Journal of Systemics, Cybernetics and Informatics (2024) 22(1), 105-113
https://doi.org/10.54808/JSCI.22.01.105

# Wi-Fi and the Wisdom Exchange:
# The Role of Lived Experience in the Age of AI

Teresa H. Langness
*Founding Board President, Full-Circle Learning International*
info@fullcirclelearning.org

## Abstract[1]

*The ubiquitousness of Artificial intelligence (AI) now grows faster than a weed in a garden patch. This momentum frequently raises questions about how to implement inclusivity and ethical research standards. It also suggests the need to integrate lived experience rather than taking only the shortcut to AI's information highway. We wonder, Does the nature of technology present geographic bias? As we speed up the process of "knowing," do we lose a bank of knowledge based on natural observations and shared intentions?*

*This paper examines the nature of AI's Socratic conversations compared with the communications invoked by global grassroots research study, to evaluate how each can contribute unique pathways linking science to social science. Pivoting around AI's summary of four water-conservation practices, survey questions were sent to seven locations in Sub-Saharan Africa where direct onsite farm research projects emphasized relationships between nature's processes and local quality of life. The results shed new perspectives on the value of supplementing formal online data with communications derived from grassroots sources – and the resulting implications for global knowledge and the sustainability of human systems.*

**Keywords:** *Artificial Intelligence (AI), Chat GPT, Agriculture, Wi-Fi, Africa, Technological Access, Local versus Global Perspectives, Grassroots Research*

## 1. Introduction

AI has moved swiftly on a trajectory toward dominance as an academic research tool. As early as 2016, the Nobel Turing Challenge proposed "a grand challenge to develop AI systems that can make significant scientific discoveries that can outperform the best human scientist." (Kitano, 2016).

[1] Acknowledgment: David Langness, Peer Editor

This challenge based its high confidence level largely on the AI system's ability to "learn from data and interactions with humans." In late 2022, Nature Review predicted advances "within our lifetime" that would coalesce scientific understanding with multidisciplinary collaborations between natural scientists, computer scientists, and philosophers of science (Krenn et al. 2022).

Today's AI has many unfolding uses but has especially increased basic machine learning, through Chat GPT, a technology that can predict logic paths and communication styles based on an archival database, unleashing a range of ethical issues. For example, to what extent might AI alter the intentions of the research? How can the addition of locally relevant lived experience compensate for AI's built-in biases?

These questions are especially important in a world without universal access to Wi-Fi. They are also essential questions as we guide students to ask those important "why" questions that will hitch their learning and research to a North Star.

For a deeper understanding of these questions and their life-changing implications, we will extend our vision from the patterns in the AI network toward the patterned garden plots of the global south.

First, consider historical attitudes about the nature of grassroots research. Paulo Freire's Pedagogy of the Oppressed, in the 1960s, defined the purpose of education as liberation from one-way discourse, or what he called the "banking" model. (Freire, 1970). His theory presumed that everyone in a social system acts either as the oppressor or the oppressed and that only self-constructed knowledge emanating from the oppressed masses promises freedom. (Freire, 1970). This theory influenced educational systems around the world over the intervening 60 years.

Another school of thought, however, posits that the dualism of Freire's philosophy, rather than liberating, sometimes propagates factions and false dichotomies, limiting opportunities for the melding of all human knowledge. When motivation springs not from division but from connection, it honors collaborative lived experiences and survives the limitations of one-way research inputs (Platt, 2022). Access to Wi-Fi then becomes an accouterment rather than a substitution for the wisdom shared across diverse populations, expanding the likelihood of a true amalgam of lived experience and academic theory.

This paper evaluates a specific research venue: school farms where regenerative agriculture, water conservation, and sustainability come together. We also draw examples from the ancient but newly coined philosophy of biomimicry, which invites researchers to mimic nature's life-generating processes (National Geographic Eds., 2017) Examples of biomimicry include swimsuits with the features of shark skin or Velcro based on the adhesion of burr needles to fur (MacKinnon, 2021). Advocates advance an understanding of nature's patterns to create analogs in materials science, genetics, and other life-shaping fields of research. They adapt the terrestrial textbook to identify innovations (Gunther, 2017).

We can assume, a priori, that "shared wisdom" (observing, applying, and exchanging information) has influenced human development throughout history. Using AI to explore a thesis without the benefit of this process can narrow the lens to focus only on an archive of presumptive predictions. (Hao, 2020). What dimension does shared wisdom lend that the artificial brain lacks? Or can we integrate both?

## 2. The Demonstration Model

The researcher first launched requests that led AI on a multi-step chase toward a list of common water conservation strategies. These practices were then presented to educators in the developing world, to compare the impact of linear communication with that of global research based on a wisdom exchange (comparing conservation and regenerative farming practices and food distribution methods in similar but distant locations). Would both research methods invite a deeper understanding across disciplines and geographies?

The researcher first asked AI to demystify the concept of photosynthesis, with a precise question: "Can you please give a scientific definition of photosynthesis?"

AI offered an equation: $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$ (AI Retrieval from 2018 Britannica). It went on to explain the need for an equal number of water and carbon molecules, prompting the researcher to ask, "Using your data and ideas, can you conceptualize a world in which photosynthesis could occur as frequently under drought conditions as in a temperate rainforest?"

AI acknowledged the difficulty of photosynthesis under drought conditions and quickly proceeded to identify drought-resistant plants such as creosote and succulents. As the parlay of questions and answers continued, a Western bias pervaded AI's discussion of the most common conservation methodologies: Xeriscape, drip irrigation, mulching, and water catchments such as rain barrels.

A deeper research dive reveals that only 5% of the world's population uses drip irrigation (MIT Eds, 2023). Furthermore, Xeriscape landscaping, invented in Denver, Colorado, is little known outside of the Southwestern United States (Duncombe, 2021). AI's examples consistently presented a Western slant, offering content without asking for context. Its Socratic line of communication lacked examples from parts of the world where the stakes are highest for the devastating impacts of drought. The "universal brain" had committed the erstwhile human blunder of basing its communications on assumptions about the geographic location and the researcher's need to know, rather than responding to the questions in inclusive ways.

Trial and error serve as teachers in the lived experience. For example, the process of biomimicry bids us explore how the natural world would answer a question about photosynthesis. While AI offers an equation for a six-celled pairing, it struggles with the nuances of the question. Yet Benyus, in her book Biomimicry, describes the epiphanies that resulted when a team of transdisciplinary researchers – a chemist, a biologist, and a molecular scientist – drew on nature's models to recreate the microscopic lessons offered by photosynthesis. Their discussions about what a leaf and an antenna have in common led to a rash of discoveries, including the model for turning sunlight into electrical currents (Benyus, 2022).

When researchers use their eyes to observe living systems, they can add imagination and intentionality to observation. For that outcome, we look to fieldwork.

## 3. Grassroots: The Sediment of Research

Smallholder farms worldwide bring in one-third of the world's food supply (Ritchie, 2021). Increasing research on climate-resilient yields can improve global food security, especially in the developing world. The nongovernmental organization Full-Circle Learning (FCL) – www.fullcirclelearning.org – promotes integrative thinking and the pursuit of applied solutions for societal challenges. In August 2023, the organization's broad reach allowed for a multinational comparison of food security projects. In each region, climate-based impacts such as drought or flooding had posed challenges, prompting praxes that focused on water conservation, photosynthesis, and sustainability.

A survey went to the network of FCL instructors conducting educational farm projects. The locations spanned seven regions across Cameroon, The Gambia, Ghana, Liberia, Uganda, and Nigeria, where institutions were studying regenerative agriculture not only for research purposes but to reduce widespread hunger. The survey reflected impacts among 739 student researchers, each group sharing outcomes with other countries to expand their joint understanding.

Respondents answered key questions related to:

- Drought-resistant methodologies;
- Comparisons of onsite versus online research;

- Crop yields and community impacts;
- Transdisciplinary impacts on communications, scientific understanding, creativity, and motivation.

The survey turned up a range of innovative conservation and regenerative farming methods far beyond AI's summary. This sheds light on the limitations of AI when it omits data not heavily weighted in the publications (grassroots research directed toward truly global sustainability). The survey results revealed increased incentives and conversations that link creative processes, scientific understanding, and problem-solving (FCL, 2021)

.

## 4. Survey Results

All projects in the African regions engaged onsite instructors. More than twice as many relied solely on that guide rather than conducting online research. Over a period of three months, instructors reported that 57% of participants showed flourishing transdisciplinary communication skills, and 43% increased their problem-solving capacities and research interests, especially on topics such as climate change and the health impacts of food insecurity.

Beyond these benefits, significant community impacts occurred. An average of 56% of student researchers – between 10% and 100% in each country – experienced enhanced motivation upon seeing the benefits of their creative ideas. The exchange of methodologies across borders magnified these gains. Of the farming projects, 43% reported enough crop yield to test the effectiveness of the methodology and/or the science, and a full 99.9% reported enough crop yield to share food and knowledge with community members and/or to significantly reduce local food insecurity (FCL, 2023). The results suggested that the search for scientific awareness should include the lived experience of those addressing social challenges.

## 5. Dimensions of the Global Lived Experience

The bridge in Figure 1 compares collaborative lived experience with an AI-based Socratic process. Crossing a bridge into a city, the speed limit may be 35 mph in the incoming lanes and 55 in the exiting lanes. Similarly, AI inquirers travel in a linear stream of questioning, and the responses return at a fast pace. They can traverse back and forth as many times as they like, but only in this linear fashion, with vistas restricted by the response pathway.

In the next image, a hot air balloon represents a lived experience shared in a wisdom exchange (e.g., a global regenerative farming movement). Such a vessel moves with the wind at about 20 mph. The crew scans the landscape to steer toward a safe but unpredictable conclusion. The travelers expend great effort but enjoy views of the ground over which they've soared amid shifts in wind and weather. Because each crew member faces a different direction, their shared evaluation invites exhilaration informed by unique vantage points.

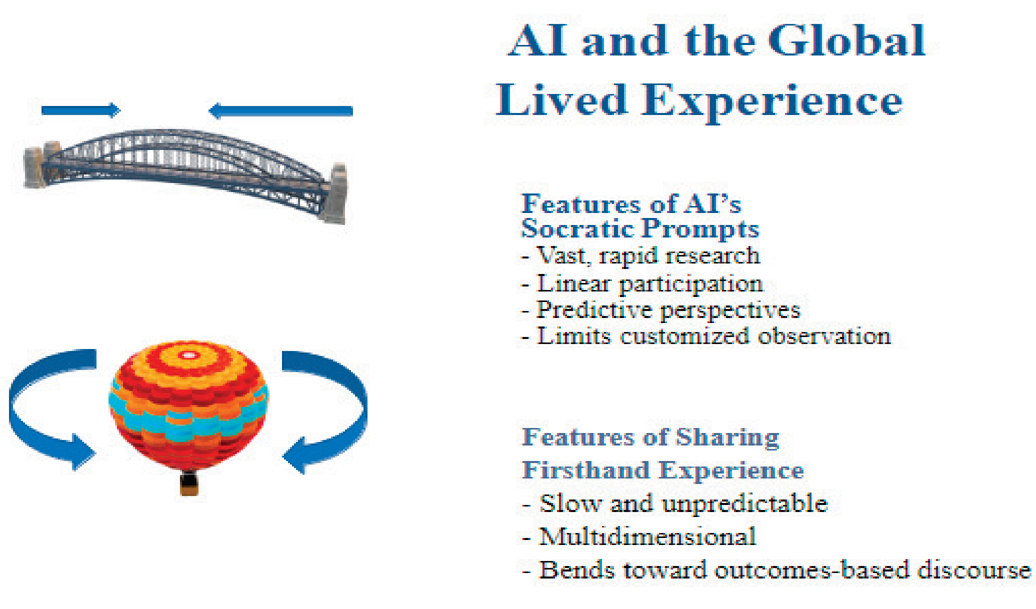


**Figure 1**

Both modes can generate conversations, but the second method mimics the rising currents of nature. Without this, the first method lacks dimension.

## 6. Conclusion

The survey underscored statistics that reveal uneven inputs to and from AI. Global access had reached less than half by 2023, with just 19% of developing nations' populations connected online (UN, 2023). In regions without extensive libraries and universities, access to AI's plethora of information can augment research, but only within the limitations of its predictive tendencies, based on the regional origins of the canon of all written content. For a deeper scientific understanding, researchers can look beyond the patterns on the computer screen toward the patterned garden plots of the global south.

Research in the age of AI calls for cognizance of the system's inherent biases while honoring the value of data gathered in relevant grassroots contexts and shared with parity across continents. This fusion of research sources holds promise, as we synthesize the gleanings gathered through Wi-Fi and those transdisciplinary conversations shared across a web of lived experience.


## Acknowledgments

Reviewers

1. Duncan A. Thomas, Policy & Knowledge Exchange Lead, Tobacco Control Research Group, 21st Century Department for Health
2. Jan Maes, Resilient Communities and Climate Solutions, SeedMondy board member, Katholieke Universiteit Leuven
3. Lily T. Ning, MAEx, Antioch Change Agent Education program, Los Angeles Unified School District Educator

Peer Editor

David Langness, Editor, bahaiteachings.org

## References


Benyus, Janine M. (2002). *Biomimicry*. New York: William Morris, pp 69-92.

Britannica Encyclopedia Eds. (2018, Retrieved from A.I.2023). What is the basic formula for photosynthesis. https://www.britannica.com

Duncombe, C. (2021). *Forty Years Ago, Xeriscaping Started Changing the Landscape of Denver*. Portland, Oregon: Westwood.

Freire, P. (1970). *Pedagogy of the Oppressed*. New York: Bloomsbury. 43-70; 71-86.

Full-Circle Learning (2023). *Food Security Survey*, Full-Circle Learning internal documents. Full-Circle Learning internal documents.

Gunther, S. (2022). Eight Amazing Examples of Biomimicy. Treehugger, July 21, 2022. Doi:. https://www.treehugger.com/amazing-examples-of-biomimicry-4869336. www.treehugger.com

Hao, K. (2020). The True Dangers of AI are Closer than We Think. MIT Technology Review. Hao, K. (2019). The Dangers of AI Are Closer than You Think. *MIT Technology Review*. https://doi.org/www.technologyreview.com/2020/10/21/1009492 www.technologyreview.com.

Kitano, H. (2016). AI to win the Nobel Prize and beyond: Creating the engine for scientific discovery. *AI Magazine*, (37), 39-49. https://doi.org/2642-Article%20Text-4933-1-10-20160305.pdf. www.a-i-magazine.com.

Kitano, H. (2016). AI to win the Nobel Prize and beyond: creating the engine for scientific discovery. AI Magazine 37, 39-49.

Krenn, M., Pollice, R., Guo, S.Y. et al. (2022). On scientific understanding with artificial intelligence. *Nat Review Phys*, *4*. 761–769. https://doi.org/10.1038/s42254-022-00518.; Cornell University. Doi https:/.[2204.01467] On scientific understanding with artificial intelligence). arxiv.org.

MacKinnon, R. (2021). An Introduction to Life's Principles. Biomimicry Institute Blog. *http://biomimicry.org*

MIT Student Eds. (2023). *Water*: MIT.edu/mission 2017/irrigation. Doi: https///doi.12.000scripts.mit.edu. www.news.mit.edu.

National Geographic Eds. (2017). Nature yields new ideas for Energy and Efficiency. July 2017. doi.org/120419-biomimicry-for-energy. www.natinalgeographic.com.

Platt, J. (2021). Humanitarian Education Systems and Resilient Identities. Doi. https:// fullcirclelearningassets.s3.amazonaws.com/Independent-Assessment-at-Year-30 www.fullcirclelearning.org.

Ritchie, H. (2021). Smallholders produce one third of the world's food. OurWorldInData.org. Published online at OurWorldInData.org. Retrieved from: 'https://ourworldindata.org/smallholder-food-production'

UN Office of the Secretary-General's Envoy on Technology Eds., (2023). Achieving Global Connectivity by 2030. doi.techenvoy/content/global-connectivity www.un.org