

A Freirean approach to breaking the spiral of silence in AI-mediated education

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Highlights

- This study develops a novel framework through a three-phase critical analysis of the theories by Said (Orientalism), Noelle-Neumann (Spiral of Silence), and Freire (Critical Pedagogy).
- The synthesis reveals that AI perpetuates biases and creates an automated Spiral of Silence within AI-mediated education.
- The integrative framework remodels AI from a tool of oppression to one of emancipation.
- Within AI-mediated education, educators can act as transformative innovators leveraging Critical Pedagogy to amplify silenced voices.
- Proposed pedagogical strategies include AI dialogical engagement, bias deconstruction, platform diversity, ethical adherence, and critical reflexivity.

Abstract

AI systems trained on biased media datasets perpetuate cultural misrepresentation and stereotypes, marginalizing minority students. This study aims to develop a framework for understanding how AI-mediated education marginalizes minority voices and to propose pedagogical strategies for disrupting this cycle and promoting equitable and inclusive learning environments. The research involves a three-phase critical analysis based on Edward Said's Orientalism, Elisabeth Noelle-Neumann's Spiral of Silence, and Paulo Freire's Critical Pedagogy. The synthesis reveals that AI perpetuates systemic cultural biases—such as Orientalist misrepresentation—and embeds them into educational technologies and curricula, identifying this cyclical process as an automated Spiral of Silence. A novel framework integrating Noelle-Neumann's Spiral of Silence with Freire's Critical Pedagogy provides a diagnostic mechanism and emancipatory guide for remodeling AI—from a tool that amplifies dominant narratives to one that fosters emancipation. It positions educators as innovators and transformative facilitators who can leverage Critical Pedagogy to challenge oppressive structures and amplify silenced voices. Proposed strategies include AI-supported dialogical engagement, deconstructing embedded biases, utilizing diverse platforms for comparative analysis, adhering to ethical guidelines, and practicing critical reflexivity. This preliminary model is designed to empower educators in order to cultivate equitable and inclusive learning environments.

Article Info: Research Article

Keywords: *Spiral of Silence, AI-mediated education, Critical Pedagogy, Orientalism, global digitalization, algorithmic bias, Western hegemony, biased media, equity and inclusion.*

1. Introduction

Digitalization has increased cultural exchange, whereby world societies are becoming more interconnected. Advanced communications technology, emanating from the West, serves as a medium to share and deliver cultural practices and the latest social trends. World societies are gradually blending to form a hybrid, homogenized culture with a Western prevalence. English, for example, has become the leading global language of communication in both business and education. Additionally, mass media—delivering

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<https://medium.com/@hana.albannay/the-spiral-of-silence-restraining-inclusive-representation-of-cultural-globalization-c0f8f1cdd073>

information through news and entertainment via outlets such as the internet, social media, music, and movies—has played a significant role in shaping public views, attitudes, and behaviors worldwide (Mirrlees, 2013).

Within this digitalized context, global media—molded by Western hegemony—often transcend and oversimplify the rich diversity of world social traditions, norms, and rituals (Mirrlees, 2013). Reflecting imperialist supremacy, it perpetuates skewed reporting, gender stereotypes, and ethnocentric narratives—while positioning Western cultures as the aspirational standard (Said, 1978; Mulinge, 2022). To captivate audiences, media outlets have frequently presented inaccurate, exaggerated, or extreme portrayals of non-Western cultures (Kobayashi et al., 2019). This phenomenon is now being hard-coded into a digital ecosystem that generates vast datasets of text, images, and videos used to train artificial intelligence (AI) platforms (Carter & Dale, 2025).

Rather than mitigating existing power asymmetries, AI systems automate biases under a veneer of technological neutrality (Carter & Dale, 2025). This dynamic is starkly illustrated by platforms like Meta, whose engagement-driven algorithms proactively amplified anti-Rohingya hate speech, misinformation, and incitement, thereby facilitating real-world violence—as evidenced in a report by the United Nations Human Rights Council (2018). The subsequent dismantling of fact-checking policies in favor of user-generated content has further entrenched this harm, prioritized dominant narratives, and automated the marginalization of minority voices (Carter & Dale, 2025).

Therefore, while the goal is to help reflect global diversity, AI systematically perpetuates stereotypes and misrepresentations. These misrepresentations persist in AI-mediated education, where they counteract inclusive cross-cultural interactions, shaping curricular content and student experiences.

This study aims to develop a framework for understanding how AI-mediated education can marginalize minority voices and to propose pedagogical strategies for disrupting this cycle and promoting equitable and inclusive learning environments. It formulates a novel framework by synthesizing three theoretical domains: a diagnostic lens (Orientalism), a mechanism of marginalization (the Spiral of Silence), and a prescriptive emancipation (Critical Pedagogy). This synthesis moves beyond critiquing AI bias to model its operation in AI-mediated education and to devise countering strategies through a pedagogy of equity.

2. Methodology

This research employs sequential, three-phase methodology involving critical analysis and synthesis.

1. Edward Said's critique in *Post-Colonial Orientalism* provides a critical lens to diagnose the systemic misrepresentation and marginalization of non-Western cultures within dominant Western discourse and its subsequent encoding into AI datasets.
2. Elisabeth Noelle-Neumann's *Spiral of Silence* theory serves as a mechanistic tool for analyzing how AI's embedded biases amplify Western hegemony and create skewed opinion climates that subsequently silence minority student voices within AI-mediated education.
3. Paulo Freire's *Critical Pedagogy* offers an emancipatory model to disrupt these cycles of marginalization and foster equitable and inclusive AI-mediated learning environments.

These theories and related literature were selected for their explanatory power in providing a rigorous integrative framework for analyzing digital cultural misrepresentation, the systemic marginalization and silencing of authentic cultural voices, and a revolutionary pedagogy against automated Western dominance, respectively.

The analysis is grounded in the three foundational theories and supported by key studies on media and pedagogy. Given that these theories were established prior to digitalization, a review of contemporary literature (e.g., AI and education) was conducted to contextualize them within AI-mediated education. Sources were identified through academic databases (e.g., Scopus, Web of Science) using keywords including "algorithmic bias," "AI in education," "cultural bias in AI," and "minority students." Priority was

given to peer-reviewed articles (2018–2025) that explicitly addressed the intersection of AI, cultural bias, and education within digitalized Western media hegemony.

Finally, the insights generated from this analysis are synthesized into an integrated framework. This innovative theoretical integration demonstrates the sequence of the marginalization cycle and remodels AI to break free from it.

3. Cultural Bias: From Orientalist Discourse to AI Algorithms

AI systemic bias is grounded by Orientalism—a hegemonic discourse defined by its exertion of power and control over the “Orient” (Said, 1978). A critical analysis of Western discourse exposes how these biases profoundly influence Western art, literature, and media. For example, Arabs in Western media are frequently portrayed as outdated, primitive nomads, mysterious, extremist villains, or exotic “Others”, necessitating Western supervision (Alshokhada, 2025). While women are broadly marginalized and misrepresented, Arab women are viewed through Orientalist stereotypical lenses. As Akabli and Chahdi (2022) point out, Arab women are predominantly depicted as helpless victims—oppressed, passive, sexually repressed, uneducated, and lacking agency—or as subservient figures in need of rescue. These inaccessible, veiled Arab women are often portrayed with exposed flesh in harem settings. In Hollywood films, roles for Arab and Muslim women are reduced to either silenced, veiled figures or eroticized belly dancers. The latter portrayal suggests an emancipation of the muted, veiled woman from male dominance through liberal Orientalism. The romanticization of veiled women’s bodies, when not rendering them silent, is weaponized to evoke fear. They are depicted as agents of terror wearing explosive belts, ready to detonate themselves among the innocent.

These harmful misrepresentations, embedded in the datasets and algorithms of AI systems (Tao et al., 2024), create a systemic feedback loop: media biases train AI, and AI-generated content then reinforces those same biases on a massive scale, perpetuating a digital form of Orientalism (Kobayashi et al., 2019). This is evidenced by AI image generators in non-Western contexts, like China’s Meitu app, consistently exhibiting “White normativity”, as they depict White people with higher accuracy and most often transform people of color into White-appearing figures (Yang, 2025).

Within this AI-driven hegemonic context, authentic voices and perspectives of reality in non-Western cultures are overruled by a macro-group of Orientalist data (Noelle-Neumann, 1993). The presentation of “Other” cultures is subdued by Western mass media outlets, resulting in the formation of rigid, categorical images of the non-Western world, a process of cultural effacement. Iterating this, Yang (2025) documents that AI systems can make non-White groups invisible by literally altering their racial appearance in generated content, particularly in interracial contexts.

Consequently, contrary perspectives, which may depict the social realities of cultures, do not blend and cannot compete in the public opinion climate, where people are preconceived through dominant narratives. This phenomenon demonstrates the Spiral of Silence (Noelle-Neumann, 1993)—a process fueled by media’s misrepresentations and now algorithmically amplified. This dynamic perpetuates cycles of marginalization within AI-mediated educational settings (Drew, 2022), detailed in the following section.

4. False Social Realities in Cross-cultural Learning Environments

Scholars posit that narrow Western portrayals are reinvented to reshape the social realities of non-Western cultures (Said, 1978). Within AI-mediated education, this cultural bias is exacerbated by a harmful feedback loop that disrupts learning processes and reinforces a student’s sense of being the “Other” (Lewis, 2025).

The consequences of this dynamic are severe. Studies reveal that Muslim students in Western universities struggle with racial stereotypes and academic isolation, reporting a lack of inclusive academic spaces and inadequate university support. The complexities of identity, religion, gender, and societal expectations profoundly shape the experiences of Muslim women in academia. Their hypervisibility, stemming from intersecting identities (e.g., as racialized Muslim immigrants), heightens their scrutiny, reinforces stereotypes, and increases their sense of exclusion. Female Muslim students reported struggling to assert

their identities positively and challenge dominant narratives. They described the institutional process of marginalizing their religious expression as a form of silencing (Kizil et al., 2025).

The reported experiences of international students mirror those of Muslim students, revealing a consistent pattern of marginalization across diverse educational contexts. Studies from Canada (Howe et al., 2023) and Northern Ireland (Cena et al., 2021) document feelings of exclusion, othering, detachment, and significant cross-cultural barriers. This marginalization was exacerbated during the shift to online learning in the UK, where digital environments often lacked cultural competency, reinforcing monolithic stereotypes (Costa & Li, 2025). Furthermore, research confirms that culturally biased AI platforms can reduce participation among minority students by over 30%, rendering them ineffective for inclusive education (Lewis, 2025). The consequences of this differential treatment are dire: students who experience it are more likely to drop out, while those who remain often cope through disengagement and defiance (Rivers, 2020).

Altogether, these findings demonstrate how the Spiral of Silence moves from media to the classroom. Western media's false representations—which suppress, marginalize, and silence minority voices—are embedded in pedagogical digital narratives. This compels minority students to self-censor and disengage, creating a cycle where educational technology and curricula perpetuate the very biases they are meant to dismantle. The theoretical lens of this mechanism is described next.

5. The Spiral of Silence

In the Spiral of Silence, individuals remain silent when they perceive their opinions to be in the minority. According to Elisabeth Noelle-Neumann (1974), the fear of isolation is a powerful force that shapes public expression. This process is dynamic. Individuals' perception of majority opinion directly affects their willingness to express divergent views, often leading to communication apprehension. Public opinion thus functions as a form of social control, beginning with a fundamental human desire to belong and avoid social isolation. When a majority's perspective is continuously reinforced—especially through mass media or influential interpersonal networks—minority opinions are suppressed and gradually silenced (Noelle-Neumann, 1993).

Noelle-Neumann further argued that mass media can skew public perception and produce widespread “pluralistic ignorance,” where individuals incorrectly assume their private views are uncommon (1993). The media plays a decisive role in constructing dominant views within a social environment, effectively setting the climate of public opinion. People increasingly align their expressed opinions with these mediated portrayals, which selectively amplify certain perspectives while downplaying or ignoring others. This conformity can solidify into accepted societal norms, drive values, and ultimately catalyze social change. The media's power to shape discourse is particularly evident on new or controversial topics. The Spiral of Silence intensifies in digital environments, where social media users frequently self-censor within homogenous networks due to fears of isolation, ostracism, or peer rejection (Sohn, 2022).

Tested and verified in Western individualistic cultures, particularly during political elections, the Spiral of Silence is also observed in Eastern collective cultures, where social harmony and majority norms strongly influence communication (Huang, 2005). Across both cultural contexts, individual personality traits—such as extraversion, neuroticism, conscientiousness, agreeableness, openness to experience, and self-efficacy—influence a person's willingness to express minority views in what they perceive as a hostile opinion climate (Nam, 2010).

Gender interplays with socio-cultural contexts within this spiral. Evidence suggests that women often self-censor and avoid criticism in male-dominated settings, suppressing their views especially when traditional gender stereotypes prevail (Amanatullah & Morris, 2010). They may be more inclined to speak out on issues like feminism and gender equality when they perceive social support, yet they retreat from discussions on leadership or power structures where they feel outnumbered. Women with intersectional, marginalized identities—such as disadvantaged women of color—often face a heightened fear of social sanctions (Hayes et al., 2005). Although online anonymity can sometimes reduce the fear of rejection,

evidence shows that women who share minority opinions online frequently encounter disproportionate harassment, effectively perpetuating their silence (Veletsianos et al., 2018).

The Spiral of Silence serves as a powerful framework for understanding public discourse. It effectively demonstrates how the complex interplay of media power, cultural contexts, individual psychology, and social identity collectively determines who speaks, who remains silent, and which opinions come to dominate society.

There are, however, exceptions to this phenomenon. The spiral's dynamic is resisted by two groups: the hardcore nonconformists, who persist in their beliefs despite facing rejection, and the *avant-garde*, comprised of innovative and forward-thinking individuals such as intellectuals, artists, activists, and reformers (Sohn, 2022). Educators, as *avant-garde* innovators, have the potential to challenge dominant false narratives and foster diverse perspectives. Critical Pedagogy serves precisely this emancipatory purpose. It aims to liberate education and promote social justice by empowering learners to voice unconventional opinions, as described in the following section.

6. Critical Pedagogy: The Pedagogy of the Oppressed

Critical pedagogy, which emerged in the mid-20th century amid European fascism, economic domination, social inequality, and cultural hegemony, was developed by Paulo Freire in *Pedagogy of the Oppressed* (1970). Rooted in the Frankfurt School's Critical Theory, it seeks to emancipate individuals and societies from oppression, whether self-imposed or external. Freire revitalized this movement with Critical Pedagogy as a cultural revolution to liberate the oppressed from ignorance, illiteracy, and a culture of silence, while urging oppressors to recognize their role in perpetuating injustice (Uddin, 2019).

Traditional versus problem-posing education

Freire critiques traditional education as a banking system, where teachers deposit knowledge into passive students, treating them as empty vessels. This memorization-focused approach stifles creativity, critical thinking, and situational awareness, embedding dominant cultural values as common sense and omitting diverse perspectives (Chalaune, 2021). This perpetuates a hegemonic environment in which the selective viewpoints of one group dominate the classroom — a process now automated through AI tools trained on biased data. (Lewis, 2025). In education, this cultivates a culture of silence, mirroring the Spiral of Silence, where fear of isolation suppresses minority voices, leading to disengagement, social fragmentation, and conflicts.

In response, Freire's problem-posing education promotes freedom through learner-centered, participatory methods. Teachers respect students' autonomy, adopt humanitarian approaches, and harness creative potential to empower students as active participants of self-governance and societal change. This fosters *conscientization*, a critical awareness that extends beyond rote learning. It enables students to improve their lives and build a just society by raising awareness of reproducible inequalities in education and social institutions (Chalaune, 2021).

Disrupting systems of oppression within the classroom

Critical pedagogy actively disrupts Bell's four I's of oppression—ideological, institutional, interpersonal, and internalized (Rivers, 2020). This form of systemic oppression, premised on the belief in one group's superiority, becomes embedded in social institutions, leading to interpersonal conflicts and internalized inferiority among oppressed groups. In educational settings, biased knowledge—now automated through AI narratives—marginalizes and excludes these groups. To break from this cycle, Freire's *Pedagogy of the Oppressed* advocates for decolonizing curricula and replacing reductive narratives with student-led Socratic questioning curricula. This method empowers students to construct knowledge collaboratively through evidence-based dialogue structure and critical text examination, thereby challenging the ideological assumptions often perpetuated by AI and standard curricula. This disruptive pedagogical approach is essential to address the cycles of disengagement and defiance identified earlier among marginalized students.

Pedagogical approaches

Aligned with Freire's Critical Pedagogy, strategies to liberate education focus on enhancing critical consciousness through several key approaches. The first is the dialogical method, a form of collaborative conversation rooted in humility and mutual trust that treats teachers and students as equals, breaking traditional monologues. Through Socratic questioning, it fosters critical inquiry and gives voice to silenced students, countering the suppression of minority views. This is complemented by connecting learning to real-life situations and problem-posing strategies that engage students in analyzing and transforming their world, as well as hands-on, out-of-book activities that make learning tangible and empower students as active learners. This leads to the second approach: the transformative intellectual role of the teacher, who facilitates this dialogue, critiques systemic inequalities, and values students' existing knowledge to empower critical reflection. Third, this creates an active learner role where students co-create knowledge, challenge assumptions, and engage in social critique, thereby forming a public sphere for agency and participation (Chalaune, 2021; Uddin, 2019). Integrating these pedagogical frameworks into AI-mediated education empowers suppressed voices and promotes social justice, thereby fostering equity and inclusion in the classroom.

7. Discussion

The preceding analysis demonstrates an automated feedback loop between Western media hegemony and AI, which systematically marginalizes non-Western voices and perpetuates a digital Spiral of Silence. Synthesized, this analysis reveals that AI does not merely systematize existing cultural misrepresentations but actively amplifies them, hard-coding Orientalist narratives into educational technologies and curricula. The consequences are severe. Students from marginalized backgrounds experience alienation, disengagement, self-censorship, and a reinforced sense of being the "Others", undermining the goals of equity and inclusion in education.

This study has established that the integration of Noelle-Neumann's Spiral of Silence and Freirean Critical Pedagogy provides a novel framework for understanding this phenomenon and offers significant contributions. It defines the automated Spiral of Silence as a central mechanism of digital oppression in education and presents Critical Pedagogy as the necessary emancipatory counter-force.

The Freirean strategies are designed to disrupt the automated Spiral of Silence. This spiral, illustrated in Figure 1, begins with digitalization systematizing cultural bias into AI systems, feeds this bias into educational platforms, and culminates in the self-silencing of minority students.

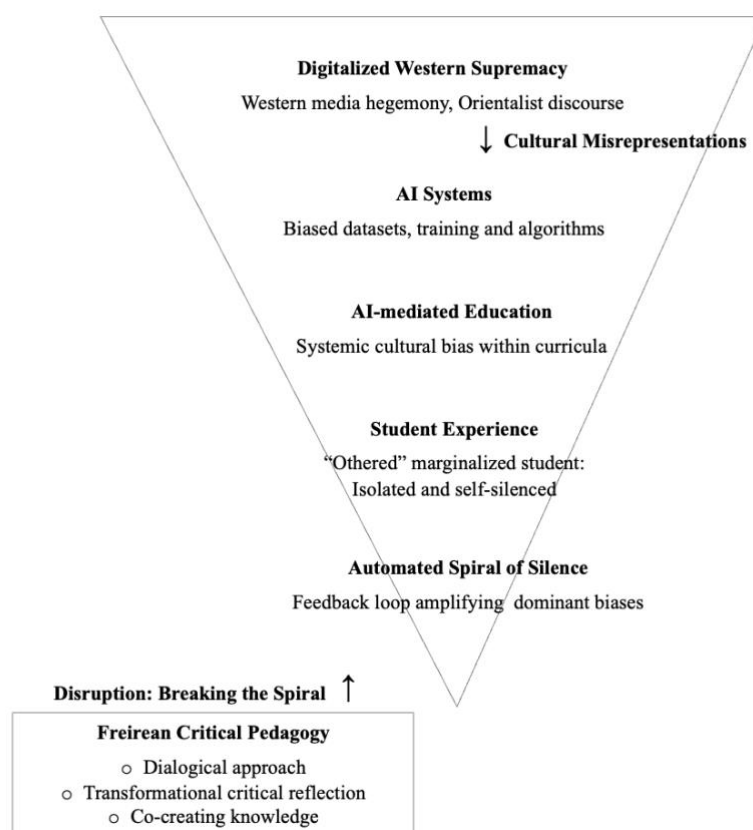


Figure 1: The Automated Spiral of Silence in AI-Mediated Education and Its Disruption through Freirean Critical Pedagogy

Therefore, the new integrative framework advocates for a pedagogical revolution that repositions educators as avant-garde innovators and transformative facilitators. Their role is to harness AI through pedagogies of liberation in order to break from this spiral, disrupt negative discourse, and foster equitable and inclusive learning environments.

The following section outlines how to operationalize the educator’s role within AI-mediated classrooms.

AI-powered dialogical engagement

Critical Pedagogy’s dialogical method, grounded in collaborative inquiry, can be enhanced by AI-driven platforms designed to facilitate structured dialogue. Research indicates that such AI tools may increase student engagement and motivation by providing interactive, culturally relevant content that resonates with diverse student groups, thereby creating a classroom environment where minority opinions are more likely to be voiced. For instance, studies show that AI tools with advanced reasoning capabilities, such as GPT-4 or ERNIE Bot, can be tailored through careful prompt engineering to emulate Socratic questioning. However, their effectiveness in supporting critical analysis of media portrayals of non-Western cultures remains underexplored. Despite this gap, scholarly findings suggest that AI-based instructional platforms have the potential to outperform conventional methods in enhancing cultural representation and reducing implicit biases—if critically guided by culturally responsive pedagogies. When developed under this essential guidance, these platforms can potentially amplify and empower minority voices (Abror & Dwi, 2024).

Deconstructing media biases

Advanced machine learning algorithms, particularly those powering Large Language Models (LLMs), can analyze vast archives of global news to detect deep-seated narrative biases, such as Orientalism, which often emphasizes negative themes while overlooking positive cultural and intellectual contributions (Tao

et al., 2024). Educators can utilize these algorithmic outputs to foster evidence-based classroom discussions (Abror & Dwi, 2024). Integrating this technique into established pedagogical strategies can promote critical inquiry and help disrupt bias in AI-mediated education. This approach embodies the Freirean problem-posing pedagogy by framing media texts as generative problems for students to critically co-investigate—actively analyzing inherent cultural biases and the underrepresentation of minority voices encoded within the algorithms (Lu et al., 2025). The following example illustrates the operationalization of both dialogical engagement and deconstructing bias.

An educator in public health class could prompt an AI chatbot to simulate a patient-provider interaction involving an Arab immigrant and a Western clinician. Students would then critically analyze the AI-generated dialogue for cultural competency, guided by a Socratic question: "Do Orientalist stereotypes permeate the output, portraying the patient as an uncivilized, aggressive man or a submissive woman?" Collaboratively, students—particularly those from the affected cultural background—would deconstruct algorithmic biases, re-prompting the AI to integrate authentic cultural data. This exercise inspires educators' creativity in mapping AI's embedded cultural stereotypes by analyzing its generated output. Simultaneously, it empowers students to break from the automated Spiral of Silence by reshaping algorithmic outputs.

Diverse AI platforms

Educators can integrate AI tools from diverse geopolitical and cultural origins to enrich cross-cultural learning environments. Western-developed tools like GPT-4 excel at generating diverse content but often rely on predominantly English-language datasets, which may introduce Anglo-centric biases (Tao et al., 2024). In contrast, models like China's ERNIE Bot, trained on extensive Chinese-language corpora, provide alternative linguistic and cultural perspectives (Zhu et al., 2024). Instead of assuming any single tool is inherently less biased, educators should harness this algorithmic diversity to support critical comparative analysis (Lu et al., 2025). By auditing AI outputs—such as their representation of non-Western cultures or regional narrative portrayals—educators can guide students in identifying computational biases across diverse contexts (Ta et al., 2025). This practice aligns with critical AI literacy, a paradigm-shift from a purely technical understanding of AI to a socio-technical one, focusing on its implications for society (Velandar et al., 2024). It also resonates with Critical Pedagogy by framing AI not as a neutral tool, but as a socio-political construct embedding layers of power for students to deconstruct in adherence to ethical guidelines.

Navigating AI ethics

A significant contribution of AI-mediated education lies in its ability to personalize learning, offering a revolutionary approach to empowering marginalized students. However, fulfilling this potential requires a strong commitment to ethical AI to prevent the perpetuation of bias and promote equity (Sarı et al., 2024). This commitment can be operationalized through comprehensive educator training that emphasizes ethical AI principles such as fairness, accountability, and transparency (Liu, 2025). Training should prioritize social benefit by leveraging AI to amplify marginalized voices and focus on mitigating unfair bias through the critical auditing of AI outputs, such as reviewing image generators for stereotypical portrayals (Eden et al., 2024). It must also address the impact of digital divide, which further limits minority voices. To maintain accountability, educators must verify and contextualize AI-generated content before classroom use. Transparency can be achieved by using algorithmic analysis to show students how a large language model's outputs might reflect suppressed perspectives; these outputs can then serve as evidence for critical classroom discussions. Through these practices, ethical AI use strategically operationalizes Freirean pedagogy—liberating oppressed voices and fostering social justice, equity, and inclusion in learning environments.

Critical reflexivity

Integrating AI tools in education requires ongoing reflexivity, an ethical practice where educators engage in continuous critical self-assessment to avoid perpetuating systemic inequalities like algorithmic bias (Door, 2014). This approach aligns with Freire's concept of conscientization, where individuals cultivate a

deeper awareness of their socio-cultural context and their potential to transform it (Chalaune, 2021). Similarly, educators must guide students to engage in self-critique while also teaching them to critically interrogate AI tools to ensure they become instruments for conscientization and social change. This practice of critical reflexivity must extend to an assessment of technological access: "Who has access to these AI tools and who does not? How does this access privileges my voice while under-representing others?" This activity aligns with research advocating for a collaborative model, where educators and students should cooperate with developers and policymakers to co-create equitable and inclusive educational environments (Lewis, 2025).

For instance, the public health educator preparing communication simulation between an Arab patient with a Western provider must first engage in critical self-assessment. Before the lesson, the educator would run the AI simulation using diverse tools (e.g., GPT-4 and ERNIE Bot) to analyze their outputs for latent bias, confronting essential questions: "Is my own pedagogical approach inadvertently framed by default Western hegemony? Am I leaning toward one perspective over another?" This confrontational questioning enhances educators' creativity by developing their critical thinking and openness to diverse perspectives. It also enables the deliberate integration of non-Western epistemologies into AI-mediated lesson plans. Students should be guided to practice similar critique. This joint, conscious effort unravels embedded socio-political and personal biases, thereby enabling both educators and students to disrupt the automated Spiral of Silence.

While advanced AI tools can better facilitate these Freirean strategies, educators in under-resourced settings can adapt the pedagogical methods with low-tech alternatives. For instance, to deconstruct media biases, educators can use readily available materials—such as news articles or social media posts—as datasets to demonstrate the Orientalist narratives and Spiral of Silence dynamics within AI platforms. Similarly, online posts showcasing biased AI outputs (e.g., from ChatGPT-4) can serve as case studies for algorithmic dialectical responses reflected by Western dominance. Although low-tech, these approaches can potentially cultivate the same integrative model in AI-driven education.

This study has several important limitations. First, the proposed framework for educators as avant-garde innovators is theoretical and has not been tested in AI-mediated classrooms, so its practical effectiveness remains unproven. Second, many educators may lack the necessary digital skills or—as noted beforehand—may have low access to diverse AI tools required to implement the strategies within the proposed framework, particularly in under-resourced schools. Third, as all AI systems inherit built-in biases, teachers require specific training to recognize and counter these biases effectively.

Future research should focus on empirically testing these methods in real AI-mediated educational settings. For example, design-based studies can assess the impact of AI-supported dialogical engagement on the participation levels among minority students. Additionally, pilot studies on AI-ethics training interventions should be conducted to evaluate Freirean outcomes such as improved conscientization or student engagement. Moreover, participatory co-design studies—where researchers collaborate with educators, students, developers, and marginalized communities—are essential. These studies could involve co-designing AI tools that operationalize Freirean principles to empower and amplify silenced voices. Finally, future studies must prioritize adapting these critical strategies to under-resourced schools, addressing the digital divide as a significant barrier to representing marginalized voices.

8. Conclusions

This study demonstrates the interplay between digitalization, Western dominance, media power, and the suppression of inclusive voices in AI-mediated education. A synthesized analysis reveals that AI perpetuates deep-seated cultural biases, such as the Orientalist misrepresentation of Arab cultures grounded in Western hegemony, embedding them into educational technologies and curricula. This cyclical process is identified as an automated Spiral of Silence. This synthesis provides a theoretical contribution distinct from the current literature: a novel framework that integrates Noelle-Neumann's Spiral of Silence with Freire's Critical Pedagogy that serves as both a diagnostic mechanism and an emancipatory model. It moves beyond existing analytical approaches by establishing an explicit link between digitalized Orientalism and countering inclusion in AI-driven education.

Such an integrative framework empowers educators as innovators and transformative facilitators to harness AI through Critical Pedagogy, enabling them to challenge oppressive structures and amplify silenced voices. Proposed pedagogical strategies include employing AI-supported dialogical engagement, deconstructing embedded media biases, leveraging diverse AI platforms for comparative analysis, adhering to ethical guidelines, and practicing critical reflexivity. These techniques provide an introductory guide for remodeling AI—from a tool that amplifies dominant narratives to one that fosters emancipation, cultivating equity and inclusion in learning environments.

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