# Technohumanistic Education: Building Harmony between Technology and Humanity in 21st Century Learning

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*Abstract -* **Technohumanistic teaching aims to balance technical progress with human values in learning. However, the speedy shifts in 21st century technology do not always strengthen human character in education. Alternatively, technohumanistic pedagogy combines principles focusing on humanity with digital aspects to craft a more significant, learner-focused, and principled educational experience. This research examines the notion of technohumanistic education, its value regarding the fourth industrial revolution and Society 5.0, plus its implications for curriculum development, study techniques, and educators' roles through a qualitative approach and literature review. To obtain a generation with not only intelligence but also sympathy, adaptability and morality, it emphasizes the importance of balancing the use of technology and developing human characteristics by analyzing published works and considering wisely.**

*Keywords:* **Technohumanistic Education, 21st Century Skills, Future Learning**

## I. INTRODUCTION

Industrial and Social Revolution 5.0, Education must adapt to the breakthrough development of digital technology. Although we are moving towards an era defined by Industry 4.0 and community 5.0, teaching and learning methods must adapt dynamically to comply with the digital conversion into development (Aesaert et al., 2013; Bayne, 2015; Hargreaves & Fullan, 2012; Lasley, 1996). Technologies include the Internet of Things (IoT), big data analytics, online education platforms and artificial intelligence, all of which are very important aspects of modern pedagogy (Schwab, 2016: Facer & Sandford, 2010; Knox, 2019).

Technology has made learning more accessible, individualized, and effective, but it has also sparked worries about the exclusion of humanistic elements from the educational process, like moral principles, empathy, teamwork, and social awareness (Peters, 2020; Blaschke, 2012).

In the midst of this transformation, there is an urgent need to redesign the educational paradigm so that it is not only adaptive to technological advances, but also able to maintain and foster the essence of humanity in students (Anggreni et al., 2024; Mishra & Koehler, 2006). In this context, the technohumanistic approach becomes relevant as an educational model that seeks to bridge between the two poles: technological progress and human values (Darder, 2017; Mahendra et al., 2022). Technohumanistic education does not reject technology, but directs it to be used ethically, reflectively, and oriented towards the formation of a complete human being, namely intellectually intelligent, strong character, and social care (Feenberg, 2002).

However, achieving balance between technology utilization and cultivation of human values within educational processes remains a challenge requiring consideration (Sen & Malhotra, 2025; Ertmer & Ottenbreit-Leftwich, 2010). While technology has become integral to 21st century instruction, its implementation often focuses exclusively on functionality and technical proficiency absent a complementary humanistic lens emphasizing ethics, empathy, and social justice (Dede, 2010). Many educators and learners experience alienation because learning interactions are centered more on devices than on meaningful human relationships (Bower, 2019). On the other hand, there are still inequalities in digital access and competence in different regions, resulting in disparities in the quality of learning (Sudipa et al., 2022; Conole, 2013). In addition, technology-based curricula often neglect the integration of human values, so learning becomes less reflective and does not touch on aspects of character building (Eliyas & Ranjana, 2022; Dunn & Raby, 2017). Teachers have also not fully played their role as facilitators of values, due to a lack of training or pedagogical approaches that balance technological advancement and the formation of the whole person. This condition raises concerns about the future direction of education, which is feared to lose its human dimension if it is not balanced with a comprehensive

technohumanistic approach (Hammond, 2010; Luckin et al., 2016).

According to Ihde, (1990), the relationship between humans and technology is always mediative, which means that technology can shape the way humans understand and experience the world (Kim & Reeves, 2007). Therefore, in education, technology should not only be a technical tool, but also part of a pedagogical practice that is aware of the ethical and existential dimensions (Jandrić, 2019; Peters & Besley, 2019) The technohumanistic approach requires educators to not only master digital media, but also be able to design learning experiences that integrate technological sophistication with students' cultural, spiritual and moral values.

This research explores the concept of technohumanistic education conceptually and applicatively (Selwyn, 2012). The focus of the study includes the philosophical foundation of technohumanism in education, its urgency in the era of digital disruption, and implementation strategies in the context of 21st century learning that is oriented towards the formation of humans with integrity, collaborative, and adaptive to change (Duhaim et al., 2024).

## II.  METHODOLOGY

This research employs a qualitative methodology using a library-based scholarly inquiry (Patton, 2002). This approach facilitates an in-depth exploration of the philosophically reflective, normatively-guided concept of technohumanistic education. As George & Bennett, (2005) notes, a literature review allows investigators to build a robust theoretical foundation through critical analysis of both primary and secondary scientific works. Additionally, this method supports identification of theoretical gaps and synthesis of concepts across diverse sources.

Core data sources include relevant scholarly books, peer-reviewed journal articles, dissertations, and educational policy documents addressing themes of technohumanism and 21st century pedagogy (Selwyn, 2011; Sugiyono, 2016; Suherman, 2013). Some formative ideas referenced comprise Ihde's, (1990) examination of the mediating relationship between humanity and technology, Freire's, (1970) perspectives on liberatory education, and Giroux's, (2011) considerations of critical pedagogy and ethics in instruction (Zhao et al., 2002).

### Data Collection

Data gathering in this investigation was directed by means of thoughtful hunts and readings of different composed wellsprings identified with the subject of technohumanistic training.

1.  Primary Literature
    Freire, (1970) on humanistic education and liberation, Ihde, (1990) on the relationship between humans and technology, and Giroux, (2011) on critical pedagogy in

the context of postmodern society are examples of important thinkers whose theoretical and philosophical works comprise primary literature.

2.  Secondary Literature
    Optional compositions incorporate logical diary articles, proceedings, dissertations and scholarly books that examine the execution of innovation in training, computerized morality, 21st century learning change, and humanistic difficulties in the time of modern mechanical change 4.0 and society 5.0.

3.  Policy Documents and Institutional Reports
Information was additionally gathered from public strategy archives at the public and worldwide level, for example, the Merdeka Curriculum record from the Ministry of Education and Culture, UNESCO reports, World Financial Forum white papers and reports identified with the computerized change of training that contain points of view on joining estimations and innovation in training (Nihlani et al., 2024).

The information assortment process included perusing logical databases, for example, Google Scholar, Scopus, DOAJ, ERIC and Perpusnas Indonesia utilizing watchwords, for example, "technohumanism in training", "humanistic training", "basic showing and innovation", "computerized ethics in learning" and "training in the 21st century.

### Data Analysis

Data analysis in this study adopted an interpretive approach, drawing meaning from various sources linked to technohumanistic education. The literature revealed three foundational themes for conceptualizing such a model amid digital transformation:

### 1.  Technology as a Means, Not an End

Firstly, technology as an augmentation, not an objective. Some scholars assert that educational technologies should mediate and amplify learning, not define its purpose. Usually, the emphasis is on being tool-controlled without considering its social meaning (Balaji et al., 2022; Tsai & Chai, 2012). Technohumanism rejects such decisions, prioritizing people in educational decisions (Wang et al., 2022).
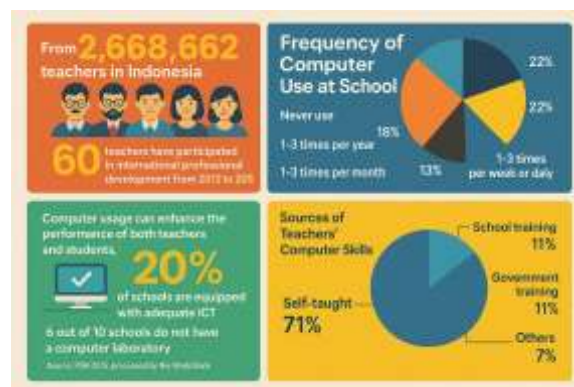


Fig. 1  Infographic on the Use of Technology in Education by Teachers in Research

Source: Teacher's Room

Fig. 1 illustrates teachers' use of technology in Indonesia, showing technology growing in importance and increasing accessibility while enriching the experience. First, Technology changes the normal research program by giving the right to develop creative tools without having to sacrifice meaning. Second, learning as an open system leads to knowledge through cooperative networks rather than isolated activities. Students create understanding by exchanging ideas online. Such connectivism values diversity and dialog over static conclusions. Thirdly, emancipatory practices. Education liberates human potential when learners critically evaluate digital impacts and shape technologies democratically. A technohumanistic model cultivates social awareness and empowerment to optimize technology for equity and justice.

## 2. The Urgency of Humanistic Values in 21st Century Education

Freire and Giroux emphasize reviving critical awareness, dialogue, empathy, and morality in education. These values become particularly meaningful with digital learning tending towards individualism, instant gratification, and competition. For Indonesia, adhering to eastern ethics and manners, humanism cannot be detached from 21st century education. Prioritizing proper conduct, Indonesia follows Ki Hajar Dewantara's eastern learning philosophy: "Lead by example at the front, spark initiative from the middle, guide from behind." As leaders, educators must exemplify admirable attitudes and behaviors for followers to emulate. From the center, teachers must also generate and foster disciples' intentions to continuously progress and create. And from the rear, direction must be supplied.
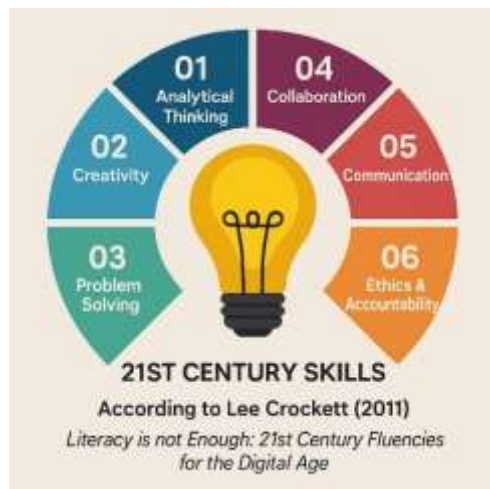


Fig. 2 21st Century Skills

Source: Lee Crockeet (2011)

Fig. 2 highlights that 21st century learning centers around the student, aiming to cultivate critical thinking abilities including: (1) evaluation of evidence, (2) problem identification and resolution, (3) self-monitoring cognition, (4) clear conveyance, (5) teamwork, (6) novel approaches and imagination, and (7) data discernment. The education is student-focused to ready pupils for logical and analytical reasoning and proficiency in addressing real-world dilemmas. Reinforcement occurs through engaging digital tools that back accomplishing pedagogical targets. Additionally, as Peters et al., (2020) probed, absent ethical framing, technology implementation in education risks perpetuating social disparities and diminishing the affective bond between educator and learner. Therefore, the future necessitates proficiency in 21st century capabilities alongside scientific and technological expertise. Moreover, education must construct on a robust comprehension and command of principles and morals. In the sphere of pedagogy, we call this technohumanistic schooling.

## 3. Synergy between Digital Skills and Social Character

Statistics from the World Economic Forum, (2020) and the Pancasila Learner Profile paper (Kemendikbudristek, 2021) reveal that impending abilities encompass not just computer literacy but also interpersonal gifts like collaboration, empathetic interchanges, and principled leadership. Technohumanistic education advocates the amalgamation of digital skills and character building, so pupils become not just digital natives but also principled digital citizens (Selwyn, 2016) The 21st century life abilities in accordance with the Pancasila Learner Profile can be seen in Fig. 3.



Fig. 3. 21st Century Life Skills based on Pancasila learner Profile

Source: Gurusiana

Overall, the results of the analysis show that the technohumanistic education approach offers a balanced synthesis between technological sophistication and the depth of human values. This is important to avoid reducing education to a mechanical process, as well as building an adaptive, reflective and transformative learning system.

## III. RESULTS AND DISCUSSION

Based on a comprehensive exploration of existing literature, researchers found that the technohumanistic educational model offers an alternative paradigm worth considering to address 21st century education challenges and benefits arising from technology's all-encompassing presence. A

thorough analysis of themes produced three core facets comprising the conceptual foundation of technohumanistic education, succinctly captured in the illustration below:



Fig. 4 The Main Dimensions that Make Up the Conceptual Node of Technohumanistic Education

Fig. 4 explains each of the dimensions in technohumanistic education, among others:

### 1. Technology as Mediation, Not Domination

In the technohumanistic framework, technology serves as a medium aiding human understanding, access, and reflection regarding the world—not an autonomous driving force dictating education's direction. Don Ihde advocated the notion of technological mediation as an extension of human existence when engaging with reality. Accordingly, technology usage in education should facilitate meaningful learning processes, not just instant content transfer.

Within Indonesian contexts, employment of learning management systems, video conferencing tools, and artificial intelligence in education has not fully cultivated reflective qualities in students. Many digital platforms remain focused on efficiency and mastery of content, neglecting critical development building awareness and learning autonomy. This underscores an urgent need to redesign digital approaches ensuring adaptability to technology while also ensuring pedagogical significance.

### 2. Revitalizing Humanistic Values

Technohumanistic education is founded on Freire's, (1970) rejection of passive "banking" education in favor of dialogue, empathy, and societal mindfulness within the learning process. When technology is utilized without an ethical or principled framework, students risk dehumanization - becoming apathetic, individualistic, and driven solely by algorithmic reasoning (Peters et al., 2020).

Freire & Giroux, (2011) assert that values of critical participation, social justice and responsibility revival should imbue ethical education. In the digital ecosystem, these values could be applied through collaborative project-based learning, critical digital literacy and online discussion spaces encouraging moral reflection. This aligns with Pancasila Learner Profile objectives emphasizing integrity, mutual cooperation, and critical thinking as chief 21st century student attributes (Kemendikbudristek, 2021).

### 3. Integration of Digital Literacy and Social Character

Digital literacy encompasses not just technical device and app usage abilities, but also internet etiquette, digital social awareness, and digital citizenship duties. The World Economic Forum, (2020) states that future skills like empathy, communication and collaboration will be needed more than mere device mastery.

Technohumanistic education requires educators to not only facilitate technology but also serve as ethical companions able to inculcate awareness of technology's social impacts. This implementation could be realized in issue-based learning activities, ethical reflection on social media usage, or development of adaptive, inclusive and equitable learning platforms (Biesta, 2010; Krippendorff, 2018).

## IV. FINDINGS

A number of notable conclusions were drawn based on the literature assessment and ensuing discussion, highlighting the merits of adopting a technohumanistic methodology in addressing the evolving intricacies and obstacles of modern learning dynamics. These results show the inherent relationship between human values, technology and developing an educational and more thoughtful framework.

Technology can support knowledge acquisition, its implementation typically prioritize operational efficiency and superior functionality considerations over important feedback and analysis as an integral component of an inseparable learning component. Limitations do not fully extend beyond some digital education platforms. Therefore, the Technuhumanist method emphasizes the nurturing of human beings, virtues and independent thinking in the learning process while highlighting the need to see technology as a tool rather than an end. This implies that we must develop more than a simple emphasis on access to information by improving education, focus on technology in educational philosophy to promote awareness and perception of criticism and Technology can be creative and effective in providing, but its use must be guided by principles such as sympathy and compassion. Used should be guided by principles such as sympathy, teamwork. This is consistent with the ideas of Giroux, (2011) and Freire, (1970), who emphasize that education should be unleashed and enable students to become people concerned about humanity and agents of social change. In this situation, technology should be used to promote ethical surveys, social conscience and action, and not a way to push society to break.

The third observation is that, despite the growing importance of digital knowledge in the 21st century. The Twenty -Two Century, educational policies still pay little attention to the

moral significance for the use of technology. Therefore, the development of social number development should be integrated into digital knowledge, according to technology education. Not only in terms of technological ability, but also using it in a responsible way, to the morality and societal significance of each digital connection. The World Economic Forum report in 2020 supports this idea by claiming that digital ethics and social skills are important factors in preparing the next generation.

The fourth observation points to the potential of technical education to reduce social inequalities due to unequal access to technology. Technohumanism aims to provide all students to receive high-quality education by promoting the values of equity and comprehensive use of educational technology. Therefore, to prevent existing shortcomings, technology education policies must take into account equity and a community approach (Biesta, 2010; Krippendorff, 2018).

According to the results of this study, technical pedagogy provides a related solution to the challenges facing 21st century education. Teaching can act as a comprehensive means of empowerment by carefully integrating and evaluating technology while promoting humanistic ideals and moral traits in the classroom. Therefore, technology education is essential to achieve a balance between technological advancement and the development of individual intellect, formation and civilization.

## V. CONCLUSIONS

Technohumanistic education plays a role in combining innovation with humanity. Using technology has become a tool rather than an end, this education has developed intellectual growth and morality. Where many consider digitalization to be an inhumane force, this progressive pedagogy includes progress while prioritizing compassion. Amidst the digital age, it provides a balanced solution to education's new challenges.

The following conclusions can be drawn from the analysis results:

1. Educational technology should be supervised by moral consciousness, human values and the intention to give students freedom, it is not used neutrally and there is no question.

2. To ensure that learning is purposeful, moral, humanistic attitudes such as empathy, communication, teamwork and social responsibility should be included in all ways of using educational technology.

3. In the 21st century, digital knowledge must be developed comprehensively, including ethical, cultural and digital civilization factors in addition to technical factors.

4. Technohumanist education also acts as a social tool that can improve the equal distribution of education and make up for differences in technology access.

Therefore, technohumanistic education is a cultural strategy as well as a pedagogical technique to uphold the sustainability of human values in the face of rapidly evolving technological advancements.

## VI. RECOMMENDATIONS

To implement technohumanistic education more widely and effectively, cooperation with various stakeholders is needed. First, the education curriculum needs to integrate digital literacy with moral and social values. Learning content should include issues of technological ethics, digital rights, digital social justice and critical reflection on digital media. Second, teachers need to be trained so that they are not only technologically literate, but also able to guide students in using technology wisely and meaningfully. Teachers must become reflective companions who foster critical awareness in the digital classroom. Third, the development of applications and learning platforms should consider cultural diversity, social conditions and accessibility. Educational technology should encourage active involvement and not discriminate against marginalized groups. Fourth, cross-sectoral synergy is needed to build an educational ecosystem that combines technological innovation with a humanitarian orientation. This includes policy-making, research and development of value-based education programs. Fifth, Continuous Evaluation of the Social Impact of Technology in Learning. Educational institutions need to have an evaluative mechanism for how technology affects social relations, the quality of learning interactions, and student character growth.

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