Φιλοσοφια
Volume 27, 3: 2026

SUSTAINABILITY AS AN ETHICAL VOICE OF EDUCATIONAL TECHNOLOGY

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In this paper, I aim to identify what persistently remains human in our most radical use of tools by expounding the significance of sustainability, particularly in education technology. Specifically, I argue that sustainability may provide an ethical face to the extensive use of technology in learning because it provides logistical, economic, and social parameters to always learn and act while having in mind the people (i.e., consumers and learners) of the future. For theoretical grounding, I will be using the lens of Heidegger's Gestell (enframing) to critique the tendencies of objects both present and ready at hand to encroach on the human consumer, and Levinas' metaphor of the tamarisk that may be interpreted as a call to protect the natural processes that carry every moment towards a future. This paper is carried out while having in mind the importance of philosophy to contribute to conversations about technology, as its use nowadays is in its radically extensive scope. With the notion of sustainability keeping the human face, discussions on the ethical use of technology in learning may keep a resonating voice that humanity cannot use technology only for personal gains, and more that we cannot be encroached by the tools that we created.

Keywords: sustainability, education technology, phenomenology, humanization

INTRODUCTION

Education technology (EdTech) has been a prevailing topic in conversations about future thinking, most likely because it emerged as a compelling solution to the problem of learning delivery when on-site classes could not be convened due to the COVID-19 outbreak. But prior to 2020, there has been literature that addresses this intersection of education technology and futures thinking, which mostly focuses on the significance of technology in shaping the landscape of teaching and learning. In 2018, the Organization for Economic Cooperation and Development (OECD) published "The Future of Education and Skills Education 2030". This is an important document for it offers a vision through an orientation that gears the education stakeholders to face the VUCA (volatile, uncertain, complex and ambiguous) world, in an era that beholds,

"a new explosion of scientific knowledge and a growing array of complex societal problems (OECD 2018, 1,3). Though released in 2020, it was during the pre-COVID times when OECD prepared "Scenarios for the Future of Schooling" which is a collection of documents which explored how technology could direct the future of education towards individualized learning. There is also "Artificial Intelligence in Education: Challenges and Opportunities for Sustainable Development," a UNESCO report co-authored by Pedró, Subosa, Rivas and Valverde (2018) which analyzed the ethical challenges and opportunities in the use of AI in education. In the same year, UNESCO also released "Futures in Education: Towards an Ethical Practice" (2018). But further throwback can lead us to earlier studies in 2017, among them are specifically about education technology like that by Anthony G. Picciano's (2017) "Blended Learning: The New Normal and Emerging Technologies"; Jude Barone et al's (2014) "Learning Futures: Education, Technology and Social Change" and Charles Dede's (2014) "Constructing Optimal Futures for Education – Technology Foresight in Educational Policy and Planning" which stressed the importance of foresight in educational planning and addressing the technological gap between formal educational environments and learner's everyday technological concerns.

What are most widely known and employed in online class management nowadays are Learning Management Systems, introduced in the 1980s for training administrators through a program called Registrar. This is courtesy of Silton-Bookman Systems, which devised the nomenclature LMS in 1984. Simultaneous to this is Massachusetts Institute of Technology's Project Athena, which is said to be the first attempt at an online classroom where students can "edit and annotate paper, present classworks, and submit assignments (Lang 2024). This is the inception of James Paridis and Ed Barrett, who provided computer access to students.

But the earliest point of its conception can be traced back to 1924, when Sidney Pressley developed the Teaching Machine. This was followed in 1956 when Gordon Pask designed SAKI, or Self-Adaptive Keyboard Instruction, to train key punch operators, and then the Computer-Based Training systems (CBT) in the 1960s, which pioneered the use of computers for instruction, self-paced learning, and interactive lessons. A notable example of this is Programmed Logic for Automatic Teaching Operations (PLATO), which was developed at the University of Illinois. The one we know of and currently use is already in the third phase: the modern web-based LMS, developed in the late 1990s. It is characterized as digital and internet-enabled, meaning it is intended for remote use. In the 2000s, we saw the rise of Course Management Systems like Blackboard and WebCT, which require institutional subscriptions. By 2002, Moodle had emerged as the first open-source LMS. Simultaneously, there is a rise in educational paradigms like Outcomes-Based Learning (OBE), which are concretized and optimized when supported by technological infrastructure. According to Qin and Chen (2025), technology bridges the curriculum to market-driven and competency-based goals, especially teacher effectiveness and graduates' employability. Consequently, institutions began training academic staff to manage flipped classrooms around 2013 and have adjusted their teaching modalities to include both onsite and online learning. Aside from ensuring graduate-readiness by exposing students to technologies relevant to the field of work, the use of EdTech has been helpful in addressing logistical concerns, such as a lack of classrooms and curricular

challenges, including managing lessons during class suspensions due to inclement weather and local emergencies.

We are living in a time when educational technology is so big, compelling, and has become a glaring facticity that needs to be faced. Stubbornly, it stays and further; and it would be very unpragmatic to ignore its persistent presence. How we deal with EdTech nowadays is already a fundamental part of the post-COVID new normal, and for that, its use is expected to be more extensive, its developments will become much more overwhelming, and its themes will just have to be connected to other elements of futures thinking, just like sustainability.

In this paper, I argue that the concept of sustainability can provide an ethical dimension to education technology. While these tools serve the purpose of learning in the present time, the call of sustainability insists that part of human progress is the accountability to welcome the Other that is beyond our time, of them who could not be objects relevant to our present becoming but would still evoke our concern for their welfare.

The 21st century has designated sustainability as the primary indicator of development, a concept formulated by the United Nations within the context of achieving a better quality of life, ensuring that the world can sustain its future generations. And this vision is actually time-bound, as when the 17 Sustainable Development Goals were introduced, they were straightforwardly referred to as the 2030 Goals. These goals, though not legally binding, are well stitched (even woven) in the fabric of all visions for global development, such that endeavors directed to these goals are funded by states and are being adapted and fostered by corporations and industries (Albela 2025, 171). Facing ecological changes and more complex social problems, institutions have accepted sustainable development as a favorable feature of policy-making as it would not only serve present needs but also safeguard resources of the earth for future generations (Aguas 2018). The 17 SDGs are integrated, with each of them affecting one another. They are grouped in three categories according to the elements of development: Economic, Social, and Environmental (171).

The field of education is among the most aggressive advocates of sustainability, through the United Nations Educational, Scientific, and Cultural Organization (UNESCO 2017), in promoting the principles of inclusivity, lifelong learning, and equitable quality education for all, leaving no one behind. (UNESCO 2026) To be more specific, UNESCO actively participated in the framing of Education 2030, which is under the coverage of SDG4 (quality education). By applying its mandate and tapping its pool of experts across the fields of education, natural sciences, social and human sciences, culture, communication, and information, UNESCO organized commissions and programs to achieve specific goals. Among these is the Social and Human Sciences Programme which aims to ground sustainability on universal values and principles of global solidarity, inclusivity, anti-discrimination, gender equality, and accountability. UNESCO also recognizes the role of culture as a precondition and context for the formulation of development policies and globalization processes related to sustainability, while capitalizing on the diverse sources of knowledge and the vital expressions of human freedom (UNESCO 2017) . This campaign for sustainability naturally cascades into active participation by educational institutions, through curriculum, pedagogy, research, physical plants, and policy implementation, so that its

operational structures would serve as a benchmark for other economic sectors (Albela 2025, 172). Education has become an exemplar in the promotion of SDGs: as vessels of learning and research (SDG4 – quality education), safe spaces for self-expression (SDG16 – peace, justice and strong institutions), social mobility (SDG5 – gender equality and SDG10 – reduced inequalities) and the general flourishing of human welfare (SDG2 – zero hunger, SDG3 – good health and well-being, SDG9 – industry, innovation and infrastructure and SDG11 – sustainable cities and communities). Additionally, the participation of schools in the 2030 Goals is hastened by UNESCO's collaboration with Times Higher Education, which provides institutional quality assurance, evaluation, and metrics for ranking (Albela 2025, 172).

If we are to follow the alignment-design as above, a discourse on sustainability in the use of EdTech will have to be under SDGs that are concerned about learning (SDG4), physical plant (SDG11), and innovation (SDG9). By such a vast scope, it is therefore worthwhile to philosophize about sustainability in EdTech, for both have become parts of the global development project, simultaneous with the industrial movement towards technologization and computerization.

But perhaps the most appropriate and realistic question to raise is how it fits – how do we assess the significance of sustainability and development goals to the technological advancements in education that entail matter, movement, consumption, and wastage? The promise of education technology towards learning efficiency always sounds good as it is framed in terms of progress, i.e., faster access, smarter systems, and broader reach, but up to what point can it deliver? Can it really deliver to all stakeholders of learning? How far can learning progress with the use of technology, considering the staggering consumption of energy, accelerated device lifecycles, and the surge in data for learning analytics? As EdTech reshapes the horizons of schooling and continually seeks to discover what else technology can do for education, it is perhaps also urgent to ask what education and its moral premises should demand from technology.

To be more specific, I would like to give sustainability a narrative that may give an ethical face to the extensive use of technology in learning, since it is a concept that may provide logistical, economic, and social parameters to always learn and act while having in mind the people (i.e., consumers and learners) of the future. As I argue that technology in learning should make us more human and ethical, I also intend to demonstrate how sustainability can question the enframing tendency of technology and pave the way for an Other who is yet to come and could sustain the humanistic goal of education. For theoretical grounding, I will be using the lens of Heidegger's *Gestell* to describe the risk of concentrating concern on tools, and *poeisis* to highlight the humanizing promise of the creative use of technology. I will also use Levinas' metaphor of the tamarisk that may be interpreted as a call to protect the natural processes that carry every moment towards a future. Hence, this path: First, I will outline how sustainability is positioned within EdTech, coming from recent literatures. Second, I shall find where sustainability stands in the phenomenologies of Martin Heidegger and Emmanuel Levinas, respectively, in *Gestell,* which means enframing, and *Autrui,* which means Other. And then finally, from reading them together, we shall articulate how this phenomenological frame of sustainability can provide an ethical context for reflecting on the proper place of innovation and tools in education.

This will be followed by a hermeneutic derivative on how to be on our "ethical toes" in building curriculum, particularly in the areas of systems design, pedagogy, and institutional policy.

SUSTAINABILITY IN EDUCATION TECHNOLOGY

We begin this part by grounding the matter in how sustainability is defined in the 1987 Brundtland Commission, which targets to "meet the needs of the present without compromising the ability of future generations to meet their own needs" (cf. UN 2016 in Albela 2024, 169-170). Sustainability in EdTech is a multidimensional concept that revolves around three important concerns:

1. **Ecological**. EdTech Sustainability is certainly concerned about protecting the planet for its future residents. This is the part that ensures our learning experience will not compromise our dwelling, as it necessarily involves the use of energy and consumption of matter. While we believe that there is less mobility in online learning, the consumption of technology contributes to our carbon footprint. Digital learning technologies rely on energy-intensive infrastructure; hardware and software, our gadgets, down to their smallest byte, have tapped matter that emits carbon, which is evidenced even in the simplest setup of data centers having wired gadgets and infrastructure (Lupetti et al. 2025). The production of laptops, tablets, and smartphones, as well as the emergence of new models, required rare earth minerals and generated environmental degradation and social harm in mining regions (Resilience 2020). Imagine how each purchase of a new model can bring an old gadget to the bin, which communities already provide a new section in the garbage area, such as e-waste, which has low recycling rates and enormous loss of recoverable materials (MDPI 2023). Scholars then argue that digital education cannot be considered sustainable without acknowledging the ecological imprint of its technological ecosystem (Baena-Morales et al 2020; Alam 2025).
2. **Social**. This dimension pertains to equitable access to digital resources, connectivity, and digital literacy. Studies demonstrate that digital transformation exacerbates inequalities within and across countries when the marginalized sector does not have access to reliable technology (Nostratabadi et al. 2023). The economic capacity of stakeholders serves as a pretext for this dimension, as technology comes at a price. LMS has specific gadget and connectivity requirements that are not affordable and not accessible to all, thereby causing the digital divide. The social dimension is concerned about disparities brought by financial capacity to access the learning tools. This resonates with a similar experience in the 1990s, when richer kids received higher grades because they had access to desktop computers, printers, and Microsoft Encarta (Chisom and Okah-Tim 2022), enabling them to produce well-prepared research homework, compared to those who only transcribed notes from encyclopedias in the library to index cards and typed them on typewriters. This socio-economic divide has measurable effects on student outcomes, including increased dropout rates and reduced enrolment rates at the tertiary level. Conceptual frameworks for equitable EdTech stress that social sustainability must be a foundational design concern rather than an afterthought (Orieno et al 2024).

3. **Pedagogical.** This is about the long-term viability, depth, and meaning of pedagogical practices in technologically controlled settings. Sustainable pedagogy requires keeping the reflective, relational, and embodied forms of learning even as digital tools change from time to time (Huang 2024). Research on Education for Sustainable Development (ESD) stresses that curricular designs must uphold ecological awareness (Samarang et al 2024), critical thinking and transdisciplinary learning should be enhanced, and not replaced by technology (Echegoyen-Sanz et al. 2024; Blose 2025), much so that it builds the pedagogical values of reflection, dialogue, agency, and positive teacher-student relationships. Sustainable pedagogy upholds the responsible use of technology in teaching, that the pedagogue should carefully avoid instances when learning is reduced to full reliance on tools and instruments, and should instead maintain educational practices that are meaningful, transformative, and relational. This is fostered by institutional policies such as the European policy document *Green Digital Education* (education-for-climate.ec.europa.eu), which underscores that pedagogical digital competencies are central to sustainability, thereby extending pedagogy as a matter of institutional capacity-building, more than a classroom practice.

These three dimensions help us realize that sustainability in education technology is inherently ethical, since its underlying issues call for subject and institution-based accountability in making decisions in the use of technology. For that, philosophy enters as this "discipline of asking questions" will certainly help us find the proper direction for our inquiry.

WORKING OUR WAY AROUND HEIDEGGER'S *GESTELL* AND LEVINAS' *AUTRUI*

The common go-to in finding Heidegger's thoughts on technology will have to be his 1964 publication *The Question Concerning Human Technology*, which was a lecture given on November 18, 1955. In this work, we can find a critique of modern technology and its reductionist tendency to treat the world and humans as "standing reserves" or resources that should be optimized and controlled. He stressed this point by talking about *Gestell* or enframing, which he first described as a "gathering together or that setting-upon which sets upon man, i.e., challenges him forth, to reveal the real, in the mode of ordering, as standing reserve (Heidegger 1964, 20). We are going to process this very dense description by highlighting three important keywords: ***setting-upon***, ***revealing the real,*** and ***standing reserve***. Gestell "sets-upon" in such a way that we perceive things as an assembly of parts which falls within the sphere of technological activity and responds to Enframing (21); that *stellen* builds, but also challenges the assembly, and for that connects (presents) itself to a bigger system which "discloses" or "reveals the real".

In such producing and presenting, there is *poeisis*, a coming-forth into unconcealment, a revelation. Heidegger tells us further that, "in enframing, that unconcealment comes to pass in conformity with which the work of modern technology reveals the real as a "standing reserve" (Heidegger 1964, 21) or a ready-to-use facility just like a water-tank or a go-bag. And so with enframing, the

technological revelation goes with a challenging and compelling prompt that things be neutral and made available for future use. While it makes sense to accumulate capital for future consumption, Heidegger cautions that enframing endangers humans in themselves and to everything that is (27), because our present determinations or ordering-way can eliminate other possibilities of unfolding. Take the example of gadget upgrades, where new versions come out with apparent improvements, with bugs merely removed and functions simply augmented. All of these are changed by human hands, determined by human minds. This is different in the case of natural objects, where growth unfolds right before our eyes and beyond our control. Take the case of a mango tree that remains to thrive despite human curation. Despite external control, such as gardening techniques and fertilizers, it will flourish and yield fruit on its own accord.

As enframing shapes an object according to its best use, Heidegger also warns of the dangerous tendency to lose grasp of its ontological nature, in which possibilities are further revealed. Going back to the previous example, one may enframe the mango tree as the family's source of livelihood during harvest, some lovers' meeting place, or a place where one dog sleeps every afternoon. Heidegger then reminds us that such a tree should always have the possibility of something else, as we experience it, which includes simply being a mango tree *per se*.

Now, two perspectives can be considered in thinking about enframing and technology: First, *how technology is enframed* (i.e., determined) to fulfill specific functions, such as how a computer is supposed to store and process data, or how a vehicle is supposed to transport people and objects. Pragmatically, this is how entities are recognized to make sense in the world by making human work easier and increasing human productivity. But second is *how technology enframes* in the sense that these useful tools can bring about the reduction of beings and their existence according to determined contexts, which does not let things be in themselves. This happens when one functions very well that it is expected to always do so, "revealing never seems come to an end… neither does it runs off into the indeterminate (Heidegger 1964, 16)," until it is other purposes prevent it to be in itself. This happens when workers are expected to do less work in the presence of machines so that they can be paid less, or they will be asked to do other tasks to compensate for their wages. This is when teachers are given extra-academic tasks because there is technology to make classroom management easier, without regard to a salary increase.

Gestell also entails a "destining", and to be more specific, a "destining of revealing" – (Heidegger 1964, 25) – that, "in this way, we are already sojourning within the open space of destining," as though it does not compel us to comply nor rebel, but continually brings us to the "push and pursuance of what is revealed by the "setting-forth" or the assembly. This poses an *existential human concern* (a necessarily tautologous pun), as this is not just about how we think about technology, but also how we find ourselves in the midst of technology. That is when we engage with the essence of technology, and there is a possibility of being carried away by all it consists of, from its parts and functions up to its very enigma. Once usurped, "the other possibility is blocked that man might be admitted more and sooner and ever more primarily to the essence of that which is unconcealed… in order that he might experience as his essence his needed belonging to revealing (26)." For Heidegger, this is dangerous, because the

technological unconcealment can usurp the essence of an inquiry or the one who undertakes it. In his work, *What is Called Thinking* (1968), he notes about how humans are reluctant to face that technological advancements change the shape of the sciences (i.e., as if there is fog that surrounds modern sciences), not because technology helped to further scientific investigations, but because of the most disturbing reality that we are still not thinking (14).

From the above, we gather that the rule of technology over sciences is an undermining not just of organized inquiries but also of ourselves by the very instruments we use. Such, "no longer concerns man even as object, but as a standing-reserve, and man in the midst of objectlessness is nothing but the orderer of the standing-reserve (Heidegger 1964, 27)." This does not only speak of the alienation brought by the routinary use of technology, of the impersonal work in assembly conveyors or of conducting a virtual lecture in front of faceless students and shutdown windows. At the expense of unthinking, more upgraded versions of the technology we use would either make us dispensable unless we upgrade ourselves as though we are also tools.

The use of technology in education may justify the need for students to be independent learners, who should perform once given their readings or data, but where is the engagement? What guarantee do we have that they are really learning if they can simply type a prompt in ChatGPT for a paper that they will humanize in Quillbot or Personalize AI? What unconcealment do we get when we do not cross the dangerous line of the standing-reserves, when we do not pick ourselves from the comfort of simply uploading a record of a previous class of the same topic? These questions haunt us. Technology can make us efficient in our teaching tasks, but how sure are we that students are learning?

In view of a Heideggerian perspective on EdTech, the reading task should also include notes from his work, *What is Called Thinking? (1968),* where Heidegger gave an important attention to pedagogy, as an important approach towards thinking. Here he mentions that teaching is about letting-learn. "The real teacher… lets nothing else be learned than learning," which is not really about procuring useful information where one poses authority over a student (16). Heidegger would rather say that the challenging task of a teacher is to share the experience of learning, which in fact requires one to be more teachable than the apprentices (15). Riley (2013) reads this part in view of the relational context of teaching and learning, as thinking is a shared undertaking, something we do jointly. Pedagogy is an engagement of solidarity where there is an understanding of learning. It is also collaborative, with the aim, "to answer appropriately what addresses situated human beings (Riley 2013, 799)." Riley enriches this view by pointing to four tentative conditions that support a Heideggerian pedagogy: 1. some matter of concern, 2. shared undertaking (which is thinking along a way in relation to that concern), 3. an encounter with phenomena within a meaningful context opened up to uncommon understanding, and 4. appropriate response from the persons involved. Clearly, education for Heidegger is an authentic human experience in the midst of shared understanding and meanings.

It is time to learn from Emmanuel Levinas. A Levinasian account of sustainability should be a derivative out of small parts of his works. There was no direct and argumentative note about environmental ethics; perhaps the most he directly

mentioned are from *The Paradox of Morality* (1988) when he said that, "the ethical extends to all living things (172), and in *The Name of a Dog, or Natural Rights* (1990), where he talked about a street dog he befriended while imprisoned in the German stalag. He named the dog Bobby, whom he said could be the last Kantian (ethical) German he knew (153). These short excerpts may give a clue on how the world beyond humans may be portrayed as an Other that calls for responsibility, except that, of course, it is only humans that hold the paragon of ethics.

In a recent work (Albela 2025), I identified two concepts that may be processed to speak of a Levinasian account of sustainability: the metaphor of the tamarisk and the attribution of the ethical to nonhuman implements being an other Other or the Third. The metaphor of the tamarisk was used by Levinas in the essay *Heidegger Gagarin and Us*, which celebrates the feat of the cosmonaut Yuri Gagarin, which marks a radical flight from enrootedness. For Levinas, Gagarin's historical success is an example on how to go beyond the wordly fascination for riveting plenitude and useless emptying; and the mention of the Biblical tree described in "all its freshness and color to charm the imagination in the midst of so much peregrination, across so much desert (Levinas 1990, 233)," also symbolizes three things that are necessary to humanity: food, drink and shelter, which are provided by earth. Levinas then described the world as the vessel of implements and a provider that should be respected on its own. In this essay, we can also find Levinas' critique on technology as he stressed the need to elevate the role of implements as ushers to transcendence, with tools belonging to the world, yet bring one forth out of the place. He writes, "technology wrenches us out of the Heideggerian world and the superstitions surrounding Place, that an opportunity appears to us: to perceive men outside the situation in which they are placed, and let the human face shine in all its nudity (Levinas 1990, 233-234). But in the ethical recognition of the human face, Levinas points out that this profound anthropocentrism should also learn to respect the mystery of the earth. In verbatim, "let us remain masters of the mystery that the earth breaths." Ethical humans should then also give space, respect the place where organisms dwell in and for themselves. "The plant is not enough of a plant to define an intimacy with the world. A little humanity distances us from nature, a great deal of humanity brings us back (233)." As objects we enjoy while being comfortable in place, humans are also called to respect the nonhumans, since the enjoyment of the Place and its implements also calls for its trusting and keeping. "And man, the keeper of Being will derive from this grace his existence and his truth (Levinas 1990, 232; Albela 2025, 176)."

Another possible source for a Levinasian account on sustainability is his notion of the other Other, which is a third persona in the ethical scenario that disrupts the supposed extent of the first Other (Autrui) and the distribution of other responsibilities to all others (les autres) (Albela 2025, 177). In order to accommodate les autres, Levinas introduces justice that would allow the Self to be responsible to the Other and for all others (Levinas 1985, 98, 101). Through the arbitration of institutions, particularly by the State, justice will be provided with mechanisms that would diffuse its violence and transcend egoistic interests.

In *Otherwise than Being or Beyond Essence* (2009), Levinas notes that the epiphanies of the other and the third create an interplay between justice (through comparison, assembly, and order in coexistence) and responsibility (and even

substitution) (157). While there is full reason and sense in the arbitrary (and thematizing) work of justice, Levinas notes that the same work of justice brings forth the more ancient wisdom that justice passes justice, i.e., justice exceeds its own version in being responsible for the other (Albela 2025, 178). This means to say that the simultaneous epiphanies of the Autrui and les autres challenge the stringent arbitrations of justice, thereby overcoming equality in favor of equity or even mercy, or the rule of chronology (as it is not always the case that I need to serve the first to call). This is so because the social sphere may blur distinctions that are easier for human judgment to grasp and thematize. All the others facing me have ambiguous and distant otherness, inasmuch as they are also ethically facing others.

This radical blurriness may be a prelude to understanding how the absolute asymmetry of responsibility and substitution can also be challenged. With the coming of the Third, there could be a correction of the asymmetry of proximity in which the face is looked at. Levinas writes: "There is weighing, thought, objectification, and thus a decree in which my anarchic relationship with illeity is betrayed, but in which is conveyed before us. There is betrayal of my anarchic relation with illeity, but also a new relationship with it (Levinas 2009, 158)." Such an anarchic relation with illeity or the disruptive and revealing opportunity for an ethical transcendence then paves the way for the possibility of the Self sub-ject to be an ethical Other, much so that I may be an Other for the others (Albela 2025, 179). It is in such light that Levinas exclaims, "Thanks to God, I am an other for the others" (Levinas 2009, 159). In sociality, and by illeity, the neighbor that faced me and I looked after is now facing others and me, "and there is also justice for me" (159).

Consequently, reciprocity becomes possible while maintaining ethical proximity, which not only affirms the profundity of giving back but also opens the possibility of paying forward. It is from this that ethics may build politics where social justice prompts that all humans should benefit from the goods of the earth (Albela 2025, 180). According to Van Roermund, the Thirds may be classified as the Infinite Other, the Arbiter, and the Polity as a plural self. In all of these types, the Third takes part in the practice of sustainability, with the Infinite Other as the well-kept environment capable of caring for the humankind, the Arbiter as the institutional body that is ready to preserve and uphold social justice with full accountability, and the Polity as plural individuals (many responsible selves) who are committed to serve and protect resources for the many others of the future). This view of the Third ushers the care of Thirds and the Thirds caring, where the environment is curated with respect, and social justice is implemented by an encouraging mechanism that does not only give back but more importantly passes acts of goodness to others (Albela 2025, 180).

Levinasianly, EdTech will have to be a provision to ethically implement the task of education. Unlike the Heideggerian narrative, which identifies instruments as part of the world that grounds us, Levinas regards these objects as uprooted and a natural extension of the relationality of dwelling (Mestre 2026, 46). Modern technology is placeless, not stuck in a place, and augments the possibility of ethics and justice through the expansion of dwelling (45), as how television discloses news and events beyond our home, or a telephone or a video conferencing application keeps people in live conversation. With Levinas, we see how technology can provide means to ex-perience, be ex-posed and to encounter, thus be capable of welcoming the Other. In

the educational scenario, this would mean sharing knowledge, making meaningful conversations, and implementing just mechanisms for inclusion, equity, and accountability. From Levinas, we also realize the opening of the ethical dimension in the use of technology, when we have in mind the future generation that embodies total alterity. As instruments that are not rooted to their place, it is necessary to realize technology's natural inclination to be improved, not to outdo and overrule and encroach human effort, but to serve the humane purpose of serving each other.

Altogether, we may find in Heidegger and Levinas a complementary critique of instrumentalism that supports the call for sustainability as the ethical lens of educational technology. From Levinas, we learn that responsibility to the Other grounds sustainability in moral obligation towards the vulnerable Face that I behold in this instant and of the other proximate Other whom I have yet to meet. From Heidegger, we heed the call to guard ourselves from the tendencies of technology to enframe and redirect education to ends that do not uphold the humanistic formation of its stakeholders. We size up sustainability as grounded in ontological care for the world and resistant to reductive technological systems.

Together, these two phenomenologists share the idea that unsustainable EdTech is not just inefficient but unethical. Ecological harm violates responsibility for future Others: that social inequity violates responsibility for present Others, and that pedagogical degradation undermines authentic being-in-the-world. We then gather from Heidegger and Levinas that sustainable EdTech is an ethical, relational, and ontological necessity. In a sustainable EdTech system, technology supports the long-term flourishing of learners, communities, and the overall educational project.

EXPLORING ETHICAL AVENUES FOR EDUCATIONAL TECHNOLOGY

This inquiry focuses on insights into the practical implications of sustainable EdTech. From Heidegger and Levinas, we learn that sustainability in EdTech is not merely about technical optimization, but rather an ethical endeavor that takes into account all stakeholders. And this project can be initiated on the levels of design, pedagogy, and policy:

Designing sustainable EdTech means taking into consideration both the device and the curriculum. So to resist the tendencies of enframing, institutions should procure machines that support the possibilities of repair and minimize the use of non-renewable energy (Baena-Morales et al 2020). Curriculum, on the other hand, must not forget that education targets human competencies more than technological development. It must formulate schemes that will use technologies that will not reduce learners to data or treat them as mere components within an information-processing system. Levinasianly, an ethical design should acknowledge the learner as Other, whose irreducible singularity cannot be contained by metrics, tracking systems, or algorithmic projections. Sustainable EdTech design must then resist interfaces and data architectures that erase user agency or reduce human beings to behavioral patterns. Interventions that may be considered are privacy-by-design, minimal data collection, and transparent algorithmic processes, and it should be ensured that these

are not mere enframing and regulatory measures. From Heidegger, we heed the call to support open-ended inquiry, creativity, and reflection, which espouse freedom.

In terms of pedagogy, models should integrate sustainability concepts, promote critical digital literacy, and preserve relational forms of learning (Huang 2024; Gamage et al 2022). The classroom, both physical and virtual, should be maintained as a safe spaces that welcome the Other in every sense of their alterity. It must be a site of an ethical relation, where the teacher responds to the vulnerability and uniqueness of each student. Creative measures should reshape pedagogies that rely on automation, standardized digital content, or algorithm-driven personalization. There should be preservation of the dialogical, face-to-face, and relational modes of instruction, even if there are technological interventions. From Heidegger, we get how technology should not shroud an authentic encounter of the world, and so learning cannot be framed bereft of the human face and fully dependent on dashboards, progress bars, automated feedback, and competence analytics. Learning should be well-peppered with reflection, questions, engagement, collaboration, and authentic human encounter.

Learning institutions are now called to heed the call of sustainability in terms of policy-making. Schools must adopt equitable access policies, invest in green IT systems, and develop frameworks for responsible AI (Nosratabadi et al. 2023; UNESCO, 2025). Educational policies must address the digital divide, because education should be for everyone, and nobody should be left behind. We hope for policies that will prioritize inclusive infrastructure, equitable device distribution and comprehensive digital literacy programs not just for the students but also for the teachers. With AI's growing influence, policies must prioritize user agency and protect them from algorithmic totalization that could obscure their individuality. Enframing should be reevaluated to limit large-scale analytics, surveillance, and platform dependence that can reduce the educational system into a mechanized apparatus serving larger socio-economic ideologies. Policies must uphold human flourishing so that technologies can be evaluated not only for their cost-efficiency and performance, but also for how they have increased possibilities for organic thought, human accountability, and the authentic exercise of human freedom. We hope to have policies that will support creative endeavors, as these are opportunities to override such routinary and tasteless encounters with tools. That if possible, institutional policy would not only be administrative but also philosophical to be able to create a mindset that cultivates a positive learning culture.

CONCLUSION

Engaging with the phenomenologies of Heidegger and Levinas in understanding the importance of sustainability in the ethical use of learning technologies brings us to conclude that EdTech is an important setting for the unfolding of knowledge, pedagogical awareness and connection of humans. This means that, aside from being useful objects, technology plays an influential role in shaping the background and context for human development. It then also belongs to an environment that may function, whether as grounding presence in a dwelling where

one thrives or a placeless provision to be uprooted as one goes beyond a comfortable home to ex-tend, connect and take part in being accountable for all others. Consequently, part of the instruments that foster learning are all other things that exist in our midst, i.e., in the world we live in. By this, responsible use of EdTech would also mean using facilities without compromising not just the liberating ends of education but also the way the earth naturally breathes.

In understanding sustainability, one enforces an ethical imagination that can resist technocracy in the use of technology. This is important because if technology is bereft of an ethical face, it can be abused and directed to a regime of metrics where technological efficiency and institutional goals override the absolute Otherness of the human stakeholders. In studying Levinas, Biesta (2016) emphasized that technology is not supposed to thematize the fluidity of knowledge production (respect *poeisis*) and compromise the ethical proximity of those who are present in the pedagogical field (respect alterities). Such ethical imagination is again important to see education as a learner-centered endeavor, where learners build their own skills, and the task of teachers is to provide arrangements by which educational processes may occur (Biesta 2016, 378). Through sustainability that fosters equal rights to human welfare and development, EdTech should have mechanisms to prevent learning spaces from turning into thought factories and cognitive bootcamps. Curriculum, as a set of learning opportunities, should be reconsidered to allow students to pursue flexible and personalized learning. This can happen in a supportive setting where learning implements, and networks are available, and learning subjectivities are honored.

While our human condition in the time of COVID and beyond has already proven that EdTech is already almost a staple in implementing teaching and learning, it would also be interesting to know that there was a time when the proliferating use of technology was imagined to liberate education from systemic totalizations. In 1971, Ivan Illich wrote *Deschooling Society*, which discussed the use of certain mechanisms to diffuse structural manipulation brought by institutional interest, system management and credentialism. To move away from systemic bureaucracy that binds academic life, Illich proposed a shift towards conviviality through learning webs designed to facilitate human activity rather than organize production (Illich 1971, 24-25). For Illich, such learning webs should be spontaneous and autonomous from binding school systems, inasmuch as they are more relational than transactional. Among these webs include: reference services to educational objects, skill exchanges, peer-matching and reference service to educators-at-large. To think, this could be a foresight of all that we enjoy now, such as open access movement and online resource repositories, skill-based apps like Duolingo, Skillshare, and YouTube, peer-matching platforms such as Reddit and Discord, online professional networks such as LinkedIn, and access to off-school professional teaching through Masterclass or Coursera. Illich, however, intended these learning webs to be non-commercial and unmonetized. With the mention of public facilities that foster a healthy academic and social life, Illich recognizes the value of technology in his time, and most likely foresees its pervasive use in educational practice in his context of the future. Conversely, Levinasian, Illich's convivial facilities and learning webs are expected to be public utilities (i.e., institutionally operated by the state or some concerned sectors) to ensure equal access and the reproach of privileged use. In this way, the open access to learning webs is a responsibility

delivered to an Other and every other. Illich contextualized technology according to this liberating view, as he views that good education should be made available to all who want to learn, empower all who want to share what they know, and support all who want to put forward an issue to the public with the chance to be heard (Illich 1971, 33). Once more, an ethical imagination should be useful in keeping in mind that all forms of educational support are not merely consumables, but would also be some others, with alterities subject to respect and conservation, for their more pervasive unfolding and for the good of the future others.

In the end, the challenge to sustainability in educational technology is not only about making EdTech greener, fairer, and more effective, but to guarantee that learning is truly geared to human formation and flourishing, and that education is open to its deepest possibilities. If only we can heed the call, EdTech will not only transform the future of learning but also help us preserve the futures we hope to make possible.

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