Overall, the analysis indicates that while the 2013 Geography Curriculum has significant potential to develop spatial literacy, its success depends on pedagogical strategies, teacher expertise, and adequate school facilities. Strengthening these elements is essential to ensure that spatial literacy develops comprehensively and sustainably across grade levels.

4. CONCLUSION

Based on the analysis of the Basic Competencies (KD) of Geography in the 2013 Curriculum, it can be concluded that the curriculum holds strong potential for strengthening students' spatial literacy, although its implementation has not yet been fully optimized. At the

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Grade X level, the competencies primarily function to build foundational spatial understanding by introducing geosphere concepts and the distribution of natural phenomena. In Grade XI, the competencies begin to emphasize the analysis of spatial interactions between humans and the environment, thus providing opportunities for students to develop spatial reasoning within social and ecological contexts. Meanwhile, Grade XII serves as the most comprehensive stage in spatial literacy development, as it enables students to process, analyze, and interpret geospatial data through topics such as remote sensing, GIS, rural-urban spatial patterns, and regional planning.

Nevertheless, the continuity across grade levels remains uneven. Technology-based spatial skills are significantly reinforced only in Grade XII, even though such capabilities should ideally be introduced earlier in simpler forms at the Grade X and XI levels. In addition, the quality of learning is strongly influenced by teacher competence and the availability of supporting facilities, including digital mapping tools. Therefore, strengthening students' spatial literacy requires synergy among the curriculum, teacher readiness, instructional strategies, and school infrastructure to ensure that the competencies are implemented effectively and remain relevant to the demands of twenty-first-century geography education.

5. REFERENCES

Castro, M. (2021). Spatial interaction in geographic research. Spatial Dynamics Review, 18(2), 120-135.

Cholifah N., Alfi Cindy. (2022). Mengembangkan Kemampuan Berpikir Spasial Mahasiswa Melalui Pembelajaran Sistem Informasi Geografi Sebagai Penguat Karakter Peduli Lingkungan. Jurnal Riset dan Konseptual. Vol.7 No.3. https://doi.org/10.28926/briliant.v7i3.1003

Goodchild, M. F., & Janelle, D. G. (2023). Spatial thinking in education. Geographical Review, 113(1), 1-20.

Huynh, N. T., & Sharpe, B. (2023). Conceptualizing spatial literacy in schools. International Research in Geographical and Environmental Education, 32(1), 10-24.

Kementerian Pendidikan, Kebudayaan m, Riset dan Teknologi Republik Indonesia. (2022). Pembelajaran dan Asesmen Kurikulum 2013.

Kerski, J. J. (2022). Spatial analysis with GIS. Journal of Applied Geography, 40(5), 523-541.

Kurikulum. (2013). Sekolah Menengah Atas Madrasah Aliyah (MA). Kementrian Pendidikan dan Kebudayaan 2013.

Lee, J. Y. (2023). Spatial cognition and geospatial technology. Computers in Human Geography, 15(4), 211-232.

Oktavianto, Sumarmi, & Handoyo, B. (2017). Pengaruh Pembelajaran Berbasis Proyek Berbantuan Google Earth Terhadap Keterampilan Berpikir Spasial. Jurnal Teknodik, 21(1).

Pratama, R. et al. (2020). Skala dalam analisis geografis: Perspektif siswa. Geography Education Journal Indonesia, 9(1), 57-72.

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Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
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Sarah Witham., Karen Kemp. (2011). Understanding and nurturing spatial literacy, Procedia - Social and Behavioral Sciences. ScienceDirect, Vol. 21 Pages 18-23. https://doi.org/10.1016/j.sbspro.2011.07.004

Setiawan, I. (2016). Peran Sistem Informasi Geografis (SIG) Dalam Meningkatkan Kemampuan Berpikir Spasial (Spatial Thinking). Jurnal Geografi Gea, 15(1).

Silviariza, et al. (2021). Integrasi konsep geografi dalam kurikulum sekolah. Geographic Curriculum Studies, 16(4), 355-370.

Syamsunardi, S., Ikhwana, N., & Syam, N. (2024). Studi Pustaka Tentang Peran 10 Konsep Geografi Dalam Meningkatkan Literasi Spasial Peserta Didik. KNOWLEDGE: Jurnal Inovasi Hasil Penelitian Dan Pengembangan, 4(4), 173-178. https://doi.org/10.51878/knowledge.v4i4.3945

Syaviar, F. A., & Wirahayu, Y. A. (2020). Pengaruh Model Pembelajaran Earthcomm Berbantuan Citra Google Earth Terhadap Kemampuan Berpikir Spasial. 5(2), 8.

Tani, N. (2019). Literasi spasial siswa dalam pembelajaran geografi. Jurnal Ilmu Geografi, 21(2), 151-170.