AI Literacy as a Civic Necessity and a Human Right: Implications for Second Language Learners in a Globalized World

Andrada Costoiu
University of Irvine

ABSTRACT

As artificial intelligence (AI) becomes embedded in daily life—from employment and education to healthcare and public services—AI literacy is emerging as both a civic competency and a human right. Yet second language learners, particularly from immigrant and marginalized communities, are often excluded from systems not designed for linguistic diversity. Adapting Benjamin Barber's (1998b) framework on technology and democracy, this paper argues that many AI systems today align with a "Pandora" future—one that reinforces inequality rather than enabling civic participation. Grounded in a human rights perspective, the paper highlights how L2 learners face a dual burden: mastering a new language while navigating opaque, biased technologies. To counter this, the paper calls for integrating AI literacy into language education and policy, ensuring L2 learners are not only users of AI, but active participants in shaping its democratic potential.

INTRODUCTION

Artificial intelligence (AI) has rapidly moved from the margins of innovation into the fabric of everyday life, influencing key domains such as healthcare, education, employment, and public governance. As these technologies become more embedded in decision-making systems, concerns have emerged regarding their potential to reinforce and deepen existing societal disparities. Rapid AI development has not only widened the digital divide but also given rise to what scholars now call the "AI divide." In particular, studies conducted in the United States highlight how algorithmic systems can disproportionately affect historically marginalized populations, perpetuating racial, economic, and linguistic inequalities (West et al., 2019; Eubanks, 2018).

The global relevance of these issues has led to increasing calls for a broader, cross-cultural dialogue on the ethical, social, and civic dimensions of AI. While policy reports and industry white papers have begun to acknowledge the urgency of equitable AI design and governance (OECD, 2023), the academic discourse is only beginning to consistently address these challenges from a global and inclusive perspective. This paper seeks to contribute to that emerging conversation by foregrounding the role of AI literacy as a civic necessity and a human right—particularly for second language (L2) learners who face unique barriers in an AI-mediated world.

AI LITERACY AS A CIVIC NECESSITY AND A HUMAN RIGHT

Over two decades ago, Barber (1998a) posed a prescient question: Has modern technology strengthened or compromised the foundations of democratic life? At the time, he described technology as an instrument of communication, stating that it cannot determine "what we say and to whom we say it" (Barber, 1998a, p. 588). Nevertheless, today, this distinction no longer holds. With the advent of AI, technology has moved far beyond being a neutral channel for human expression. AI systems now help determine what we see, what we value, and whom we hear—curating knowledge, influencing behavior, and even mediating access to public resources. Algorithms sort job applicants, prioritize healthcare needs, regulate online speech, and increasingly shape public opinion through opaque recommendation engines. In this new landscape, AI does not simply carry our voices—it structures them, filters them, and sometimes silences them. The question is no longer just whether we have something to say but whether we are being heard—or whether we are even speaking in systems designed to listen. In this context, AI literacy becomes essential to democracy: it empowers individuals not only to understand how technologies function but also to demand a say in how they are designed, deployed, and governed.

To better conceptualize the multifaceted impact of AI on democratic participation, I developed an analytical framework inspired by Benjamin Barber's (1998b) *A Passion for Democracy*, where he discussed three possible futures for the relationship between technology and democracy: "Pangloss," "Pandora," and "Jefferson." In this framework, "Pandora" symbolizes a bleak future in which technology deepens social divisions and erodes democratic principles. In contrast, "Jefferson" offers for a hopeful outlook where technological advances promote democratic involvement and strengthen civic life. "Pangloss" is named after Dr. Pangloss, a satirical philosopher from Voltaire's (2005) *Candide*, who believed "all is for the best in the best of all possible worlds." This scenario reflects naïve technological optimism—the idea that all innovation is inherently good and that problems will fix themselves over time without active intervention.

While Barber originally presented these scenarios as narrative illustrations of how technology might shape society, I translated them into a structured comparative framework relevant to today's AI landscape. The table emerged from synthesizing Barber's insights with contemporary research on algorithmic governance, digital inequality, and civic agency (Eubanks, 2018; Buhmann & Fieseler, 2023; Benjamin, 2019; Floridi, 2014). It is designed to clarify how AI systems—depending on their design, governance, and social context—can either empower or marginalize citizens. This typology also responds to the need for nuanced, accessible models that educators and policymakers can use when addressing AI literacy as a civic right.

The typology presented in Table 1—Pandora, Jeffersonian and Panglossian—serves as a framework for understanding the civic consequences of AI systems. It also highlights why we should redefine AI literacy as an essential civic competence and a fundamental human right. As AI technologies increasingly shape access to employment, education, healthcare, housing, and political agency, the ability to critically engage with these systems is no longer optional. It is essential for equitable participation in modern civic life.

Table 1.

Three Scenarios of AI's Impact on Social and Civic Life

Scenario	Characteristics	Potential Social Outcomes	Implications for Civic Engagement
Pandora	- Opaque AI systems; AI systems designed without transparency or accountability - Algorithms that reinforce existing biases and socioeconomic inequalities - Centralized control over data and decision power	- Erosion of public trust in democratic institutions - Marginalization of underrepresented communities - Algorithmic exclusion from jobs, housing, credit, and services - Increased surveillance and control	- Reduced public participation in democratic processes - Disempowerment of citizens, especially those from marginalized groups; Barriers to full participation in social, economic, and political life
Jeffersonian	- AI systems developed with transparency and accountability - Algorithms designed to promote fairness and inclusivity - Active public participation in AI governance	- Strengthened public trust in democratic institutions - Empowerment of underrepresented communities in digital and physical civic spaces - Fairer access to jobs, housing, healthcare - Enhanced civic participation through accessible AI tools	- Increased public engagement in democratic processes - Strengthened inclusion across society - Empowerment of citizens to influence policy and decision-making
Panglossian	- Blind faith in tech as neutral/good - Minimal oversight or critique - Market-driven development	- Unintended harms - Widening digital divides; exclusion of vulnerable populations from digital systems - Passive public	- Passive citizenry; erosion of local agency and critical dialogue - Limited access to benefits of innovation; false sense of inclusion - Over-reliance on tech without critical engagement

In the *Pandora scenario*, the lack of AI literacy and transparency results in a form of civic disempowerment. Communities that lack the knowledge or tools to understand or question algorithmic decision-making become passive recipients of opaque, potentially discriminatory outcomes. This is especially dangerous for vulnerable populations—such as low-income individuals, migrants, or linguistically diverse groups—whose access to rights and services is often mediated by AI systems. Without literacy, individuals cannot recognize when a system is unfair, nor do they know how to seek recourse. In this context, the lack of AI literacy becomes a mechanism of exclusion, violating not only democratic norms but also the right to autonomy, dignity, and informed consent.

The *Jeffersonian scenario* illustrates the emancipatory potential of AI when accompanied by inclusive, critical, and widespread AI literacy. Here, AI literacy is framed as a civic good: the

means by which individuals can participate meaningfully in discussions about data ethics, algorithmic fairness, and the governance of emerging technologies. It is also a human right, aligned with Article 27 of the Universal Declaration of Human Rights, which asserts that everyone has the right to "share in scientific advancement and its benefits." Equipping citizens with AI literacy ensures that they can actively shape how technology intersects with their lives, rather than be shaped by it. This includes the ability to challenge algorithmic decisions, advocate for transparency, and participate in the co-design of fairer systems.

The *Panglossian scenario*, while seemingly neutral, poses risks by fostering complacency. In societies where AI is seen as inherently beneficial and where digital literacy is narrowly defined as technical proficiency, critical engagement is often sidelined. This reinforces a technocratic vision of society in which decisions are delegated to systems that remain outside the public's understanding or control. In such a context, the lack of robust AI literacy—particularly one that includes ethical, civic, and human rights dimensions—undermines the democratic ethos and risks replicating historical forms of marginalization under a veneer of innovation.

Taken together, these scenarios demonstrate that AI literacy must be understood not merely as a technological skill but as a civic right and human necessity. This is especially significant given the profound role AI now plays in mediating participation, opportunity, and agency. Just as reading and writing became essential to democratic citizenship in the age of print, AI literacy must also be seen as indispensable in today's algorithmic era. It is not enough to simply use AI-driven tools; citizens must also be able to interrogate, influence, and co-create the systems that affect their lives.

THE ADDED COMPLEXITY FOR SECOND-LANGUAGE LEARNERS

For L2 learners, the challenges associated with AI literacy are even more complex. In a globalized world, L2 learners are often transnational citizens, refugees or economic migrants who must navigate not only linguistic barriers but also AI systems that are designed mainly with native speakers and dominant cultural norms in mind. These technologies often assume fluency in the host country's language, overlook non-standard linguistic expressions, and encode cultural assumptions that marginalize diverse worldviews. Thus, L2 learners face not just a language gap, but a deeper epistemic exclusion: they are expected to comply with the logic of systems they had no voice in shaping.

This dual burden of linguistic and algorithmic exclusion raises urgent questions about equity and inclusion in the digital age: how can L2 learners meaningfully integrate in their host societies and participate in civic life if the tools of that participation are not designed for them as well?

Far from abstract concerns, this question takes on immediate urgency in domains where automated systems make or influence critical decisions. When language proficiency becomes a proxy for credibility, intelligence, or eligibility—as it often happens in algorithmically mediated environments—L2 users are not just disadvantaged; they are structurally sidelined. As an example, I highlight a few particularly concerning areas, where algorithmic exclusion has life-altering consequences. These areas are related to employment screening, healthcare access and immigration services, where language becomes both a technical filter and a social barrier.

1. *Job application platforms* powered by AI often use automated screening tools to filter candidates based on linguistic cues—parsing résumés, cover letters, and even video interviews for "native-like" fluency, phrasing, or grammar (Albassam, 2023; Yam &

Skorburg, 2021). These screening tools frequently operate on models trained on dominant language patterns, implicitly privileging native speakers and penalizing candidates who express themselves differently (Hofmann et al., 2024; Liang et al., 2023). Non-native phrasing, despite conveying competence or experience, can trigger rejections before a human ever reviews the application. In such cases, L2 speakers are not just navigating language difference; they are navigating systems that equate fluency with employability, regardless of actual skills or qualifications.

2. Similarly, *healthcare and immigration systems* increasingly rely on AI-based forms, automated intake chatbots, and triage systems that presume a high level of linguistic and cultural fluency (Anderson & Rainie, 2023; Harby et al., 2024). These interfaces often struggle to accommodate diverse language repertoires, regional dialects, or culturally specific ways of expressing need, pain, or urgency. For example, a patient using idiomatic or non-standard English to describe symptoms may be misunderstood by a chatbot, potentially leading to delays in care or misdiagnosis. In immigration contexts, the consequences of misinterpreting an AI-based system can be severe—affecting legal status, access to asylum, or family reunification. A case study revealed that an Afro-Indigenous detainee's Portuguese dialect was not recognized by an AI-powered translation tool, leading to six months of miscommunication and uncertainty regarding his asylum application (Bhuiyan, 2023).

In all these areas presented above, AI does not simply reflect existing inequalities; it can amplify them by embedding linguistic bias into decision-making processes that are opaque, unaccountable, and hard to challenge. These systems, often presented as neutral or efficient, obscure the fact that many L2 users must adapt to communication standards of which they may not be aware.

Addressing this requires not only technical improvements—such as more robust multilingual natural language processing (NLP) and better error tolerance—but also a reframing of what counts as valid or professional communication in public systems. Justice-oriented AI design must recognize that L2 speakers are already navigating these institutions with resilience and skill; the responsibility lies with the systems to adapt and support them, not filter them out.

Framed within the *Pandora–Pangloss–Jeffersonian* spectrum, the current reality for many L2 learners veers dangerously close to the **Pandora scenario**, where AI systems reinforce and deepen inequality, limit access, and erode democratic agency. L2 learners are not just linguistically disadvantaged—they are systematically silenced. Their voices are often misrepresented or excluded entirely by language-biased algorithms. In NLP models, for example, non-native speech patterns or regional dialects may be treated as "errors," leading to misunderstandings or penalties in AI-based assessments or services (Asrifan, 2025; Markl, 2023). This reveals not just technical failure but civic injustice, as it strips individuals of the basic right to be heard on equal terms.

Yet imagining a **Panglossian trajectory**—where technological advancement is assumed to benefit all—introduces a different kind of danger: complacency, because it ignores how existing power dynamics shape AI development and deployment. This perspective—the belief that "everything is fine because tech is neutral"—can be particularly dangerous for L2 learners. While these systems may appear to be working "well," they often invalidate the lived realities of multilingual users. Platforms may assume default fluency in a majority language or offer only superficial translation, reinforcing monocultural norms and ignoring real communicative needs. L2 learners in this scenario are technically included but culturally erased. They appear in the data, but are absent in the design.

By contrast, the **Jeffersonian scenario** offers a more hopeful yet still unrealized possibility—one where AI is understood as a civic tool that can boost democratic involvement, amplify marginalized voices, and embrace the diversity of its users. But this vision can only be achieved if we intentionally design AI systems that recognize multilingualism as a civic asset rather than a complication. It requires not only representation in data, but meaningful participation in governance, development, and oversight. The question we must ask is not only *"What kind of technology are we building?"* but *"What kind of society are we choosing to become?"*

This brings us back to Barber's challenge: if democracy is to benefit from technology, then politics—not technology—must take the lead. Citizens must "have a voice, demand a voice" in the systems that shape their lives (Barber, 1998a, p. 588). But what does that mean for those who are not yet fluent in the language of those systems—literally or metaphorically? L2 learners, far from being peripheral, are often frontline users of public AI systems, yet their needs are rarely centered in design or policy. A truly democratic society must treat AI literacy as a civic right—the right not only to use the tools but to question them, reshape them, and help create alternatives that reflect diverse realities. Until we do, we are not only excluding L2 learners from civic participation—we are failing to live up to the very ideals of democratic inclusion we want to uphold.

RECOMMENDATIONS:
BUILDING AI FOR LINGUISTING EQUITY AND SOCIAL AND CIVIC INCLUSION

As AI technologies become embedded in the infrastructures of public life—from education and employment to healthcare and immigration—their role as gatekeepers is undeniable. For L2 learners, this shift raises urgent questions about inclusion, equity, and representation. AI systems, as they currently exist, often reflect the linguistic hierarchies and cultural assumptions of dominant groups, marginalizing those who communicate differently. To counteract this, a justice-oriented approach must guide AI development, one that centers linguistic diversity as a core dimension of civic inclusion. Below are a few recommendations that could guide this effort:

First, *incorporating AI literacy in language education* can empower learners not just to use AI tools, but to also understand how algorithms work, what biases may be present, and how to advocate for transparency and fairness. This would equip L2 learners with the tools to understand and critique the technologies shaping their lives. Pedagogical strategies can include project-based learning, critical media analysis, and co-design workshops that integrate language development with digital citizenship.

Second, *embedding multilingualism at the design level* is essential. AI systems—particularly those involved in public services, education, and civic communication—should be designed from the ground up with multilingual functionality. This includes not only high-quality machine translation but also voice recognition systems that can accurately interpret non-native accents, regional dialects, and code-switching. Language options should not be an afterthought but must be integrated into core system architecture.

Third, *diversifying data sets and language models* is critical for reducing bias and enhancing performance across linguistic groups. The performance of AI tools often reflects the biases in their training data. Developers should actively work to expand datasets to include non-standard, non-dominant, and non-native speech patterns. This approach ensures more accurate and equitable outcomes in language processing, assessment tools, and user interactions. Engaging L2

communities in data collection through participatory data practices can help ensure that these systems better represent real-world diversity.

Fourth, *engaging L2 communities in the policy process* ensures that those most affected by automated decision-making are included in shaping AI governance. To facilitate their participation, it is crucial to provide linguistic accessibility in public forums, hearings, and digital platforms that address AI governance. Community-based organizations, language teachers, and cultural mediators can serve as bridges to bring these voices to the table.

Fifth, *developing ethical guidelines that focus on linguistic justice* requires moving beyond abstract fairness to uphold language as a civic and human right. Governments, educational institutions, and private tech companies should adopt ethical frameworks for AI that explicitly address linguistic discrimination. These guidelines must extend past technical fairness to embrace cultural and linguistic rights, recognizing the use of one's language as both a civic and human right. International principles such as UNESCO's 2021 Recommendation on the Ethics of Artificial Intelligence (Morandín-Ahuerma, 2023) provide a strong foundation for this effort.

Finally, *monitoring and evaluating impact continuously* is necessary to maintain accountability. AI systems deployed in multilingual contexts should be regularly evaluated for their social impact, particularly on L2 users. This includes tracking access, usability, and satisfaction across linguistic groups and being transparent about system limitations. Regular audits—preferably conducted by independent, interdisciplinary teams—can help ensure that systems remain accountable and adaptable.

In sum, building AI that supports linguistic equity is not simply a matter of better design; it is a political and ethical mandate. If we want AI to support democratic participation rather than deepen exclusion, we must ask not only what it can do but who it truly serves. Only then can we ensure that no one is left voiceless in an increasingly automated public sphere.

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Andrada Costoiu is an educator, researcher, and author whose work spans human rights, language rights, and emerging technologies. She has held academic, governmental, and international roles, including policy and EU project evaluation for Romania's Ministry of Commerce. A founding member of AIESEC Bucharest, she remains active in global civic development initiatives. Her novel, Under the Iron Curtain (2021), *explores life in communist Romania. She is currently training as a commercial pilot.*

Email: andradac@uci.edu