The Role of AI in Ecohumanistic Education

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Abstract

The paper discusses the potentials of ChatGPT and other AI technologies in diffusing ecohumanism in educational settings. Ecohumanism merges ecological and humanistic values to foster sustainable and ethical interactions between humans and the natural environment. Blended use of AI in education has the potential for paradigm changes in learning characteristics, personalizing experiences, and enhancing ecological literacy while bridging interdisciplinary collaboration. It illustrates, with the use of case studies from institutions like UC Berkeley, MIT, Stanford University, University of Edinburgh and University of Dunaujvaros, how AI tools may make learning environments engaging, effective, and ethically responsible. Some of the ethical and practical issues involved in the integration process are also spelled out along with AI, and it provides future research directions for maximizing the potential benefits that will result from the combination of AI with ecohumanistic education.

Keywords: *Ecohumanism, Artificial Intelligence (AI), ChatGPT, Ecological Literacy, Interdisciplinary Learning, Sustainable Development.*

Introduction

Ecohumanism is an interdisciplinary approach wherein ecological and humanistic values unite to institutionalize a sustainable and ethical relationship between man and the natural environment. It comes with the realization that men are intrinsically linked to environmental health by returning to the holistic understanding of interconnectedness across life forms. The roots of ecohumanism can be found in a diversity of traditions of philosophy and ethics, which have centered interests on intrinsic values within nature and on dependency upon harmonious man-environment coexistence (Merchant, 2003).

Core to eco humanism is the principle of sustainability: what is done in the present serves the world's interest so that future generations can also meet their needs. At the root of this lies a commitment to the conservation of natural resources, protection of biodiversity, and environmental stewardship. It further interlaces the importance of ethical relations between man and nature by promoting respect, care, and responsibility toward the environment. Such an ethical dimension challenges the anthropocentric view of humans being separate or superior to nature. Instead, it promotes a biocentric or ecocentric perspective where all living beings have intrinsic values (Naess, 1989).

Another potent characteristic of ecohumanism is its nature of being interdisciplinary; it is, therefore, possible to synthesize both scientific and cultural ethical and philosophical approaches. Working at the interface both of science and humanities, one will appreciate a rounded explanation concerning any environmental issue, involving a broad scope in opinions and approaches. Ecohumanism creatively fosters deeper ecological literacy and ethical awareness in an individual and community by integrating ecological knowledge with humanistic wisdom (Orr, 1994).

Artificial intelligence mainly involves the development of computers that can perform tasks that, for the most part require intelligence at the human level. Such tasks include learning from experience, understanding natural language as well as recognition of patterns, and solving problems and decisions. The advances in machine learning, as well as the processing of information and natural language and data

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analysis, bring forth AI technologies such as ChatGPT, which interrelate with the users, gather information on the context, and respond intelligently to the user (Russell & Norvig, 2020).

In the context of education, AI has the potential to transform teaching and learning, thereby assisting in personalized, adaptive, and enjoyable experiences for the learner (Kokuti et al., 2023). This artificial intelligence system could analyze big data that might be useful in personalizing student content needs, providing instant feedback, and identifying difficult areas for the students. This can be a good way of enhancing student engagement and learning outcome because every student will be learning at his or her unique style and pace (Luckin et al., 2016).

Among the significant gains of AI in education is to make learning interactive and experiential. For example, simulations and virtual learning environments powered with AI can place students at the center of a realistic situation in which they have to apply higher-order skills to complex problems within an environment that is safe and controllable. AI can also foster collaborative learning by connecting students to peers, mentors, and experts across the globe, thus creating a global community of learners (Holmes et al., 2019).

Also, AI can play a leading role in maximizing the benefits of ecohumanism in the learning space by assimilating ecological and humanistic dimensions of learning. AI-based tools such as ChatGPT may inform students about concrete problems related to environmental and ethical challenges, and sustainable development, which shall motivate them to develop their critical thinking and reflections on how they contribute to global efforts. In fact, by facilitating quality discussions and multi-perspective insights, AI can inculcate a sense of ecological consciousness and related ethical responsibility in the minds of students. Several potent utilities arise or become more available to many people during such efforts (Borenstein & Howard, 2021).

The aim of the paper is to establish the possible role that ChatGPT and other AI technologies could play in entrenching ecohumanism within learning institutions. The intention behind the debate is to try to project how such cutting-edge technologies can be introduced into curricula with a view to showing their potential for facilitating improvements in ecological literacy, ethics awareness, and interdisciplinarity. The article illustrates, through different case studies, how AI tools provide personalized, engaging, and effective educational experiences in keeping with ecohumanist principles.

The essence of integrating AI in education with regard to increasing ecological awareness and humanistic values lies mostly in revolutionizing traditional learning practices. In that regard, AI technologies such as ChatGPT provide a more engaging and effective way of personalizing learning experiences. Probably through real-time data analysis and interactive simulations, AI sets up students to understand complex ecological problems and their interplay with human activities. This deepens one's ecological literacy and critical thinking capacities. Moreover, AI makes possible interdisciplinary learning by connecting learners worldwide to experts or co-learners in other lands who can integrate their respective expertise in solving an environmental problem. From this interaction at the global level, horizons broaden as appreciation of diverse perspectives and development of a sense of shared responsibility toward the environment develop.

The Intersection of Ecohumanism and AI in Education

The integration of ecohumanism and AI in education is a forerunning approach that raises the possibility of a much more sustainable and humanistic educational framework. This intersection leverages the strengths of both paradigms so that the learning environment created is informative but, at the same time, transformative. AI technologies can process and analyze large datasets to provide valuable insights into trends and challenges lying ahead for the environment. AI will allow learners to understand. Through available data in an accessible and engaging way, how human activities relate to climate change, biodiversity loss, and resource depletion. Besides, AI can help attain competencies - specifically higher-order thinking skills - by leading students to undergo various scenarios and test possible answers before finally reflecting on the ethics involved (Nkona, 2020) (Olsen et al., 2020).

Moreover, the interdisciplinary nature of ecohumanism tallies well with the capacities of AI in connecting fragmented sources of information and perspectives. AI can operate within a multidisciplinary learning place by linking students to various stakeholders in environmental science, ethics, philosophy, and studies in culture. That myriad approach lets one build up a complete understanding of the ecological and humanistic issues of the intelligent student body, hence creating a sense of being interlinked and collective responsibility among them (Selwyn, 2019).

While the integration of AI and ecohumanism in education presents numerous opportunities, some challenges arise from this position. The more significant of these key concerns are the ethical uses of AI technologies. The AI systems should be so designed and implemented that they will respect privacy, avoid bias, and sustain fairness. In this line, another requirement is the adequate training and support for educators to be able to make effective use of AI integration in educational practice and thereby enable them to resolve any technical or pedagogical problems related to that mission (Zawacki-Richter et al., 2019). Despite these challenges, the potential benefits of combining AI and ecohumanism in education are substantial. Against the backdrop of such possibilities, to draw on the capacity of AI to develop ecological literacy and ethical awareness, educators could design a learning environment through which students learn facts and actions. Thus, the outcome of this paper envisions an office where informed and responsible citizens commit themselves to cause sustainability and further develop harmony with the natural world (Bakare-Fatungase et al., 2024).

Two powerful paradigms, eco humanism and AI, offer broad possibilities for the augmentation of education. Ecohumanism enables the exploration of the ethical and ecological dimensions of human existence; AI provides modern tools and innovative methods of personalization, interactivity, and interdisciplinarity in learning. A shared transformative educational experience can be created to equip students with the knowledge, skills, and values necessary to navigate and act on the complex environmental challenges of the 21st century (Pacori-Zapana, 2024). The deeper we will apply AI in promoting eco humanism in education, the more it will become essential to know how these technologies shall be used ethically and effectively to enhance humanistic and sustainable futures for all.

Theoretical Framework

Confronting these emergent global environmental challenges, from a changing climate to lost biodiversity and the depletion of natural resources, rapidly comes the feeling of ingredients based on an interdisciplinary approach to education. With ecological literacy and humanistic values, a multidisciplinary approach will lead us to a deeper understanding and innovation solution-finding with the help of more advanced technologies such as AI. Ecohumanism principles in this educational paradigm focus on sustainable principles, the establishment of ethical relations with nature, and incorporation of various points of view (Figure 1). The overarching approach is in developing an environmentally aware and ethically responsible individual in taking up the challenge of pushing the limits of sustainable development. The following subsections describe the core eco-humanistic values, operational aspects of AI technologies, like ChatGPT, and possibilities of such an interdisciplinary educational framework to bring about changes.

Figure 1 Theoretical framework: Ecohumanism, AI and Education in Interdisciplinary Approach

Theoretical Framework:
Ecohumanism, AI in Education and Interdisciplinary Approach
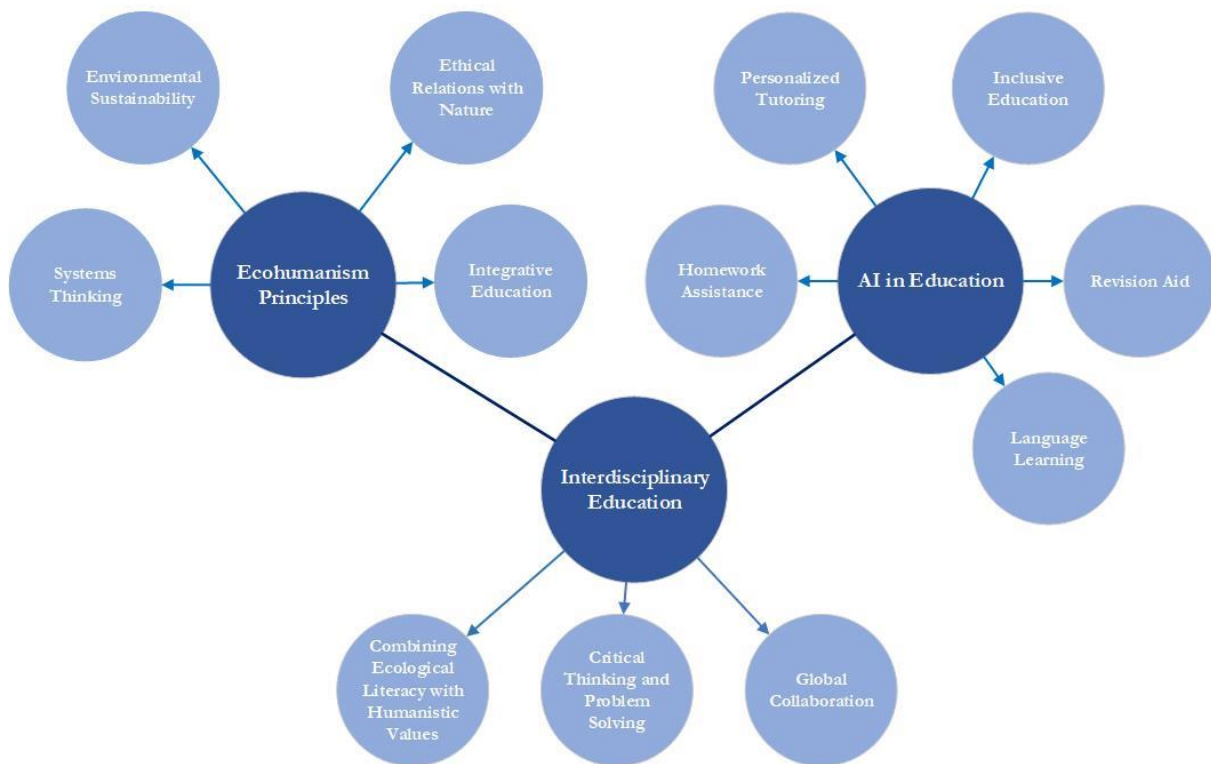
Ecohumanism Principles

Ecohumanism emphasizes the interrelationship of life forms, practicing environmental sustainability, and nurturing ethical relationships with nature. It also undertakes interdisciplinary approaches toward complex ecological challenges. Interdisciplinary approaches assume a prominent place in eco humanism because they put together a wide range of perspectives and knowledge systems to solve the complex environmental challenges thrown up by it. The principle encourages collaboration between disciplines - like science, ethics, philosophy, and arts - to build holistic and comprehensive solutions (Hategan, 2021). Ecohumanism calls for integrative education that links ecological literacy with ethical and cultural understanding. The express purpose is to bring up a new generation of people who are environmentally conscious, ethically responsible, and able to usher in sustainable development. Ecohumanism enhances systems thinking, whereby a clear understanding of the complex interactions between different components constituting an ecological or social system is reached. This approach enables a person to find leverage points for intervention and develop strategies dealing with root causes rather than symptoms (Aloni et al., 2023).

AI in Education

Artificial Intelligence (AI) is revolutionizing various sectors, and the educational sector does not seem to be an exception. One such development made in AI in recent years has been ChatGPT, which is the state-of-the-art language model of OpenAI. Its architecture is GPT-4, which, upon being fed with something, can identify it and provide human-like text accordingly. First, ChatGPT is pre-trained on a diversified dataset containing books, websites, and other forms of writing. The model was trained to predict the next word in a sentence so that it would learn from that process about grammar, world facts, and some reasoning. ChatGPT is capable of keeping context overturns of conversation. It means that it can remember the previous parts of a conversation and uses that information to generate appropriate responses. This feature is very handy in educational applications, including follow-up interaction and retaining context. The model gets Improved continually with iterative feedback from Human reviewers.

From personalized tutoring to administrative support, the uses of ChatGPT in education can be manifold and multi-dimensional. ChatGPT can provide one-on-one customized tutoring through on-the-spot explanations and answering each question. This would be especially helpful for courses like mathematics, science, and language arts, where students are mostly backward in understanding specific problems or certain concepts and need immediate clarification. Language learning can be significantly enhanced by employing ChatGPT. It can engage students in conversation practice, correct their grammar, and suggest improvements in vocabulary. It can even be translated as needed. In this game-like approach, students will learn both the language to use and how to use it in an environment that supports them. ChatGPT can help students with their homework by explaining in detail and giving step-by-step solutions to problems. It can help one decompose complex ideas into more minor, more straightforward elements for easier comprehension, so the student will be in an excellent position to understand and complete their assignments. As a revision friend, ChatGPT can quiz students on various topics and give summaries of multiple disciplines apart from aiding in revision. This shall be important during the revision for exams, where one has to go through tons of material that has to be structured and gone through efficiently. ChatGPT can thus support inclusive education by providing personalized support to students with special needs. It could adapt to a student's pace and offer tailored support, hence rendering an education accessible to all learners.

Interdisciplinary Approach

With pressing global challenges such as climate, biodiversity loss, and resource depletion looming extensive, an interdisciplinary approach that brings together ecological/humanistic education and AI technologies becomes crucial. Integrating environmental, and humanist education with AI technologies engenders a comprehensive understanding of environmental issues and encourages the developing of innovative solutions for them. Using AI capabilities, educators can achieve heightened ecological literacy and ethical awareness, eventually developing in students the ability to efficiently handle complex environmental challenges. The paper debates the role and power of this kind of interdisciplinary approach in revolutionizing education. The enormity of the complexity of environmental problems is vast, and it calls for a multidisciplinary approach that draws diverse fields of knowledge. Ecological education provides the scientific foundation to understand the environmental processes and human-induced impacts. In contrast, humanistic education offers a view into ethical, cultural, and even philosophical dimensions that foster a deeper appreciation for the intrinsic value of nature and the…interconnectedness of all forms of life. Various advantages are associated with integrating ecological and humanistic education with AI technologies.

By making learning more personalized and interactive, AI engages students with knowledge relevant to them. Generally, this leads to the effective assimilation of information and a better grasp of more profound concepts. Because AI enables students to be confronted with real problems and encourages them to find creative solutions, it enhances critical thinking and problem-solving. In so doing, this prepares students to engage in the complex nature of environmental issues. AI provides global collaboration, which exposes students to a variety of perspectives and experiences. A standpoint of interrelation between ecological and cultural systems and essential teamwork in sort for solving global challenges and problems is gained by the students. Incorporating some dimension of ethical consideration, AI builds in students, through learning about ecology, a sense of moral responsibility strong enough to set them up to make informed and moral decisions throughout their lives and working careers.

Case Studies - AI in Education and Its Impact on Ecological and Humanistic Learning

Here are some case studies in which ChatGPT or similar AI technologies were integrated into educational programs to promote ecohumanism. It now turns on demonstrating how AI has influenced ecological and humanistic learning, leaning on these case studies.

Case Study 1: Enhancing Environmental Science Education with ChatGPT

Institution: University of California, Berkeley

The University of California, Berkeley, has already adopted this ChatGPT to enhance capacity in its education and research study program in the fields of environment and other scientific areas. This has been very promising in advancing the understanding and abilities of students. For instance, ChatGPT has been deployed successfully in environmental science courses through real-time data analyses and interactive simulations: students engage profoundly with concepts in ecology by being able to analyze real-time Environmental data—things like air quality and water pollution levels. This practical application aids in learning about complex problems associated with the environment (Leven, 2023).

Moreover, ChatGPT has been instrumental in driving scientific research at UC Berkeley. It has been utilized for generating massive data sets out of sparse data, especially in the domain related to chemistry. Scientists at Berkeley have begun using ChatGPT for the rapid collation and analysis of data about metal-organic frameworks, or MOFs - substances critical and workable solutions related to fighting climate change - access to clean water and fresh air (Zheng, 2023). Probably done in perhaps a fraction of the time it would take was this process to go through years, it showcases the potential of ChatGPT in realizing an increase in the pace of scientific discovery and research efficiency. These are but a few applications that prove the efforts UC Berkeley is putting into implementing cutting-edge AI technologies, such as ChatGPT, into its educational and research environs for provision in a more interactive and data-driven learning environment that will allow students to increase the pace at which major scientific breakthroughs are realized.

Case Study 2: Promoting Sustainable Development through AI at MIT

Institution: Massachusetts Institute of Technology (MIT)

MIT has adopted AI technologies, including ChatGPT, to increase its sustainability and urban planning programs toward project-based learning while promoting sustainable development. Students in such courses apply AI tools in developing models of sustainable urban planning, testing them for the establishment of green building design, energy-efficient transport systems, or some other waste management solutions that will help students work out pragmatic and sustainable solutions for the urban environment (MCSC, 2024).

A recent MIT study entitled "The Climate and Sustainability Implications of Generative AI" considers the environmental and social implications of the very rapid growth in generative AI (Gen-AI). Showing both benefits from Gen-AI, such as enhanced productivity and innovation, it underlines large sustainability challenges, most importantly related to increased energy consumption, large carbon footprints, and accelerated depletion of natural resources. It is, therefore, incumbent upon researchers to call for a balanced approach that underscores efficiency improvements and broader sustainability goals as a way of ensuring responsible development and use of technologies belonging to the Gen-AI family (Bashir et al., 2024).

AI also helps systems thinking by empowering students to learn about how urban systems are interconnected with each other. For example, they can simulate changes in transportation to understand how that would change the quality of the air and their usage of energy. This further enhances their understanding of how elements of different urban aspects interact and impact each other (Prasad, 2023). MIT's infusion of AI technologies into its educational programs does not stop at enhancing individual learning experiences. It also dramatically encourages group projects and international collaboration. MIT students can join their peers and experts worldwide to engage in AI-aided realization of a collaborative project that brings diversity into their studies. This collaboration across the globe will enhance the knowledge base of students more comprehensively on sustainable development and prepare them for complexities in international, interdisciplinary teams (MIT News, 2021).

The example of integrating AI at MIT displays learning that inspires methods of system thinking and collaborative solving, core components that will go into education for sustainable development. It stresses how AI can more sustainably contribute to making urban environments greener and encourages ecohumanism.

Case Study 3: AI-Driven Ethical Dialogues in Philosophy Courses at Stanford University

Institution: Stanford University

ChatGPT has already been used at Stanford University in philosophy courses to create ethical dialogues that sharpen students' minds. Such integration is supposed to enrich the participation of students in the highly effective discussion of philosophical subject matters by getting AI-generated prompts that can maintain the flow and diversity of arguments within the debate. This improved significantly the critical thinking of students to be able to explore the different viewpoints and reason up an argument (Scott, 2024). The recent introduction of ChatGPT into educational settings at Stanford University has generated significant discussion among faculty regarding its impact on learning and teaching. Professors have noted that this advanced AI chatbot can serve as a valuable tool for generating diverse examples and facilitating student understanding of various writing styles and formats. By providing numerous examples, ChatGPT helps students analyze and compare different approaches to writing, thereby enhancing their critical thinking and analytical skills. However, the faculty also express concerns about the potential for students to over-rely on AI, which could undermine their development of essential writing skills. This duality highlights the need for careful integration of AI technologies in education, ensuring they complement rather than replace traditional learning methods (Lee, 2023).

The AI also allows for helpful practice in ethical decision-making by offering complex moral scenarios. Students, through the analysis of results from various actions and the discourse regarding the moral implications of those results, actually learn how to handle ethical dilemmas (Stanford HAI, 2024). This helped us to incorporate cultural contexts into these ethical scenarios, and thus to give them a little more depth in terms of understanding global moral challenges. It helps students to appreciate the dimension of culture embedded in ethical issues and thus feel prepared to understand and address such a challenge from different perspectives.

Case Study 4: AI-Supported Environmental Citizenship Education at the University of Edinburgh

Institution: University of Edinburgh

The University of Edinburgh announced its adoption of AI technologies - specifically, AI technologies such as ChatGPT - to promote personalized learning in environmental citizenship education and community-based ecological projects. This is part of a larger strategy by the university to explore and harness generative AI systems within educational environments. Tailored feedback and learning pathways that the artificial intelligence tools create promote engagement and deepening understanding of complex ecological concepts. It thus shapes a personalized approach to help students understand environmental problems in a more compounded manner. On many occasions, for instance, as part of community-based projects, students collect and analyze local-level environmental data using AI for a sense of environmental stewardship and community matter (The University of Edinburgh, 2023).

The University of Edinburgh does this by impressing on learners the responsible use of AI, making sure that students are aware of the limitations of these tools and the truthfulness of everything from AI needs to be double checked. The implication, therefore, is that the use of AI by the University of Edinburgh in environmental citizenship education points to AI's potential to enhance person-to-person learning, community involvement, and interdisciplinary approaches in education-that is, all essential aspects of ecohumanism.

Case Study 5: Green transformation specialisation at the University of Dunaújváros

Institution: University of Dunaújváros

University of Dunaújváros (UoD) recently introduced a new specialization in Green Transformation within its Mechanical Engineering BSc program. This aligns with the institution's development plan, which emphasizes sustainability and eco-friendly technological advancements. The Green Transformation

specialization at UoD is designed to equip mechanical engineering students with the knowledge and skills necessary to address environmental challenges through sustainable engineering practices. The curriculum includes courses on energy management, renewable energy technologies, and sustainable industrial processes (UoD, 2023). This initiative is part of the university's strategic focus on developing technical education programs that align with global sustainability goals. The institutional development plan of UoD for 2021-2026 outlines strategic objectives across three dimensions: educational and training activities, research and development, and the third mission of societal engagement. The plan highlights the importance of the green transformation and digitalization in all educational programs, particularly in technical fields such as mechanical engineering (UoD, 2021). The development plan includes the creation of a Green Technology Knowledge Center, focusing on photovoltaic and battery research, societal impacts of new technologies, and promoting eco-friendly practices within the industry. This center will play a pivotal role in advancing the green transformation agenda and fostering collaboration between academia and industry.

AI plays a crucial role in advancing the goals of the Green Transformation specialization. AI technologies can optimize energy use, reduce waste, and enhance the efficiency of industrial processes. For instance, AI-driven predictive maintenance can minimize downtime and extend the lifespan of machinery, thereby reducing the environmental impact of manufacturing operations. Furthermore, AI can be employed to develop smart grids and enhance the integration of renewable energy sources into the power supply system. By analyzing vast amounts of data from various sources, AI algorithms can predict energy demand patterns and optimize the distribution of energy, ensuring a more sustainable and reliable energy supply.

The Green Transformation specialization embodies the principles of ecohumanism by integrating sustainability into the core of mechanical engineering education. The focus on eco-friendly technologies and sustainable industrial practices aligns with the ecohumanist goal of creating a harmonious relationship between humans and nature. This approach not only addresses environmental concerns but also promotes the well-being of future generations by ensuring the responsible use of resources and the preservation of ecosystems. The Green Transformation specialization at UoD represents a forward-thinking approach to mechanical engineering education, emphasizing sustainability and eco-friendly practices. By integrating AI and ecohumanism, the university can enhance the effectiveness of this specialization and contribute to the broader goals of sustainable development.

Discussion

The presented case studies clearly open a window for showing the enormous benefits and challenges of implementing AI technologies such as ChatGPT within the purposes of ecohumanistic education. Successful implementations in institutions present valuable lessons learned in ways that make use of artificial intelligence to awaken ecological literacy and humanistic values.

Enhancing Ecological Literacy and Critical Thinking

UC Berkeley's infusion of ChatGPT into the educational setting exhibits massive enhancement of ecological literacy. Through AI tools, the student will be submerged in real-time data charts and interactive simulations on environmental concepts and problems. This puts learners into practical, hands-on methods for better understanding complex phenomena in ecology and goes on to enhance critical thinking with problem-solving while trying to meet challenges presented by environmental sustainability. It is further observed that AI-assisted education in the domain of environmental science can make learning experiences more personalized. Accordingly, feedback and guidelines are given according to every individual's needs and progress, attending to differently paced/differently styled learning. This would mean that students who were formerly just passive receivers will now take a more active part in taking charge of their process of learning, helping to establish a closer connection with the subject matter.

Promoting Interdisciplinary Learning and Collaboration

Case study from MIT and Stanford University signified: AI supports interdisciplinarity in learning and collaboration. AI technologies can connect gaps among different fields of study, which the students could engage themselves in to find out where environment science, ethics, philosophy, and technology intersect. For instance, at MIT and UoD, making use of AI tools in courses on sustainable urban designing shows how students can apply interdisciplinary expertise to generate practical solutions for real-world problems. Artificial intelligence provides access to global collaboration among students, connecting their peers from diverse parts of the world with mentors and experts. In that way, it will be able to share perspectives and experiences adding value to the learning process and creating a sense of worldwide responsibility toward sustainability. Collaboration across disciplines and boundaries would allow students to work toward solving environmental problems that are complex and need holistic and cooperative solutions to be addressed effectively.

Addressing Ethical and Practical Challenges

While AI integration brings great benefits to ecohumanistic education, case studies also highlight serious ethical and practical challenges. One of the most important ones is ensuring ethical use regarding AI technologies, predominantly with regard to data privacy and respect for algorithms that are non-biased. Developers and educators have the responsibility to make sure that such systems are designed and developed in ways that respect privacy and guarantee fair treatment to all users. More importantly, there is a dire need for adequate training and support for teachers. It becomes very important to empower educators with the capacity and relevant skills to integrate AI into their teaching effectively. That's to say, therefore, equipping them with knowledge about how data generated through AI tools should be interpreted; even curriculum integration and possible technical or pedagogical problems that could emerge in the course of work. That is, if not well trained, AI cannot fully demonstrate its potential on improving learning outcomes.

Conclusion

The integration of ecohumanism and artificial intelligence (AI) in educational settings presents a promising approach to fostering a sustainable and ethically grounded relationship between humans and the natural environment. The case studies illustrate the transformative potential of AI technologies like ChatGPT in enhancing ecological literacy, promoting interdisciplinary learning, and facilitating ethical dialogues.

Through the use of AI the educational institutions engage students with real-time data analysis, interactive simulations, and personalized learning to deepen their understanding of complex environmental issues. Not only does the practical application of such tools improve critical thinking, increasing problem-solving skills, but it also instills ecological consciousness and a sense of ethical responsibility. AI offers the capacity to bridge gaps between different disciplines in studies and connect students with other students and experts all over the world to promote teamwork in solving environmental challenges. All this interdisciplinarity and global collaboration empowers students to be able to deal with the multifaceted nature of sustainability issues effectively. But the integration of AI into an ecohumanistic education will also be faced with pressing ethical and practical problems. Ensuring the protection of data, conquering algorithm bias, and creating due training for educators are critical if the use of AI technologies is to be responsible and effective. The meeting of these challenges will require the development of comprehensive ethical frameworks and continuing support for educators, if the full potential in which AI can improve learning outcomes is to be realized.

Future research has to be directed toward the long-term effects of AI integration, focused on students' ecological literacy and ethical awareness. More importantly, developing transparent AI tools will include works toward learning platforms and in-class driven AI project-based learning as provisional steps into the wholesome implementations of AI means in ecohumanistic education.

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