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Teachers' Perspectives on the Future of Geography Education in Türkiye: A Qualitative Inquiry*

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Abstract

The purpose of this study is to identify strategies for enhancing the future role and effectiveness of geography instruction, based on the perspectives of high school geography teachers in Türkiye, and to propose actionable recommendations. The research employed a qualitative methodology within the framework of descriptive analysis. Data were collected through open-ended questions administered to 508 geography teachers selected via stratified sampling from five provinces (Konya, Antalya, İzmir, İstanbul, and Gaziantep). The responses were analyzed using content analysis, and the resulting codes and themes were supported by frequency and percentage distributions. The findings indicate that a significant majority of teachers (65.1%) believe the importance of geography education will increase in the future, citing reasons such as growing environmental crises, disaster risk awareness, global interconnectivity, and the need for spatial literacy. Teachers' suggestions for improving geography instruction emphasized the expansion of fieldwork, increased use of visual and technological materials, the establishment of dedicated geography classrooms, and the adoption of a more flexible curriculum. Additionally, nearly half of the respondents reported that their schools lack adequate instructional tools and materials for geography teaching. The study concludes that geography education in Türkiye should move beyond a test-centered approach and be restructured to emphasize applied, interdisciplinary, and technology-integrated learning. In this context, it is recommended that teachers participate in continuous professional development, that equitable access to instructional resources be ensured across schools, and that enriched geography-specific learning environments be developed.

Keywords: Fieldwork in Geography, Instructional Strategies, Spatial Thinking, Teacher Perspectives, Geographical Education

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Geography education not only equips students with the ability to understand and analyze both natural and human environments but also enables them to grasp social, economic, and environmental issues at both global and local scales. Geography does more than teach the interactions between people and places and their outcomes; it also fosters broader perspectives in individuals (Bednarz et al., 2012). Highlighting the necessity of learning geography, Girgin (2001) emphasized its role as a discipline that investigates not only the natural elements of countries but also their cultures, facilitates the analysis of land use, enhances the perception of regions, countries, and physical and human environments, organizes and disseminates knowledge about the world we live in, and underscores the importance of economic life, planned development, and progress, while also exploring disaster preparedness and explaining the impacts of natural hazards.

For these reasons, the significance of geography as a discipline has been sustained from antiquity to the present. Between the 2nd century BCE and the early 17th century, geography primarily served the purpose of identifying trade routes (such as the Silk and Spice Roads) and informing geographic explorations through the utilization of geographical knowledge. Today, its importance has shifted toward the management of natural and energy resources, global climate change and disaster risk reduction, urban planning and transportation networks, as well as geopolitical and international relations.

Özey, Tuna, and Bilgen (2013) argued that in a rapidly changing and globalizing world, the relevance of geography education and geographic knowledge is growing steadily. Similarly, the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2021) emphasized in its report that geography education is a key discipline for achieving the Sustainable Development Goals (SDGs). The report also pointed out that in today's world—where geographical boundaries are nearly dissolved—problems occurring in one part of the globe are acutely felt elsewhere, thereby reinforcing the critical role of geography education in enabling societies to make informed decisions for their survival and future planning.

Moreover, geography education is widely recognized for its strong contribution to the development of students' critical thinking and problem-solving skills. It also fosters future-oriented awareness in learners regarding global challenges such as environmental degradation, climate change, and sustainability. In this regard, geography education is expected to become increasingly important, as it enables individuals, communities, and nations to make more informed and conscious decisions, laying a foundation for a more sustainable future. While the importance of geography education is frequently emphasized in the literature, most studies in the field tend to focus on theoretical frameworks. Empirical research based on teachers' perspectives, especially those with large sample sizes and practical implications, remains limited. In the context of Türkiye, there is a particular scarcity of qualitative studies that offer practice-oriented solutions grounded in teacher experience. This presents a barrier to the integration of existing knowledge with contemporary educational technologies and to the development of concrete, experience-based strategies. Therefore, there is a pressing need for research that centers on teachers' direct insights and addresses the future role of geography education from a practice-based perspective.

Strategies for Enhancing the Future Role and Effectiveness of Geography Education: Expectations and Practical Proposals

In today's world, many countries are undertaking various initiatives to improve geographical education and to enhance its future role and effectiveness. These efforts not only raise the standards of geography education but also contribute to countries' sustainable development agendas. In her master's thesis titled *Fundamental Problems of Secondary School Geography Education (The Case of Kartal District)*, Elmas (2006) found that textbooks are insufficient, learning environments are inadequate for delivering quality education, the significance of geography is not well understood, and instructional materials are not adequately integrated into teaching practices.

Highlighting the importance of geography, Girgin (2001) argued that anticipating positive or negative events concerning the world we live in is only possible through geographic data. He also emphasized that geographical inventories are essential for explaining the functioning of natural systems. Similarly, Yli-Panula, Jeronen, and Lemmetty (2020), in their study *Teaching and Learning Methods in Geography Promoting Sustainability*, focused on teaching and learning methods in geography that promote sustainability. Recent studies show that the use of virtual reality (VR) technologies in geography education positively impacts student motivation and spatial understanding (Huang & Hu, 2025). Moreover, combining GIS applications with phenomenon-based learning models significantly improves students' geographic literacy and emotional engagement (Meechandee & Meekaew, 2025).

Understanding, learning, and transforming geographic knowledge into sustainable development are closely tied to how geography is taught and learned. Therefore, this study considers teaching and learning strategies, thematic content, objectives, levels of thinking skills, and instructional method characteristics to foster sustainability in geography education. According to the findings, concepts such as environmental, social, economic, and cultural sustainability are the most frequently used terms. Active participation, thinking skills, animation, assessment, dialogue, demonstrations, and ICT skills are among the most emphasized instructional methods supporting sustainability in geography education.

The *2016 International Charter on Geography Education* prepared by the Commission on Geographical Education of the International Geographical Union (IGU-CGE, 2016) includes topics such as the purpose of geography education, its contributions to learning, research in geography education, international cooperation, and the development of a global action plan. This declaration particularly addresses policymakers and educational leaders. It has been endorsed as an international action plan with the goal of ensuring that all young people around the world receive a quality geography education and supporting educators in their efforts to combat geographic illiteracy.

This study also attempts to compare the perception and value of geography education in Türkiye with that of other countries, emphasizing the essential nature of geography education. It notes that in Türkiye, geography courses are often viewed primarily as a means to pass exams, which negatively affects the development of the discipline. The study seeks to underline the critical role that geography plays in cultivating responsible citizens who are aware of national and global issues. The famous quote by Mustafa Kemal Atatürk—"Nations that know their geography and their own territory well also know how to protect and benefit from it"—perfectly encapsulates the importance of geography education and geographic knowledge.

At a time of accelerated global change, rising environmental crises, and the growing impact of digital technologies in education, geography is expected to assume a more critical role. In Türkiye, the exam-oriented perception of geography education is compounded by mismatches between technological capacities and instructional methods. According to Bondarenko (2025), although GIS-based geography instruction enhances students' spatial thinking, limitations in teacher preparedness and theoretical grounding hinder its implementation. Additionally, while VR-supported geography education enhances classroom interaction and learning effectiveness, curriculum policies have yet to fully embrace such innovations (Huang & Hu, 2025).

In this context, to enhance the future role and effectiveness of geography education, the integration of digital technologies such as GIS and VR must be prioritized. Course content should be aligned with contemporary and local issues, interdisciplinary approaches should be emphasized, creative and participatory learning methods should be adopted, teacher training strategies must be advanced, and programs fostering social awareness and civic responsibility should be developed. Furthermore, improving the effectiveness of geography instruction requires increasing field trips and observational activities, using more visual and instructional materials, creating specialized geography classrooms, extending course hours, ensuring curricular flexibility, and enhancing the necessary geography-related equipment in schools. Additionally, efforts should be made to boost both teacher and student motivation. Given geography's role in fostering spatial thinking, environmental awareness, and disaster preparedness, the subject must be restructured to meet the demands of the modern era.

Indeed, Meydan and Yıldız Yılmaz (2020) found that primary school geography curricula in Türkiye between 1923 and 2018 were predominantly focused on information transmission and failed to sufficiently incorporate contemporary themes such as sustainability and spatial literacy. The results of these studies are expected to help overcome barriers in geography education, improve education policies, and guide the development of more effective teaching strategies. The original contribution of this research lies in its systematic analysis of teacher-based solution proposals regarding the future of geography education in Türkiye, based on a broad sample.

In contrast to the largely descriptive studies with small sample sizes in the existing literature, this research offers both theoretical and practical contributions by presenting concrete strategies grounded in teacher experiences. Furthermore, it distinguishes itself by integrating current trends in literature such as digital technologies, sustainability, interdisciplinary instruction, and equitable learning environments.

In summary, the central research question guiding this study is: "From the perspectives of geography teachers in Türkiye, how is the future role of geography education being shaped, and what types of strategies should be developed to enhance its effectiveness?"

To explore this problem, the following sub-questions were formulated:

1. What are geography teachers' perspectives on the future importance of geography education?

2. According to geography teachers, what practical suggestions are most prominent for improving the effectiveness of geography instruction?
3. How do teachers evaluate the adequacy of the tools and instructional materials available in schools for use in geography education?

Methodology

Research Design

This study aims to explore the future role of geography education and strategies to enhance its instructional effectiveness based on the perspectives of geography teachers working in Türkiye. To deeply understand teachers' experiences, perceptions, and suggestions through qualitative data, a qualitative research design was adopted. Among descriptive qualitative research approaches, the case study design was chosen for this study. This design was preferred because it allows an in-depth investigation of a specific phenomenon within its real-life context (Karasar, 2019; Creswell & Poth, 2018; Merriam, 2013). The study focused on a single holistic case—the perspectives of geography teachers—which was structured into sub-units (e.g., future role, instructional strategies, adequacy of instructional materials) according to the sub-research questions. Yin (2018) emphasizes that case study designs are particularly effective in research that seeks to answer "how" and "why" questions, where the researcher has limited control over events, and where contextual variables play a critical role. Since this study is built around context-driven questions such as "How is the future role of geography education being shaped?" and "How do teachers think the effectiveness of this subject can be improved?", the case study approach was deemed highly appropriate. Given the qualitative nature of the research, the teachers' responses were analyzed using in-depth content analysis. The aim of content analysis was to derive meaningful themes and sub-themes from the open-ended responses provided by teachers, and to structure these in a descriptive framework (Yıldırım & Şimşek, 2021; Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2008). In this process, the teachers' views were coded, classified under main themes, and the resulting thematic framework was supported with frequency distributions.

Population and Sample

The target population of the study consisted of high school geography teachers across Türkiye. The sample was selected using a stratified random sampling method and included 508 geography teachers working in five provinces from different geographical regions of the country—Konya, Antalya, İzmir, İstanbul, and Gaziantep. Of these participants, 284 were male and 224 were female.

Table 1

Provincial and Gender Distribution of Survey Participants

Province	n	Woman		Man		Total	
	f	*f*	%	*f*	%	*f*	%
Antalya	361	35	36,08	62	63,92	97	100
Gaziantep	362	23	32,86	47	67,14	70	100
İstanbul	1656	62	50,00	62	50,00	124	100
İzmir	607	61	57,55	45	42,45	106	100
Konya	364	43	36,94	68	63,06	111	100
Total	3350	224	43,70	284	56,30	508	100

The survey was administered to a total of 508 geography teachers, including 224 female and 284 male participants, all of whom were actively employed in various types of high schools. The survey was conducted directly at the teachers' schools. When analyzing the distribution of participants by province and gender, it is observed that the numbers of female and male teachers are relatively balanced (see Table 1).

Data Collection Instruments

In this study, data were collected using a set of open-ended questions developed by the researchers and finalized with expert input. These questions aimed to explore the challenges faced by geography teachers, their proposed solutions, and their views on the future importance of geography education. The responses provided by teachers were coded and categorized for analysis. The number and structure of the open-ended questions were determined based on expert opinions before the instrument was finalized and administered to the participants. The interview form included open-ended items designed to elicit detailed insights into teachers' perspectives on geography education. To ensure content validity, the instrument was reviewed by three subject-matter experts, and a pilot study was conducted. Necessary revisions were made to the instrument based on the feedback from the pilot implementation.

Data Collection Process

Participants were informed of the purpose of the open-ended questions, assured of the confidentiality of their responses, and invited to participate voluntarily. A total of 508 geography teachers working in public high schools under the Ministry of National Education in Konya, İzmir, İstanbul, Gaziantep, and Antalya were given fifteen days to respond to the open-ended questions. The completed interview forms were then collected in person. Data were gathered through face-to-face interviews. To facilitate open expression of thoughts, the interviews were conducted in a semi-structured format, recorded with the participants' consent, and subsequently transcribed. Responses to the three open-ended questions generally took 15–20 minutes to complete.

Data Analysis

The open-ended responses obtained from geography teachers were analyzed through content analysis, and the frequencies and percentages of identified themes were processed using SPSS 25.0. The SPSS software was utilized only for calculating descriptive statistics. The coding and qualitative data analysis were conducted manually by the researchers (Yıldırım & Şimşek, 2021). A descriptive content analysis approach was employed (Creswell & Poth, 2018). First, responses were coded, and similar codes were grouped under broader thematic categories. The coding process was carried out independently by two researchers, and only those codes with inter-rater agreement were included in the final analysis. For example, under the theme "Future Importance of Geography Education," sub-codes such as "strategic location," "global warming," "geographic awareness," and "geopolitical consciousness" were identified. As a result of the coding process, three main themes and numerous sub-themes emerged. A summary of the code-to-theme process is presented on the table below.

Table 2

Descriptive Content Analysis Results: Code–Subtheme–Theme Frequencies Based on Teachers' Perspectives

Theme	Sub-Theme / Codes	n
Importance of Geography Education (Theme 1)	Global awareness, Geopolitical consciousness	331
Effective Teaching Strategies (Theme 2)	Field trips and observation, Increased instructional hours, Visual materials	253
Material Adequacy (Theme 3)	Lack of equipment, Need for digital materials	245

Validity and Reliability

To enhance the reliability of the data analysis process, coding was conducted independently by two researchers, and the resulting codes were compared. The inter-coder agreement rate was calculated as 91%, which exceeds the minimum acceptable threshold of 80% recommended in the literature (Miles & Huberman, 1994). In addition, to ensure content validity, feedback was obtained from three experts in the fields of educational sciences and geography education. The structure of codes and themes was revised accordingly based on their suggestions. To further support the internal consistency of the study, sample participant quotations were included in the findings section.

Findings

Findings on Geography Teachers' Views Regarding the Future Importance of Geography Education

This section evaluates the findings related to the sub-question: "What are geography teachers' views on the future importance of geography education?" The collected data were subjected to content analysis. Coding was carried out independently by two researchers, and common themes were formed through consensus. The inter-coder agreement rate was calculated as 90%. Three main themes derived from the codes are presented below.

Table 3

Themes and Frequency Distribution of Sub-Codes Based on Geography Teachers' Views on the Future Importance of Geography Education

Theme	Codes (Sub Themes)	f
1. Increasing Future Importance of Geography Education	Global awareness, strategic location, environmental consciousness, technological advancements, geographic decision-making	331
2. Risk of Declining Status of Geography Education	Systemic inadequacies, lack of institutional support, weak public perception	177
3. Undecided/Non-Responsive Participants	Uncertainty, "no opinion"	0

Theme 1: The Increasing Future Importance of Geography Education (f = 331, %65,10)

The majority of participating teachers emphasized that geography education will become significantly more strategic and essential in the coming years. Their perspectives were primarily grounded in global trends such as the climate crisis, disaster management, global sustainability, and the increasing integration of digital technologies in spatial contexts. Sample participant responses include:

- "Geography fosters creative thinking and decision-making skills; therefore, it must be given the status it deserves in educational programs."
- "In a globalized world, geography will not only convey knowledge but also serve as a strategic thinking tool."
- "Türkiye's strategic location and natural resources can only be managed effectively through geographic knowledge."

These responses indicate that geography education enhances skills such as geopolitical awareness, environmental sensitivity, and critical thinking among individuals (Yli-Panula et al., 2020).

Theme 2: Risk of Declining Status of Geography Education (f = 177, %34,89)

Approximately one-third of the participants expressed concern that if the current educational practices persist, geography education may lose its significance in the future. These views were supported by justifications such as insufficient instructional time, low emphasis in national examinations, and limited societal value attached to the subject.

Sample participant responses include:

- "Those who do not know their own geography will have their maps drawn by others."
- "In our country, geography is highly undervalued; if the current system continues, its importance will diminish."
- "Geography is treated as a side dish on the educational plate."

These remarks suggest that geography literacy is not institutionally supported to a sufficient degree, and that educational policy limitations play a role in its diminished status (Girgin, 2001).

According to the analysis, a majority of respondents (65.10%) believe that geography will hold a more strategic role in the future. This optimistic perspective is supported by the perceived influence of geography on spatial decision-making, its role in addressing environmental challenges, and its contribution to societal awareness. On the other hand, 34.89% of participants expressed concerns that, if the current system remains unchanged, the societal and institutional reputation of geography education will continue to deteriorate.

These findings reflect both the hopes and concerns of teachers and offer valuable insights for developing policy recommendations aimed at strengthening the future of geography education (Commission on Geographical Education of the International Geographical Union [IGU-CGE], 2016).

Findings on Geography Teachers' Recommendations for More Effective Teaching of Geography Courses

This section presents findings derived from teachers' responses to the open-ended question: "What are your suggestions for teaching geography more effectively?" Responses from 508 geography teachers were analyzed using descriptive content analysis. The data were independently coded by two researchers, and major themes were established through comparative analysis. The inter-coder agreement rate was calculated as 91%. Based on the systematic analysis of teachers' perspectives, the findings are presented below.

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Themes, Sub-Codes, and Frequency Distribution Based on Geography Teachers' Recommendations for More Effective Teaching of Geography Courses

Theme	Codes (Sub-Recommendation Categories)	f	%
1. Advancement in Teaching Methods and Techniques	Field trips and observation (25.08%), Use of instructional materials (18.64%), Visual content (17.65%)	315	61,37
2. Improvement of Learning Environments	Dedicated geography classrooms (13.53%), Use of technology (5.61%)	97	19,14
3. Curriculum and Process Design	Increased course hours (6.93%), Flexible curriculum structure (5.49%)	64	12,42
4. Teacher and Student Support	Activities to enhance teacher qualifications and student motivation (2.80%)	14	2,80
5. Assessment and Policy Support	Increasing the number of geography questions in the exam system (3.79%)	18	3,79

Theme 1: Advancement in Teaching Methods and Techniques (f = 315, %61,37)

Under this theme, most teachers emphasized that field-based learning, rich instructional materials, and visual-supported presentations significantly enhance students' engagement and learning quality. A particularly strong emphasis was placed on the idea that students internalize spatial concepts more effectively through on-site observations.

Sample participant responses include:

- "Geography is best learned through exploration, observation, and direct interaction with nature."
- "Lessons that incorporate maps, globes, and digital models are more effective."
- "Visuals help capture students' attention and make the lesson more concrete."

These findings align with those of Altan and Ünaldı (2021), who highlight the value of "garden-based geography education," and Yli-Panula et al. (2020), who stress the importance of active learning and visual materials.

Theme 2: Improvement of Learning Environments (f = 97, %19,14)

Participants emphasized that the physical quality of the classroom environment directly influences the learning process. Specifically, they highlighted the need for dedicated geography classrooms and technologically equipped spaces.

Sample participant responses include:

- "Special classrooms should be designed for geography and supported with visual and auditory equipment."

- "Interactive maps and animations on smartboards are highly effective."

These views are consistent with the IGU-CGE (2016) declaration, which advocates well-equipped spatial learning environments.

***Theme 3: Curriculum and Process Design* (f = 64, %12,42)**

Some teachers argued that the current curriculum is narrow and limited in scope relative to the demands of the subject. They suggested that it should include more flexible and contemporary content.

Sample participant responses include:

- "Geography is not just about memorization—it's about analytical thinking, and we don't have enough time to teach that."
- "Curricula should be updated in accordance with current developments and allow teachers flexibility in implementation."

Theme 4: Teacher and Student Support (f = 14, %2,80)

Participants noted a lack of systematic support mechanisms to enhance both teacher motivation and professional development, as well as student engagement in geography education.

Sample participant responses include:

- "Teachers should receive continuous in-service training."
- "Geography clubs and competitions should be encouraged for students."

Theme 5: Assessment and Policy Support (f = 18, %3,79)

Several teachers criticized the insufficient number of geography questions in national standardized exams, stating that this undermines the perceived importance of the course.

Sample participant responses include:

- "If there are no geography questions on exams, neither students nor parents will take the subject seriously."
- "Subjects with more coverage in standardized tests like those of ÖSYM are naturally taken more seriously."

Teachers' recommendations highlight multi-dimensional areas for development, including fieldwork, enriched materials, technological integration, and curricular flexibility—all of which are seen as critical for enhancing the effectiveness of geography instruction. These findings support Girgin's (2001) assertion that geography education must be restructured not only in terms of content but also at pedagogical and systemic levels.

Findings on the Adequacy of Geography-Related Equipment and Materials in Schools

This section presents the findings related to the study's third sub-research question: "What is the perceived adequacy of geography-related equipment and materials available in schools for use in geography instruction?" The responses gathered from teachers were

analyzed in accordance with qualitative data analysis techniques. The answers to the open-ended question were processed using a descriptive analysis approach. First, open coding was performed, and then the codes were grouped under broader themes based on content similarity. In the "Theme" column, repeated expressions reflect different sub-codes linked to the same overarching theme. This is a core characteristic of qualitative data analysis (especially descriptive or content analysis), where multiple patterns (codes) can fall under a single theme. The coding process was carried out by two independent researchers, resulting in an inter-coder agreement rate of 92%.

Table 5

Themes, Sub-Codes, and Frequency Distribution Based on Geography Teachers' Views on the Adequacy of Geography Equipment and Materials in Schools

Theme	Code	(n)	(%)
Insufficiency of Materials and Equipment	Lack of maps, compasses, and globes	130	25,6
Insufficiency of Materials and Equipment	Inadequacy of projectors and smart boards	115	22,6
Relative Adequacy of Materials and Equipment	Technological infrastructure is available	105	20,7
Relative Adequacy of Materials and Equipment	General materials are not suitable for geography	97	19,1
Lack of Dedicated Geography Classrooms	Absence of a designated physical classroom	61	12,0

Theme 1: Insufficiency of Materials and Equipment (%48,16)

Approximately half of the participants reported that the equipment and materials required for effective geography instruction in schools are insufficient. These views emphasize the absence or dysfunctionality of basic instructional tools such as maps, compasses, globes, atlases, smartboards, and projectors.

A sample teacher comment is as follows:

> "Apart from one old wall map, there are no visual materials in our school. Technology exists, but it's not tailored to geography."

This finding suggests that a lack of physical resources negatively impacts both student achievement and engagement in geography lessons (Altan & Ünaldı, 2021).

Theme 2: Relative Adequacy of Materials and Equipment (%39,90)

Some teachers reported that geography-related materials and equipment in their schools are adequate, particularly in private schools and high-performing public schools. These teachers highlighted the effective use of technological infrastructure and visual resources. However, they also noted that such materials are often not well-integrated into the curriculum. As one teacher stated:

> "We have materials, but they are not specifically designed for geography teachers. They are mostly for general use."

Theme 3: Lack of Dedicated Geography Classrooms (%11,92)

A portion of participants indicated that their schools do not have dedicated classrooms for geography lessons. This deficiency not only limits the use of materials but also places geography at a disadvantage in inter-disciplinary competition for instructional resources. One teacher expressed the issue as follows:

> "Science classes have their own laboratories, but we have no dedicated classroom for geography. That limits our ability to use visual materials."

These findings suggest that a significant majority of geography teachers share the perception that the subject lacks adequate physical and technological infrastructure.

Discussion and Conclusion

Regarding the first sub-research question of this study—conducted to explore the future role and strategies for enhancing the effectiveness of geography education from the perspectives of geography teachers—it was concluded that the importance and status of geography education will increase in the future. Geography is undeniably significant in the development of individuals, the resolution of national problems, fostering environmentally conscious citizens, and cultivating generations with a strong sense of social responsibility. These findings are consistent with the study by Yli-Panula, Jeronen, and Lemmetty (2020), which similarly emphasized the growing relevance of geography education in promoting sustainability and environmental awareness.

In the current context of Türkiye—where the impacts of disasters are increasingly felt and geographical phenomena such as landslides, floods, and erosion play a growing role in human life—the importance of geography education is correspondingly heightened. Therefore, geography curricula must be designed in ways that are applicable to everyday life, and instructional programs should be structured accordingly. Unlike earlier studies (e.g., Girgin, 2001; Özey et al., 2013), this research offers a qualitative, field-based contribution by providing data on future roles and perceptions of geography education based directly on teacher insights, thereby bringing a new perspective to the literature.

Regarding the second sub-question—"How can geography lessons be taught more effectively?"—teachers recommended increasing field trips and observational activities, enhancing the use of materials and visual aids, establishing dedicated geography classrooms, extending instructional hours, and providing more flexible curriculum structures. These recommendations align with the findings of Çetinkaya (2014) and İnce (2014), both of which emphasized the importance of out-of-classroom activities and the issue of limited materials. Similarly, Kurtkaya (2010) reported that 75% of schools lack specialized geography classrooms and that instructional materials are insufficient.

Köşker (2012) suggested that geography teachers should engage more in extracurricular activities, as place-based education enhances students' understanding of the relationship between humans and their environment, enables them to analyze local natural and cultural resources, and fosters deeper awareness of the problems in their surroundings. Additionally, Kaya, Ünaldı, and Artvinli (2013) emphasized that in-service training for teachers should not only be reactive but also serve proactive purposes, such as adapting to a changing world and improving professional motivation and institutional effectiveness. In this

context, the true purpose of such training is not merely teacher development but the development of the institution itself. Accordingly, in-service training programs for geography teachers should be expanded in both quality and frequency and offered on a regular basis.

Furthermore, this study distinguishes itself by presenting these themes with quantitative backing, based on the frequency distribution of teacher responses. This approach differentiates it from many previous studies. However, it is worth noting that some teacher responses included less emphasis on digital integration than the strong digital transformation orientation found in Yli-Panula et al. (2020). This may suggest that digitally oriented geography education has not yet become widespread in Türkiye (İnce, Şahin, & Yentür, 2021).

Concerning the third sub-question on the adequacy of instructional tools and materials, teachers reported a general lack of resources and the absence of dedicated geography classrooms. Given that geography relies heavily on visual and auditory materials, the current lack of such resources impairs the creation of an ideal teaching and learning environment. Sarıbaş and Meydan (2019) noted that geography teachers often lack the technological competence and materials required for effective instruction and highlighted the need to expand place-based teaching approaches.

The absence of smartboard-compatible textbooks, digital maps, educational videos, projection equipment, and physical models negatively affects learning (Kaya, Ünaldı, & Artvinli, 2013). These findings are consistent with key problems identified in prior studies, including Boztepe (2010) and Kaya, Artvinli, & Bulut (2008). However, the unique contribution of this study lies in its systematic thematic analysis of open-ended teacher responses related to material adequacy and in its effort to structure context-driven recommendations accordingly.

Based on these findings, it is evident that geography education in Türkiye must be restructured through a digital transformation lens. Teachers should be encouraged to develop innovative instructional strategies through active participation, and geography education should be approached not only through the availability of physical tools but also with an emphasis on pedagogical quality.

Recommendations

Recommendations for Geography Teachers

Given the limited use of instructional materials and the lack of adequate teaching equipment in geography education—as well as the underutilization of diverse teaching methods—it is recommended that geography teachers continuously update themselves in material development and implementation, as well as in alternative instructional approaches.

Recommendations for School Administrators

It is recommended that dedicated geography classrooms be established, that these classrooms be technologically equipped, and that appropriate geography-related materials be provided. Particular emphasis should be placed on supplying smartboard-compatible content, digital maps, and virtual fieldwork tools to support innovative teaching practices.

Recommendations for Teacher Educators

It is advised that teacher education programs for geography pre-service teachers place greater emphasis on field-based teaching strategies, digital geography tools (e.g., GIS, VR),

and the development of critical thinking skills by integrating these components more deeply into course content.

Recommendations for Policy Makers

It is recommended that the number of geography-related questions in national standardized examinations be increased to enhance the subject's visibility in academic success metrics. Additionally, teacher guides that provide practical examples of how curriculum content can be implemented in classrooms should be developed for all grade levels and distributed to teachers.

Recommendations for Researchers

- Future studies could use qualitative designs, particularly phenomenological and ethnographic methods, to explore teacher experiences in greater depth.
- Geography education practices in Türkiye could be analyzed through comparative studies with those in Europe, Asia, or OECD countries, focusing on curricula, material usage, and teacher education to identify similarities and differences.
- The effectiveness of digital geography education, including GeoAI, virtual field trips, and similar innovations, should be examined through experimental and mixed-method research to determine their impact on learning outcomes.

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