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History Teachers' Perceptions on the Effectiveness of Google Earth in Teaching Historical Sites in Secondary Schools in Dodoma City, Tanzania

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Abstract: *Teaching historical sites in secondary schools is challenging due to geographic distance and financial constraints, making physical field visits difficult. Google Earth offers a geospatial platform that enables teachers to virtually explore historical sites, landscapes, routes, and physical features. Guided by the Technology Acceptance Model (TAM), this study investigated History teachers' perceptions of Google Earth's effectiveness for teaching historical sites in Dodoma City, Tanzania. While the broader research utilized a mixed-methods design, this paper reports on the qualitative strand. Twelve History teachers across three secondary schools were purposively selected for semi-structured interviews. Data were analyzed thematically. Findings revealed that although all participants used a mix of conventional and digital resources, only four of the twelve teachers had integrated or experimented with Google Earth in their lessons. Ten teachers perceived Google Earth as a valuable cognitive bridge between abstract textbook narratives and real historical landscapes, enhancing students' understanding of terrain, distance, scale, and spatial context. However, eleven teachers cited unreliable internet connectivity and data costs as significant barriers. Systematic integration was further constrained by limited technological-pedagogical content knowledge and curriculum time pressures. All twelve teachers emphasized the need for practical professional development tailored to History content. The paper concludes that while Google Earth holds considerable potential as a supplementary tool for teaching historical sites, its effective implementation depends on enhanced teacher competence, reliable infrastructure, and purposeful alignment with curriculum goals.*

Keywords: *Google Earth; History teachers; historical sites; geospatial technology; History education; teacher perceptions; Technology Acceptance Model*

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1. Introduction

Contemporary History education increasingly emphasises historical reasoning rather than the simple recall of names, dates, and events. Historical understanding requires learners to examine relationships among people, places, time, evidence, causation, continuity and change, and the spatial settings in which events unfold (Seixas & Morton, 2013; VanSledright, 2011). Because migration, warfare, trade, settlement, political expansion, resistance, and cultural interaction occur within geographical space, the teaching of History benefits from approaches that connect historical narratives to location, landscape, distance, and movement (Xiang, 2017; Diễn, 2026).

Historical sites are particularly valuable because they link documentary or narrative accounts of the past with identifiable physical places. However, routine field visits to important sites are often constrained by distance, transport costs, school budgets, safety considerations, and limited instructional time. In such circumstances, digital

geospatial technologies can supplement conventional resources by enabling virtual access to places that learners may otherwise encounter only through textbooks, photographs, or static maps (Demirci et al., 2013; Ratinen & Keinonen, 2011).

Google Earth is among the most widely accessible virtual-globe applications for educational use. It enables users to search for locations, move between geographical scales, view satellite imagery and terrain, and examine spatial relationships interactively. Its educational significance lies not merely in presenting visually attractive images but in allowing teachers and learners to situate subject content within real-world space and to interrogate relationships among location, terrain, distance, and human activity (Demirci et al., 2013; Xiang, 2017). Recent History-focused research further suggests that Google Earth can support historical thinking when it is used as part of structured inquiry rather than as a stand-alone visual display (Dewi & Hariadi, 2024; Diễn, 2026).

The relevance of such technologies is reinforced by Tanzania's current curriculum and digital-education direction. The History Syllabus for Ordinary Secondary Education encourages learner-centred approaches, varied instructional resources, information searching, and the integration of information and communication technology in teaching and learning (Ministry of Education, Science and Technology [MoEST], 2023). Likewise, the National Digital Education Strategy and subsequent implementation guidelines emphasise the integration of safe, inclusive, reliable, and pedagogically meaningful digital technologies across schools and teacher education (MoEST, 2024, 2025).

Nevertheless, the presence of technology does not guarantee meaningful pedagogical use. Teachers decide whether a digital tool is relevant to curriculum goals, manageable within available lesson time, technically feasible, and compatible with their pedagogical practices. Research on technology integration consistently shows that teachers' beliefs, perceived usefulness, confidence, knowledge, and contextual conditions mediate whether available technologies become embedded in classroom practice (Davis, 1989; Mishra & Koehler, 2006). Understanding History teachers' perceptions is therefore essential for determining whether Google Earth is likely to move from occasional demonstration to sustained pedagogical use.

1.1 Statement of the Problem

Effective teaching of historical sites requires learners to understand not only what happened in the past but also where events occurred and how physical space influenced historical action. Conventional resources such as textbooks, printed maps, and teacher explanations remain important, but they may provide limited representations of terrain, distance, scale, and the relationships among historical locations. Google Earth potentially addresses part of this limitation by providing interactive, spatially referenced representations of places and landscapes (Demirci et al., 2013; Xiang, 2017).

Despite this potential, the empirical literature on Google Earth has historically been concentrated in Geography and geospatial education rather than school History. Studies in Geography have reported benefits for spatial thinking, engagement, and conceptual understanding (Ratinen & Keinonen, 2011; Demirci et al., 2013; Xiang, 2017), while emerging studies in History indicate possible gains in motivation, contextual understanding, and historical thinking (Dewi & Hariadi, 2024; Diễn, 2026). However, there remains limited evidence on how Tanzanian History teachers themselves perceive the usefulness, feasibility, and curricular relevance of Google Earth.

Moreover, teachers are the principal mediators between technological affordances and classroom practice. A potentially useful application may remain underutilised where teachers face unreliable connectivity, limited devices, high data costs, insufficient technological-pedagogical knowledge, or pressure to complete examination-oriented curricula. Conversely, even modest technological resources can support meaningful learning when teachers are able to integrate content, pedagogy, and technology coherently (Mishra & Koehler, 2006). The paper therefore examined History teachers' perceptions of the effectiveness of Google Earth for teaching historical sites in selected secondary schools in Dodoma City.

1.2 Purpose of the Study

The purpose of the paper was to examine History teachers' perceptions regarding the effectiveness of Google Earth for teaching historical sites in selected secondary schools in Dodoma City, Tanzania.

1.3 Significance of the Study

The paper contributes to the growing literature on subject-specific digital pedagogy by examining geospatial technology from the perspective of History teachers in an African secondary-school context. Its findings are relevant to teachers seeking to supplement textbooks and static maps with spatially rich representations, to school leaders responsible for digital infrastructure and professional development, and to curriculum developers interested in operationalising ICT integration within History instruction (MoEST, 2023, 2025). The paper also contributes context-specific evidence to debates about the conditions under which perceived technological usefulness is translated into actual classroom adoption.

2. Literature Review

This section is divided into two sub-sections: empirical and theoretical literature review.

2.1 Empirical literature review

2.1.1 Google Earth as an Educational Technology

Google Earth is a digital virtual-globe environment that allows users to explore the Earth's surface through georeferenced imagery, terrain, and interactive navigation. In educational settings, the platform can support movement between global and local scales, visual comparison of locations, and examination of spatial relationships that are difficult to communicate through static representations alone (Demirci et al., 2013; Xiang, 2017). These affordances have made Google Earth particularly prominent in Geography and geospatial learning, although its relevance extends to subjects in which place and movement are analytically important.

For History education, the value of Google Earth lies in its capacity to spatialise narratives. Teachers can locate historical settlements, routes, battlefields, archaeological sites, and heritage landscapes; compare a conventional map with present-day terrain; and draw attention to geographical features that may have shaped human decisions. Such use can help connect chronological and causal explanations with the physical contexts in which events occurred (Diễn, 2026).

2.1.2 Google Earth and Historical-Site Instruction

Historical-site instruction is strengthened when learners can relate historical accounts to the physical spaces in which those accounts are situated. Physical fieldwork remains pedagogically valuable because it provides direct encounters with material heritage, local interpretation, and embodied experience. However, virtual geospatial tools can serve as supplementary resources when physical access is limited, and can also be used before or after field visits to support orientation, comparison, and consolidation (Demirci et al., 2013; Ratinen & Keinonen, 2011).

In the Tanzanian context, this supplementary role is particularly relevant for sites that are geographically dispersed. A History teacher may, for example, use Google Earth to illustrate the spatial relationship between Tabora and Bagamoyo when discussing nineteenth-century caravan routes, or to locate Kilwa Kisiwani, Olduvai Gorge, and Kondoa Rock-Art Sites within their broader geographical environments. Such use is consistent with a curriculum orientation that encourages varied resources, learner participation, and ICT-supported learning (MoEST, 2023).

2.1.3 Spatial Thinking

Spatial thinking involves reasoning about location, scale, distance, direction, pattern, distribution, and relationships among phenomena. Google Earth has been shown to support forms of spatial reasoning because learners can manipulate scale, compare locations, and observe spatial and temporal change in ways that static maps cannot easily provide (Xiang, 2017). Ratinen and Keinonen (2011) likewise found that Google Earth supported geographical thinking despite participants' difficulties with ICT skills and data interpretation.

Although spatial thinking is most frequently discussed in Geography education, it also has disciplinary relevance to History. Historical explanations often require learners to consider why events occurred in particular places, how terrain constrained or enabled action, how routes structured exchange, and how distance affected migration, conflict, administration, or trade. Recent quasi-experimental research in History education indicates that structured Google Earth activities can contribute to dimensions of historical thinking, including significance, evidence, cause and consequence, and ethical reasoning (Diễn, 2026).

2.1.4 Engagement, Visualisation, and Historical Learning

Interactive visual technologies may increase interest and attention because they allow learners to explore rather than simply receive representations. In secondary Geography, Demirci et al. (2013) reported substantial improvement in achievement following a structured Google Earth exercise, while learners also described the activity as useful and engaging. In History education, Dewi and Hariadi (2024) similarly reported that Google Earth-supported instruction was associated with greater motivation, engagement, and learning achievement.

Nevertheless, engagement should not be treated as equivalent to learning. Digital novelty may attract attention without producing disciplinary understanding unless teachers connect visual exploration to historical questions, evidence, and interpretation. Accordingly, Google Earth is most educationally valuable when it supports inquiry into historically meaningful problems rather than functioning as digital sightseeing (Mishra & Koehler, 2006; Diễn, 2026).

2.2 Theoretical Literature Review

2.2.1 Technology Acceptance Model

The study was guided by Davis's (1989) Technology Acceptance Model (TAM). TAM proposes that technology acceptance is strongly influenced by perceived usefulness and perceived ease of use. Perceived usefulness refers to the extent to which a user believes that a technology will improve performance, whereas perceived ease of use concerns the degree to which using the technology is expected to be relatively free of effort (Davis, 1989).

In this study, perceived usefulness referred to teachers' beliefs that Google Earth could improve the teaching of historical sites by enhancing visualisation, spatial understanding, contextualisation, and learner engagement. Perceived ease of use encompassed teachers' ability to navigate the platform, locate historical sites, prepare suitable activities, access connectivity and devices, and integrate the application within available lesson time. TAM is particularly appropriate because it permits analysis of the gap between favourable perceptions and low actual use: teachers may judge a technology to be useful while contextual barriers reduce its practical usability and adoption (Davis et al., 1989).

TAM was complemented in the discussion by the Technological Pedagogical Content Knowledge (TPACK) perspective. TPACK emphasises that effective educational technology use requires an integrated understanding of subject matter, pedagogy, and technology rather than technical skill alone (Mishra & Koehler, 2006). This perspective is useful for interpreting teachers' calls for professional development that connects Google Earth directly to History topics, historical inquiry, and curriculum objectives.

Existing research supports the educational potential of Google Earth for spatial thinking, visualisation, engagement, and inquiry (Ratinen & Keinonen, 2011; Demirci et al., 2013; Xiang, 2017). However, much of the literature originates from Geography education and from contexts outside Tanzania. Although emerging History-focused studies show promising results (Dewi & Hariadi, 2024; Diễn, 2026), little empirical work has examined how Tanzanian History teachers perceive the pedagogical value and practical feasibility of Google Earth. This paper addresses that contextual and disciplinary gap by focusing on the experiences of twelve History teachers in Dodoma City.

3. Methodology

3.1 Research Approach and Design

The wider investigation employed mixed methods; however, the present paper reports only the qualitative strand concerned with History teachers' perceptions. A qualitative descriptive design was adopted because the purpose was to obtain a clear, experience-near account of how teachers understood, used, and evaluated Google Earth within their professional context. Qualitative description is appropriate when researchers seek a comprehensive summary of participants' experiences in terms that remain close to the data rather than producing a highly abstract theoretical interpretation (Sandelowski, 2000). The design was also appropriate because the study did not experimentally manipulate instruction or attempt to measure causal effects on student achievement. Instead, it explored teachers' perceived usefulness, perceived ease of use, classroom experiences, implementation barriers, and support needs. This distinction is important because the findings should be interpreted as teachers' perceptions and professional observations rather than direct evidence of student learning outcomes.

3.2 Study Area

The study was conducted in three secondary schools in Dodoma City, Tanzania. The schools were selected because they had at least some access to digital infrastructure, including computers, which made it possible to investigate perceptions of a technology that was potentially usable in practice. Dodoma also provides a relevant setting for examining the tension between national aspirations for digital integration and the infrastructural conditions that shape implementation at school level (MoEST, 2024, 2025).

3.3 Participants, Sampling, and Sample Size

The participants for the objective reported in this paper were twelve History teachers drawn from three secondary schools. Purposive sampling was used because the study required information-rich participants with direct experience of teaching History and familiarity with instructional resources used to present historical sites. Purposive sampling is appropriate in qualitative inquiry when participants are selected deliberately because of their relevance to the phenomenon under investigation (Palinkas et al., 2015). Four teachers were selected from each school, producing a total of twelve participants. The sample was not intended to provide statistical representation of all History teachers in Dodoma City; rather, it was designed to generate detailed, contextually grounded accounts across three school settings. Furthermore, references to student engagement or understanding in the findings are teachers' reported perceptions rather than independently collected student data.

3.4 Data Collection

Data were collected through semi-structured interviews with the twelve History teachers. Semi-structured interviewing was appropriate because it provided a common set of topics while allowing participants to elaborate on experiences, examples, and constraints that were not fully predictable in advance. The interview guide addressed teachers' existing instructional resources, awareness and use of Google Earth, perceptions of usefulness and ease of use, perceived effects on visualisation and learner engagement, instructional strategies, technical and curricular barriers, and professional-development needs.

3.5 Data Analysis

Interview data were analysed thematically. The analysis followed a systematic sequence of familiarisation with the transcripts, initial coding, grouping related codes, generating candidate themes, reviewing and refining themes, and producing an interpretive account. These procedures are consistent with established approaches to thematic analysis, which seek to identify and organise patterned meaning across a qualitative dataset (Braun & Clarke, 2022; Byrne, 2022). Descriptive frequencies were used only to indicate how commonly selected perceptions appeared among the twelve participants. These counts were not treated as inferential statistics and were not used to claim population-level prevalence. The qualitative interpretation remained primary, with participant quotations used to demonstrate how the identified themes were grounded in the interview data.

3.6 Trustworthiness

Trustworthiness was considered in relation to credibility, transferability, dependability, and confirmability, which are widely used criteria for evaluating qualitative research (Lincoln & Guba, 1986; Korstjens & Moser, 2018). Credibility was supported by comparing accounts across teachers and schools and by grounding interpretations in direct quotations. Dependability was promoted through consistent use of the interview guide and a documented analytic process. Confirmability was strengthened by retaining a clear link between codes, themes, and participant statements, while transferability was supported through description of the study setting, participants, and implementation context.

3.7 Ethical Considerations

Permission to conduct the study was obtained from the relevant institutional and educational authorities. Participation was voluntary, and teachers were informed about the purpose of the study and their right to decline questions or withdraw. Confidentiality and anonymity were protected by reporting participants through teacher and school codes rather than personal names. Interview records were stored securely and used for academic purposes only.

4. Results and Discussion

The interviews revealed a consistent tension between high perceived pedagogical value and low actual classroom adoption. Teachers generally recognised the capacity of Google Earth to make historical sites and routes more spatially intelligible, yet practical use remained limited and experimental. Four themes were generated: (1) awareness exceeded actual adoption; (2) Google Earth was perceived as a cognitive bridge between abstract historical narratives and real places; (3) teachers perceived enhanced spatial understanding and learner engagement; and (4) a persistent technical-pedagogical gap constrained systematic use.

4.1 Awareness Exceeded Actual Adoption

The findings revealed that, all twelve teachers reported using some combination of conventional and digital resources, including printed maps, smartphones, and projectors, but only four had experimented with or integrated Google Earth into lessons. This pattern indicates that familiarity with digital resources does not necessarily translate into pedagogical integration. The distinction is consistent with TAM, which separates beliefs about a technology from actual usage and recognises that perceived usefulness may be insufficient where the effort or contextual cost of use is high (Davis, 1989; Davis et al., 1989).

> *"I don't just tell them about the ruins of Kilwa anymore. I try to use my phone to show them the bird's-eye view. It helps them see the scale of the ancient city."* (Teacher 2, School 1, February 2026)

The quotation illustrates an emerging shift from exclusively verbal explanation towards visual-spatial representation. At the same time, the teacher's reliance on a personal phone suggests that implementation depended partly on individual initiative rather than on institutionalised access to suitable classroom technology.

> *"My strategy is 'Comparative Analysis.' I show them a 2D map in the book, then we look at the actual terrain on Google Earth to see why a battle happened on that specific hill."* (Teacher 11, School 3, February 2026)

This example demonstrates a more analytically productive use of Google Earth because the application is not merely substituting for a printed map. Instead, the teacher compares representations and uses terrain as evidence within a historical explanation. Such practice aligns with the argument that educational technology is most effective when its affordances are integrated with disciplinary content and pedagogy rather than used as an isolated digital add-on (Mishra & Koehler, 2006).

4.2 Google Earth as a Cognitive Bridge Between Abstract History and Real Places

Ten of the twelve teachers identified spatial visualisation as a major advantage of Google Earth. Participants repeatedly referred to terrain, geographical scale, distance, and the physical reality of historical locations. This perception corresponds with research showing that Google Earth can support reasoning about spatial and temporal

relationships by enabling users to move dynamically between scales and locations (Xiang, 2017).

> *"Traditional maps are flat; History is not flat. Google Earth shows the mountains and the distances. Students finally understand why the Maji Maji warriors had to walk for days."* (Teacher 3, School 1, February 2026)

The teacher's statement conveys a perceived shift from a flat cartographic representation towards a more spatially situated understanding of historical action. Importantly, the value is not the three-dimensional display in itself, but the opportunity to use terrain and distance to explain the constraints under which historical actors operated.

> *"It helps with scale. Students often think the distance between Tabora and Bagamoyo is small. GE shows them the vastness of the slave trade routes."* (Teacher 12, School 3, February 2026)

This account shows how teachers perceived Google Earth as useful for developing a more realistic appreciation of scale. Such spatial contextualisation is compatible with historical inquiry because routes, distance, and movement influence how learners interpret trade, mobility, coercion, administration, and communication. Recent research similarly suggests that Google Earth can support historical thinking when spatial evidence is deliberately connected to historical questions and concepts (Diễn, 2026).

4.3 Perceived Effects on Learner Interest and Engagement

Teachers also perceived Google Earth as capable of increasing learners' attention and interest in History. These claims should be interpreted carefully because students were not participants in this objective; the evidence therefore reflects teachers' observations rather than independently measured student outcomes.

> *"The engagement is 100%. When they see the 3D buildings of a historical site, they stop sleeping in class. They realize History happened in real places, not just in books."* (Teacher 8, School 2, February 2026)

The phrase "engagement is 100%" is best understood as an emphatic qualitative expression rather than a measured percentage. Nevertheless, it indicates that the teacher perceived three-dimensional visualisation as making historical content more immediate and authentic. This interpretation is broadly consistent with prior studies reporting positive relationships between structured Google Earth use and learner engagement or motivation (Demirci et al., 2013; Dewi & Hariadi, 2024).

At the same time, visual engagement should not be conflated with disciplinary learning. Without carefully designed historical questions, source work, and explanation, virtual exploration may remain visually appealing but intellectually superficial. Accordingly, teachers need to move beyond showing places towards asking learners to interpret why particular settlements, routes, or conflicts developed where they did (Mishra & Koehler, 2006; Diễn, 2026).

4.4 Sense of Place and the Potential for Historical Empathy

Teachers' descriptions of terrain, distance, and travel hardships suggest that Google Earth may support a stronger sense of place and a more contextual appreciation of historical actors' circumstances. However, the present study did not directly measure historical empathy; it is therefore more accurate to conclude that teachers perceived the application as providing spatial information that could support such understanding. Historical empathy requires more than visualising landscapes. It depends on contextualised reasoning about the beliefs, choices, constraints, and experiences of people in the past. Google Earth can contribute to this process when spatial evidence is combined with historical sources and inquiry questions, but the technology cannot generate empathy automatically. This reinforces the need for disciplinary mediation by the teacher rather than technologically deterministic assumptions about learning (Seixas & Morton, 2013; Mishra & Koehler, 2006).

4.5 Internet Connectivity as the Dominant Implementation Barrier

Eleven of the twelve teachers identified internet connectivity and limited offline accessibility as major barriers. This finding demonstrates that perceived ease of use is partly infrastructural rather than merely individual. In school contexts, the usability of digital applications depends on reliable connectivity, affordable data, functioning devices, and sufficient technical support. Tanzania's current digital-education policy framework similarly recognises reliable and affordable infrastructure as a prerequisite for meaningful digital integration (MoEST, 2024, 2025).

> *"The internet is my enemy. Sometimes it loads halfway, and the students start laughing. It ruins the flow of the inquiry."* (Teacher 1, School 1, February 2026)

The quotation shows how technical instability can interrupt the instructional sequence, consume lesson time, and

undermine teacher confidence. Consequently, limited adoption should not be interpreted simply as resistance to innovation. Teachers may value Google Earth but rationally avoid it when the probability of technical failure threatens lesson continuity.

4.6 Need for Technological-Pedagogical Content Knowledge

All twelve teachers expressed a need for practical professional development. Their accounts indicate that general digital literacy was insufficient for effective classroom integration. Teachers wanted support in locating historically relevant places, linking Google Earth functions to syllabus content, and designing purposeful learning activities.

> *"We need training on how to find specific historical layers. I can find Dodoma, but I struggle to find the exact coordinates of the ancient ruins mentioned in the syllabus."* (Teacher 6, School 2, February 2026)

This statement illustrates the distinction between basic technological operation and technological-pedagogical competence. Effective use requires teachers to know not only how to navigate the application but also how to select historically relevant sites, formulate inquiry questions, relate spatial representations to historical evidence, and assess learning. This finding closely reflects the TPACK framework, which conceptualises meaningful technology integration as an interaction among technological, pedagogical, and content knowledge (Mishra & Koehler, 2006).

Professional development should therefore move from software orientation towards curriculum-based lesson design. Rather than training teachers simply to operate Google Earth, programmes should demonstrate how specific locations, routes, terrain features, and visualisations can be connected to History topics and learning outcomes. This approach would also align more directly with Tanzania's curriculum expectation that ICT be used purposefully within teaching and learning (MoEST, 2023).

4.7 Curriculum Time Pressures and Implementation Cost

> *"The curriculum doesn't give us time for 'tours.' I am expected to finish the topic of 'Colonial Administrative Systems' in 40 minutes. GE takes 15 minutes just to load."* (Teacher 9, School 3, February 2026)

The quotation reveals an interaction between technological and curricular constraints. When substantial lesson time is lost to loading or setup, teachers face a practical trade-off between exploratory digital activities and completing required syllabus content through more predictable methods. This can be understood as an implementation cost: the time, preparation, connectivity, and classroom management required to obtain the potential benefits of the technology. The finding also shows why favourable attitudes alone do not guarantee adoption. Within TAM, perceived usefulness may remain high while perceived ease of use is reduced by contextual barriers (Davis, 1989). From a TPACK perspective, the challenge is also pedagogical: teachers need efficient, curriculum-aligned designs that make the technology serve a defined historical purpose rather than function as an additional activity competing for scarce lesson time (Mishra & Koehler, 2006).

5. Conclusion and Recommendations

5.1 Conclusion

The study examined History teachers' perceptions of the effectiveness of Google Earth for teaching historical sites in three secondary schools in Dodoma City. The findings reveal a clear contrast between perceived pedagogical usefulness and actual classroom adoption. Although ten of the twelve teachers valued Google Earth for spatial visualisation, only four reported experimental or actual classroom use. Eleven identified connectivity and access problems as major barriers, while all twelve expressed a need for practical professional development.

Teachers perceived Google Earth as a cognitive bridge between abstract textbook narratives and real landscapes, especially because it can display terrain, distance, scale, and the location of historical events. However, the findings also show that technological affordances do not translate automatically into pedagogical effectiveness. Unreliable connectivity, data costs, insufficient technological-pedagogical knowledge, and curriculum time pressures constrained regular use.

From the perspective of TAM, the study demonstrates that perceived usefulness can remain high even when perceived ease of use and actual adoption are weakened by contextual conditions (Davis, 1989). From a TPACK perspective, the findings further indicate that successful integration requires more than operational competence: teachers need to connect technology with historical content and appropriate pedagogy (Mishra & Koehler, 2006). Google Earth should therefore be regarded as a potentially valuable supplementary resource whose effectiveness depends on infrastructure, teacher competence, and purposeful curriculum alignment.

5.2 Recommendations

Based on the findings of this study, the following recommendations were made:

5.2.1 History teachers should receive subject-specific professional development that links Google Earth directly to historical sites, routes, terrain, inquiry questions, and curriculum objectives rather than focusing only on generic ICT skills.

Schools and education authorities should strengthen reliable internet connectivity, access to projectors or suitable devices, and technical support so that digital activities do not depend primarily on teachers' personal devices or data.

5.2.2 Future research should combine teacher perceptions with classroom observation and student learning measures to determine whether Google Earth produces measurable gains in historical thinking, retention, engagement, or spatial-historical understanding.

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