

## Editorial

### Human-Centered Intelligence: Technology, Inclusion, and Sustainability in a Transforming Society

Technological innovation is reshaping how societies learn, communicate, make decisions, and respond to complex environmental challenges. Artificial intelligence, machine learning, assistive technologies, and automated language systems now influence activities ranging from classroom instruction and urban environmental management to bilingual literacy and international destination marketing. Yet the significance of these technologies cannot be assessed solely through their technical performance. Their academic and social value ultimately depends on whether they enhance human capabilities, expand accessibility, respect cultural meaning, and contribute to sustainable development.

The four articles in this issue of *Latin American Business and Sustainability Review* (LABSREVIEW) examine this broader transformation from distinct but complementary perspectives. Together, they suggest that innovation should not be understood as the simple adoption of increasingly sophisticated tools. Instead, meaningful innovation requires the deliberate integration of technology with pedagogical principles, environmental responsibility, linguistic sensitivity, and human judgment. This issue is therefore organized around the theme of human-centered intelligence: the design and application of intelligent systems in ways that remain responsive to people, communities, cultures, and the environments in which they operate.

This theme is particularly relevant for Latin America and other culturally and linguistically diverse regions. Although emerging technologies can help address persistent educational, environmental, and economic challenges, their implementation also raises important questions. Who benefits from technological innovation? Whose knowledge, language, and cultural meanings are represented? How can accessibility be incorporated from the beginning rather than treated as an afterthought? When should automated outputs be accepted, and when is expert human intervention indispensable? The contributions in this issue engage with these questions across education, environmental science, bilingual literacy, and intercultural communication.

The issue begins with Melissa Fiori's article, "Social Constructivism, UDL, and Instructional Design in the AI-Enhanced Spanish L2 Classroom: Operationalizing Theoretical and Practical Implementation." The article addresses a central concern in contemporary higher education: how artificial intelligence can be incorporated into teaching without displacing either learner agency or the educator's pedagogical role. Fiori integrates social constructivism, Universal Design for Learning (UDL), and instructional design into a conceptual model for AI-enhanced second-language education. Social constructivism provides the theoretical foundation for understanding learning as a socially mediated process, while UDL offers a practical framework for designing flexible and accessible learning experiences.

Rather than treating artificial intelligence as an autonomous instructor, the article positions it as a pedagogical resource whose value depends on thoughtful instructional mediation. The educator remains responsible for establishing learning objectives, designing meaningful interactions, evaluating outputs, and guiding students' critical engagement with AI-generated content. This contribution is especially important at a time when educational discussions often oscillate between uncritical enthusiasm for artificial intelligence and calls for its restriction. Fiori offers a more productive position: AI can support accessible, collaborative, and engaging learning, but only when its use is grounded in sound learning theory and deliberate instructional design.

The second article moves from educational innovation to urban environmental sustainability. Daniel Leonardo Gonzalez Torres, María Isabel David Otalvaro, and Ricardo Andres Santa Quintero present "Multi-Output LSTM-Based One-Step-Ahead Hourly Forecasting of PM<sub>2.5</sub> and PM<sub>10</sub> at an Urban Station in Bogotá: A Two-Year Performance Analysis." Their study develops a deep-learning model to forecast hourly concentrations of two major atmospheric pollutants at the Fontibón monitoring station in Bogotá, Colombia.

Using a multi-output Long Short-Term Memory network and a seven-day sliding observation window, the authors demonstrate the capacity of machine learning to identify nonlinear temporal patterns in urban air-quality data. The model explains approximately 70% of the variance during the validation period, providing a reproducible proof of concept for the development of urban early-warning systems. The contribution extends

beyond predictive accuracy. Reliable short-term forecasts can support public-health advisories, environmental policy, institutional planning, and more responsive urban management. In this context, intelligent systems become instruments of environmental governance. The study demonstrates how data-driven innovation can contribute to healthier and more sustainable cities, particularly in high-altitude urban environments where atmospheric and meteorological conditions create distinctive pollution challenges.

The third article, “Accessibility Meets the Science of Reading in Spanish English Dual Language Classrooms,” by Irene Oramas Sosa and Carlos Zarzalejo, returns to education but addresses it through the intersecting perspectives of bilingual literacy, accessibility, and educational equity. The authors introduce the concept of inclusive biliteracy, defined as the coordinated development of literacy in Spanish and English within instructional systems designed to be equitable from the outset.

Their framework brings together four dimensions: structured literacy, cross-linguistic development, UDL-based accessibility, and technology-supported instruction. This integration is significant because multilingual learners, and particularly multilingual learners with disabilities, are often served through fragmented educational approaches. Literacy development, bilingual education, accessibility, and educational technology may be treated as separate areas, even though they converge in the lived experiences of students. By connecting these domains, the article presents accessibility as an infrastructural condition of effective education rather than a supplementary accommodation. The authors also connect inclusive biliteracy with equity and human-capital development. Accessible bilingual instruction expands opportunities for learners to participate fully in education and society while preserving the cognitive, social, and cultural value of multilingualism. Importantly, the framework generates testable propositions that can guide future empirical research. It therefore provides both a conceptual foundation and a research agenda for examining how inclusive biliteracy can be implemented and evaluated across educational settings.

The issue concludes with Pamela Doran and Carlos Zarzalejo’s “Critical MT Praxis: Machine Translation and Tourism Slogans in Latin America.” This article examines a less visible but increasingly consequential dimension of automated intelligence: its mediation of cultural meaning. Tourism slogans are not merely informational statements. They are condensed expressions of identity, emotion, and destination positioning intended to create an affective relationship with prospective travelers. When these slogans are processed through automated translation systems, lexical accuracy alone cannot guarantee communicative effectiveness.

The authors analyze 40 Latin American tourism slogans using Google Translate, DeepL, and Microsoft Translator and compare their outputs with human translations. Although 52.5% of the machine-generated translations achieved high fidelity, the analysis identifies recurring problems involving literalism, tonal flattening, lexical imprecision, and culturally misleading cues. DeepL generally produced the most natural results, but none of the systems consistently preserved the full persuasive and emotional force of the original slogans.

Through their proposed Critical MT Praxis framework, the authors demonstrate that machine translation must be assessed not only in terms of semantic correspondence but also through its cultural and affective consequences. This finding has direct implications for tourism marketing, destination branding, and intercultural business communication. Automated systems can facilitate multilingual communication, but human linguistic and cultural expertise remains essential when communication depends on emotion, identity, and persuasion.

Collectively, the four articles show that technological effectiveness and human-centered design are not competing priorities. They are mutually dependent. Artificial intelligence in the classroom requires instructional mediation; environmental forecasting requires connection to public decision-making; bilingual education requires accessibility by design; and machine translation requires cultural and affective evaluation. Across these contexts, technology becomes valuable when it supports human agency, expands participation, strengthens informed decisions, and responds to the particularities of language, place, and community.

This issue invites scholars and practitioners to move beyond asking whether intelligent technologies should be adopted. The more consequential questions concern how they should be designed, governed, interpreted, and integrated into social systems. By addressing these questions across disciplinary boundaries, the articles reinforce LABSREVIEW’s commitment to research that connects innovation with sustainability, inclusion, and the realities of Latin America and its global relationships.

The future of intelligent systems will not be determined by computational capacity alone. It will depend equally on the educational, ethical, cultural, and institutional choices that guide their use. Human-centered intelligence offers a framework for making those choices responsibly—and for ensuring that technological progress contributes to more accessible, sustainable, and culturally responsive societies.

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