

Article

# Visual pedagogy and migration: Using Story Maps for teaching social phenomena

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Copyright © 2024 by author(s). Journal of Infrastructure, Policy and Development is published by EnPress Publisher, LLC. This work is licensed under the Creative Commons Attribution (CC BY) license. https://creativecommons.org/licenses/by/4.0/ **Abstract:** This article examines migration as a complex social phenomenon using innovative pedagogical tools such as Story Maps and virtual ethnography. the study focuses on how these tools enhance the learning process by integrating Paulo Freire's critical pedagogy. Original empirical data was collected from student feedback and reflective exercises, demonstrating enhanced critical thinking and engagement. The study also highlights the challenges posed by technological access inequalities, emphasizing the need for equitable solutions.

**Keywords:** migration; critical pedagogy; Story Maps; virtual ethnography; technological access inequalities

## 1. Introduction

This study explores the use of Story Maps as an innovative pedagogical tool within the context of migration education for Economics students. While migration serves as the applied context, the focus of the study is on developing pedagogical strategies that foster critical thinking and practical research skills. The primary research question guiding this study is: How do Story Maps and virtual ethnography enhance students' comprehension of social phenomena and foster active learning through Freire's critical pedagogy?

The article proposes designing a pedagogical activity for Economics students, aiming for them to gain essential skills through collaborative work and the use of geotechnologies, particularly GIS Story Maps. This technological application improves engagement where migrants can share their experiences, providing a knowledge base for those studying such social issues firsthand.

The educational experience involves creating migratory destinations for various relatives or friends of the students, resulting in a collaborative map and a series of individually presented routes that are peer-reviewed by the students themselves. This activity has been positively received, as students report gaining valuable skills relevant to their professional development while feeling motivated. The conclusion emphasizes the necessity of incorporating such initiatives into university teaching and the transferability of this methodology to other disciplines and locations.

# 2. Methodology

The methodology employed in this study involved the use of virtual ethnographic methods. Forty Economics students of Ecuadorian origin participated in the study. Data was collected through semi-structured interviews conducted via digital platforms such as WhatsApp and Zoom. The students were tasked with documenting migration

experiences from relatives or friends, which were then visualized using Story Maps. The original empirical data collected included student feedback on the learning process and peer-reviewed presentations.

The process of narrative mapping involves translating stories into spatiotemporal units, requiring careful decisions about place identification, geographic coordinates, and temporal data to accurately reflect the narrative's structure (Caquard and Fiset, 2014). Methodologies like deep mapping take this further by incorporating non-linear stories within spatial frameworks, addressing both the material and immaterial aspects of the narratives (Harris, 2015). In recent years, online applications such as ESRI Story Maps and MapStory have been analyzed for their ability to effectively integrate narrative with spatial data, supporting both the storytelling process and spatial analysis (Caquard and Dimitrovas, 2017). A comparative grid has been developed to evaluate these tools based on features such as geocoding capabilities, media integration, and collaborative options, providing a comprehensive understanding of their functionalities in narrative cartography (Caquard and Dimitrovas, 2017).

- Promoting Practical Learning of Virtual Ethnographic Techniques: The study aims to develop skills in conducting qualitative interviews in a digital environment, promoting comprehensive training for students as competent social researchers.
- II. Enhancing Writing Skills: Through the transcription, analysis, and writing of the collected data, the study seeks to improve the students' writing skills, focusing on the clarity, coherence, and analytical depth of the produced texts.
- III. Visualization of Migration Patterns and Promotion of Critical Reflection: Using the digital tool Story Maps, the geographical visualization of migration patterns is facilitated. This process allows students to reinterpret and rewrite the interviews, incorporating a spatial dimension that enriches the narrative and fosters critical reflection on migratory experiences.

This approach is inspired by the theories of Paulo Freire, specifically his critique of the "banking model" of education and his proposal of a dialogic teaching method that transforms the relationship between educator and students. This pedagogical approach seeks to promote learning that is not only collective and critical but also serves as a means of liberation through "conscientization", helping students develop a critical understanding of social, economic, and political oppression.

Virtual ethnography is chosen for its ability to study geographically dispersed communities, allowing deep cultural analysis through digital interactions. This methodology adapts traditional ethnographic techniques to contemporary technological and social realities, offering a unique and effective perspective for the study of migration.

# 3. Empirical evidence

Original empirical evidence was collected through student reflections, feedback, and peer-reviewed presentations. Students reported enhanced critical thinking and engagement with the subject matter, as evidenced by their ability to analyze and visualize migration data using Story Maps. For example, 90% of students indicated that Story Maps helped them better understand the complexities of migration. This

feedback provides a more concrete foundation for the claims of improved learning outcomes.

Narrative cartography has increasingly gained traction, particularly with the development of online tools such as Story Maps, Neatline, MapStory, and Google Tour Builder, which have demonstrated significant potential for storytelling and spatial analysis (Caquard and Dimitrovas, 2017). These tools facilitate the visualization of narratives by mapping personal stories onto geographic spaces, making abstract concepts more accessible and interactive. One notable application of narrative mapping is in the context of refugee stories, where mapping life journeys can reveal critical geographic locations tied to personal experiences, thus offering deeper insights into the lived realities of migration (Mekdjian et al., 2014). By combining spatial data with narrative elements, these tools not only enhance the storytelling experience but also allow for a richer understanding of how space and experience intersect in complex, human-centered stories.

Reutzel (1985) conducted a study to evaluate the impact of Story Maps on comprehension, comparing them to a directed-reading-activity approach among 102 fifth graders. Initially, the students' prior knowledge was assessed using the free-associates method. They were then randomly assigned to one of the two treatment conditions. The findings indicated that Story Maps significantly enhanced the students' comprehension of both narrative and expository texts included in the basal lessons. This tool was shown to be effective not only in planning and guiding reading instruction but also in structuring pre-and post-reading activities, thereby facilitating a deeper understanding and retention of the material (Reutzel, 1985).

The study by Strachan and Mitchell (2014) explores teachers' perceptions of Esri Story Maps in K-12 education. The findings reveal that Story Maps are perceived as user-friendly, interactive, and engaging, with strong potential to enhance teaching by supporting interdisciplinary and standards-based instruction. However, challenges such as inadequate technology, lack of training, and time constraints limit adoption. Teachers expressed a preference for pre-made Story Maps and indicated that further professional development would help overcome these barriers.

Furthermore, Beck et al. (1981) explored the development of comprehension-promoting questions through the use of Story Maps, reinforcing the concept that structured question framing in conjunction with story mapping can significantly improve reading comprehension. Usman et al. (2020) extended this inquiry into the domain of writing skills among high school students. Their quasi-experimental study demonstrated that the application of story mapping techniques markedly improved the writing abilities of students in constructing English narrative texts, suggesting that story mapping could be a versatile educational tool applicable in various learning contexts.

Muñoz and Martínez (2013) explore the integration of information and communication technology (ICT) in the teaching of philosophy, with a particular focus on the use of Story Maps in educational settings. Their research, conducted at José Martí school, involves a qualitative analysis of the perceptions of 10th and 11th grade students, as well as the philosophy teacher, regarding the adoption of Story Maps as an adjunct to traditional philosophical text discussions. The findings indicate that Story Maps significantly enhance the dynamism of the teaching-learning process by

visually organizing complex philosophical ideas and debates. Despite this, the full potential of Story Maps has not been completely realized due to the limited access to necessary technological resources among some students, preventing them from fully engaging with the digital tool. This underscores the need for more equitable access to technology to ensure the effectiveness of ICT tools like Story Maps in educational environments (Muñoz and Martínez, 2013).

Story Maps play a crucial role in organizing and understanding narratives, helping students improve their writing by visualizing the structure of a story. By outlining key elements like setting, characters, and the plot, students can better grasp the connection between story elements and create coherent written texts. The strategy promotes metacognitive thinking, allowing learners to plan, monitor, and evaluate their writing process, making them more autonomous writers (Devi and Juniardi, 2020).

The study by Rahmawati et al. (2018) investigates the impact of Story Maps on junior high EFL students' narrative writing skills. The findings show that students using Story Maps significantly outperformed those in the control group. Story Maps helped students organize narrative elements better and write more coherent texts. However, there was no significant difference between visual and auditory learners in terms of improvement. The process-writing approach also positively influenced students' motivation and writing accuracy.

The importance of Story Maps in educational settings cannot be overstated. Story Maps provide a visual framework that helps learners organize and understand narratives more effectively. By outlining key elements such as the setting, characters, and plot, students can create coherent written texts that demonstrate a deeper grasp of the material. This strategy not only fosters the ability to connect different components of a narrative but also promotes metacognitive thinking, enabling learners to plan, monitor, and evaluate their own learning processes (Devi and Juniardi, 2020). By doing so, it empowers them to become more autonomous writers, which is a key goal in educational practice.

Writing, particularly in the context of learning English as a Foreign Language (EFL), is one of the most complex skills to develop. It is also the most controllable and correctable by educators, making it a prime area for intervention through strategic tools like Story Maps (Sreena and Ilankumaran, 2018). The Story Map Strategy, functioning as a metacognitive tool, allows students to visualize the structural elements of a narrative. This enhances their ability to organize their writing by improving content, organization, and language use. Research supports the use of Story Maps as an effective method for fostering cohesive narratives in student writing (Tabatabaei and Radi, 2013).

Numerous studies have confirmed the positive impact of Story Maps on writing skills. For instance, Fadhilah (2020) found that the use of Story Maps significantly improved students' abilities to organize their ideas in narrative texts. Similarly, Rahmawati et al. (2018) observed that Story Maps enhance students' achievements in writing by encouraging coherent organization of ideas, making the writing process clearer and more structured.

# 4. Theoretical framework

Since the late 20th century, the map has emerged as a fundamental tool in the analysis of literary geography, with scholars increasingly recognizing its role in exploring narrative spaces (Cooper and Gregory, 2011; Hui, 2009; Morretti, 1999, 2005; Piatti et al., 2009; Wells, 2012). The concept of deep mapping has further expanded this understanding by integrating both tangible and intangible elements of geography, allowing for the merging of personal and collective narratives with spatial analysis (Bodenhamer et al., 2015). This approach is grounded in intellectual traditions that emphasize the importance of personal stories in shaping spatial understanding, drawing on the works of Guy Debord, Michel De Certeau, and Yi Fu Tuan (Debord et al., 2004; Massey, 2005). Such mapping techniques serve heuristic purposes by revealing the underlying narrative structures within literary and personal stories (Morretti, 1999, 2005). Additionally, narrative mapping has found particular relevance in indigenous and migratory contexts, where it is employed for political and legal purposes, linking oral histories to physical landscapes (Rossetto, 2014). In these cases, mapping reveals "dense points" locations imbued with emotional and personal significance, especially within the migrant experience (Rossetto, 2014).

In this study, we apply ethnographic methods rather than conducting a full ethnography. Students engaged in qualitative data collection and analysis using digital tools, which mirrors some aspects of traditional ethnographic research. However, it is important to note that this research focuses on the educational use of these methods, rather than a deep immersion into a particular community. The term 'virtual ethnography' here refers to the use of digital platforms to collect data, not the study of online communities.

Ethnography, traditionally considered a branch of anthropology focused on describing the cultural realities of societies, has undergone significant evolution with the advent of the internet and the emergence of virtual communities across various platforms (Domínguez, 2007; Ruiz and Aguirre, 2015). This transformation has necessitated the development of virtual ethnography, adapting the principles of classical ethnography to cyberspace, thereby enabling the study of new forms of interaction and cultural production within these digital spaces.

The introduction of technology and social media has created new arenas for social and interpersonal relationships that, in turn, generate culture and identities (Mosquera, 2008). Within this context, Story Maps emerge as a valuable tool both for teaching and for virtual ethnography, facilitating the visualization and understanding of complex data and spatial relationships in an accessible and dynamic format.

In the educational realm, Story Maps offer an innovative way to complement the reading of philosophical texts, allowing students to explore philosophical conceptualizations and debates interactively and contextually. This tool can help link abstract theories with real-world situations and contexts, thereby enhancing understanding and learning in subjects traditionally viewed as challenging and esoteric.

Regarding virtual ethnography, Story Maps enable a visual representation of ethnographic information that can be crucial for understanding how identities and social relationships are configured in cyberspace. These maps allow ethnographers to

present their findings in a way that highlights the connections between data and virtual space, thus facilitating a deeper understanding of the cultural dynamics at play.

The importance of Story Maps in virtual ethnography also lies in their ability to address the challenges of deterritorialization, as mentioned by Álvarez (2009), where the virtual does not occupy a specific place or time but permeates various contexts simultaneously. By utilizing Story Maps, ethnographers can trace interactions and networks that transcend physical barriers, offering a more holistic and contextual perspective of online cultures.

However, it is crucial to recognize that the effectiveness of Story Maps and virtual ethnography largely depends on access to technology. Limitations in access to technological devices and the internet can restrict the potential of these methods, underscoring the need to address digital inequalities to maximize their educational and ethnographic impact.

In summary, Story Maps are essential not only as educational tools in the teaching of complex disciplines such as philosophy but also as innovative methods in the practice of virtual ethnography, enabling a richer and more detailed understanding of the new cultural realities emerging in cyberspace. Domínguez (2007) contends that virtual ethnography should not be confined to the obvious elements such as virtual communities or cyberspace alone; rather, it should be understood as encompassing much more. Specifically, virtual ethnography should not be limited to cyberspace because the ties of socialization do not end within the network or digital realms but extend into physical reality. Limiting its scope to virtual spaces alone would neglect the broader aims of ethnography to understand culture and social relationships as they occur in reality, as social networks, messaging platforms, and other digital spaces represent only a portion of the complex web of socialization.

Moreover, virtual ethnography should not focus solely on seeking homogeneous communities, considering the diverse strata within cyberspace where individuals from various nationalities and environments converge due to shared interests. Despite building identities and cultural elements within these virtual spaces, these individuals bring with them pre-existing constructions, preconceptions, and worldviews from their physical environments.

Building on the above, the idea arises that ethnography should not be confined to cyberspace. While cyberspace is a significant field of study, it remains interconnected with other localized fields such as churches, neighborhoods, schools, etc. As Domínguez (2007) states, adding "on the internet" to each cited location can open numerous fields of work for virtual ethnography. This indicates that the topics of virtual communities should not be the sole focus, as physical and virtual realities complement each other and weave networks of interaction. Thus, virtual ethnography should not only understand relationships within a virtual space but also consider the technological mediation between online and offline interactions.

Finally, it is crucial to clarify that virtual ethnography should not replace classical ethnography but rather complement it. Both approaches can coexist and be mutually informative, as subjects interact within both virtual and physical environments, highlighting the interconnectedness of modern social life (Álvarez, 2016).

In the realm of geography education, Marta and Osso (2015) highlighted the integration of Story Maps with geographical content to enhance the teaching and

learning processes. Their project demonstrated how Esri Story Maps can be employed to create engaging and informative story-driven maps, offering a dynamic way to present geographical information. Strachan and Mitchell (2014) provided insights into teachers' perceptions of Esri Story Maps, indicating their effectiveness as teaching tools in educational settings. This suggests that Story Maps hold substantial potential for enhancing educational outcomes across different subjects and age groups. These studies collectively underline the utility of Story Maps in educational settings, demonstrating their effectiveness in enhancing comprehension and learning outcomes across diverse subjects.

EFL Teaching and Writing Skills: The study highlights the importance of developing core language skills, particularly writing, in English as a Foreign Language (EFL) contexts. Writing is considered one of the most challenging skills for students to develop, but it is also the most controllable and correctable by teachers (Sreena and Ilankumaran, 2018). The Story Map Strategy: As a metacognitive tool, Story Maps help students visualize key components of a narrative. They aid in structuring writing tasks, improving content, organization, and language. Research supports that using Story Maps enhances students' abilities to produce cohesive narratives (Tabatabaei and Radi, 2013). Previous Research: Several studies confirm that Story Maps significantly improve students' writing skills. Fadhilah (2020) found improvements in narrative text writing abilities, particularly in content and organization. Similarly, Rahmawati et al. (2018) observed that Story Maps improved students' writing achievement, particularly in organizing ideas coherently.

# 5. Discussion of results

The results indicate that the use of Story Maps, combined with virtual ethnographic methods, significantly enhanced student engagement and understanding of migration. Freire's theory of dialogic learning was validated, as students were able to critically engage with real-world migration stories and reflect on their own understanding. The challenges of digital access remain, but the overall positive student feedback demonstrates the potential of these pedagogical tools to enhance learning outcomes.

The incorporation of Paulo Freire's theory of the Oppressed and intersectional pedagogy has provided a robust foundation for the development of a critical and comprehensive understanding of migration. This theoretical underpinning emphasizes the need for education to transcend traditional didactic methods, advocating instead for a dynamic and participatory learning environment where students are not mere recipients of information but active participants in their learning process.

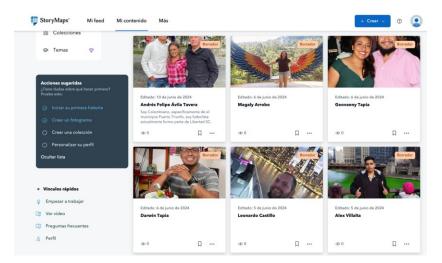
By utilizing Freire's principles, the educational approach adopted in this study fosters critical thinking and empowers students to question and challenge prevailing narratives about migration. This critical engagement is crucial for understanding the multifaceted nature of migration, which includes not only geographical movement but also the socio-economic, cultural, and political dimensions that influence and shape the migratory experience.

Moreover, the use of intersectional pedagogy allows for a nuanced exploration of how various factors such as race, class, gender, and legal status intersect to impact the experiences of migrants. This approach highlights the complexities and diversities within migrant communities, encouraging students to consider multiple perspectives and to recognize the differential impacts of migration on different groups.

Practical application of these theoretical concepts was facilitated through the use of Story Maps, a digital tool that enables the visual representation of data in an interactive format. Story Maps serve not only as a means of presenting information but also as a platform for storytelling, where students can integrate theoretical knowledge with personal narratives and empirical data. This method enhances the learning experience by making abstract concepts more tangible and relatable, thereby improving students' ability to retain and apply what they have learned.

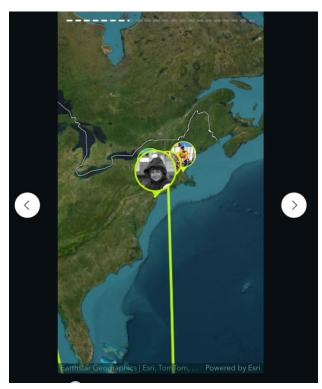
The positive outcomes of this educational approach are evident in the students' enhanced capabilities to both understand and convey the complexities of migration. As shown in **Figure 1** (García-Macías and Mora-Mendieta, 2024), students engaged with the application demonstrate not only a greater comprehension of migration as a multidimensional social issue but also increased skills in research, analysis, and digital literacy. These skills are essential for their future roles as scholars, policymakers, or practitioners in the field of migration studies.

In conclusion, the discussion of results highlights the transformative potential of innovative educational methodologies that integrate digital tools and critical pedagogies. Such approaches are essential for preparing students to tackle complex global issues like migration effectively, equipped with both theoretical understanding and practical skills.



**Figure 1.** Use of Story Maps.

The implementation of virtual ethnography as the main technique for studying the Ecuadorian diaspora through digital interactions proved to be particularly valuable. As shown in **Figure 2**, this method not only facilitated the collection of data on migratory patterns through personal narratives and spatial analysis but also allowed students to develop essential skills in qualitative research methods adapted to a digital context (García-Macías and Mora-Mendieta, 2024). The collaborative nature of the work, which involved the creation of collaborative maps and migratory routes, fostered interactive learning and deepened the understanding of both the personal and collective impacts of migration.



**Figure 2.** Routes of migrations made by Story Maps.

However, one of the challenges highlighted by the study is the digital access gap. Despite the clear pedagogical benefits of tools such as Story Maps, limited technological access for some students can compromise the effectiveness of these educational methods. This finding underscores the urgent need to address digital inequalities to maximize educational benefits and ensure that all students have equal learning opportunities.

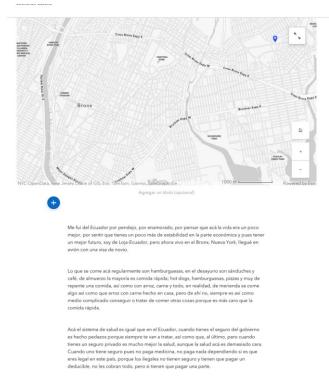


Figure 3. Destinations of migrant, made by Story Maps.

The results, as illustrated in **Figure 3**, also suggest that the methodology employed is transferable to other fields and disciplines (García-Macías and Mora-Mendieta, 2024). This indicates significant potential for adapting these pedagogical techniques to different educational contexts, which could revolutionize the way complex and multidimensional topics are taught across various academic areas.

In conclusion, this study demonstrates how the combination of critical pedagogies and advanced technologies can enrich higher education and prepare students to confront and understand global challenges from an informed and empathetic perspective. However, for these approaches to be fully effective and accessible, it is crucial that educational institutions and policymakers work together to improve access to technological resources, thereby ensuring that every student can fully benefit from these innovative teaching methodologies

# 6. Conclusions

This study demonstrates the transformative potential of integrating critical pedagogy with digital tools like Story Maps in migration education. By utilizing Freirean principles of dialogic learning, the study fosters critical engagement with complex social issues. However, the digital access gap remains a significant challenge that must be addressed to ensure all students benefit from these innovative methodologies. The approach developed in this study is transferable to other fields and disciplines, offering a model for educational innovation that can be applied in various academic contexts.

The use of Paulo Freire's pedagogy and the theory of the Oppressed adds a critical and reflective dimension to learning, fostering an education that is both liberating and transformative. This approach not only enhances the practical and analytical skills of students but also deepens their understanding of the social and cultural complexities of migration.

The methodology of virtual ethnography proved to be particularly effective for studying geographically dispersed communities, allowing students to explore and analyze digital cultures and social relationships in virtual spaces. However, the research also underscores the importance of equitable access to technology, as limitations in this access can restrict learning opportunities and the effectiveness of pedagogical tools like Story Maps.

In summary, the study demonstrates that the integration of digital technologies and participatory pedagogical approaches in higher education can significantly enrich the teaching and learning about complex social phenomena like migration. Furthermore, this methodology is transferable to other disciplines and contexts, suggesting a model for educational innovation that could be adapted and applied in a variety of academic settings and themes.

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