# Logic of Educational Reform and Empirical Research on Experiential Learning in the Digital Era

**Tongtong Ye**

School of Humanities and Foreign Languages,Anhui University of Science and Technology Engineering Anhui Chuzhou 239000

***Abstract:*** Digital transformation and the explosive development of generative artificial intelligence (AI) are profoundly reshaping educational logic. Addressing the limitations of AI as "disembodied intelligence" regarding contextuality and embodiment, this study explores the functional impairment of traditional "receptive learning" within information-overloaded environments. Grounded in embodied cognition theory and experiential learning models, this study designed an empirical intervention based on embodied meaning-recording. Empirical results indicate that the intervention group effectively resisted the loss of meaning through embodied meaning-recording, showing significantly greater improvement in behavioral indicators of smartphone addiction compared to the control group. This study demonstrates the potential of experiential teaching in awakening students' "life consciousness" and alleviating digital addiction. It proposes that future educational reforms should return to the logic of embodiment, reconstruct evaluation systems through "human-machine integration," and shift education from symbolic exchange toward the holistic growth of life.

***Keywords:*** Experiential Teaching; Educational Reform; Sense of Meaning

**DOI:10.12417/3029-2328.26.05.012**

## 1.The Ontological Impact of Digital Transformation: Disembodied Intelligence and the Crisis in Education

### 1.1 Limitations of AI as "Disembodied Intelligence"

Generative Artificial Intelligence (Generative AI) has experienced explosive growth in recent years. It has not only restructured productivity frameworks but has also challenged educational logic at a profound ontological level. Traditional education has long been predicated on Cartesian mind-body dualism, conceptualizing learning as a purely symbolic processing operation involving information input, storage, retrieval, and output (Peters, 2005). However, as large language models demonstrate the capacity to retrieve information and synthesize logic at speeds outperforming humans, this "disembodied" educational paradigm faces an unprecedented crisis of legitimacy.

First, the core mechanism of generative AI relies on symbolic operations and probabilistic predictions derived from massive datasets. This modality of intelligence reduces cognition to a purely computational process, completely detached from real-time sensorimotor interactions with the physical environment. In traditional pedagogy, if instructors function merely as transmitters of knowledge, their role becomes highly susceptible to AI substitution, given that AI significantly outperforms humans in symbolic retrieval and logical organization.

Second, human students cannot compete with AI in symbolic memory and logical calculations. Under current assessment frameworks, no amount of practice or training can enable human processing speed, memory capacity, or cognitive efficiency to rival those of AI. Furthermore, although AI-generated knowledge is explainable and logically structured, it lacks embodied experience and situational contextuality (Peters, 2005). Consequently, as the educational system continues to produce disembodied knowledge that can be effortlessly replicated by AI, student motivation and the perceived meaning of learning rapidly destabilize.

Paradoxically, the pronounced decontextualized nature of AI-generated knowledge, which stems from its lack of sensory perception in the physical world, underscores the irreplaceable value of human learning. Human cognition does not occur within an isolated brain; rather, it is fundamentally grounded in the dynamic coupling of the body, action, and the environment. Nonverbal signals—such as facial expressions, gestures, and postures—transmit critical emotional states and communicative intentions during social interaction and knowledge construction. These

dimensions remain unattainable through the disembodied symbols simulated by AI (Gallese, 1998).

### 1.2 Information Overload, Cognitive Load, and the Erosion of Meaning

Within digital environments, students face severe information overload, wherein the volume of accessible information far exceeds their processing capacity. According to Cognitive Load Theory, human working memory resources are strictly finite. When flooded with excessive, low-quality, and fragmented information, attentional resources drain rapidly, preventing deep learning from occurring (Sweller, 1988). This overload impairs decision-making performance and induces chronic psychological stress.

Under high cognitive load, individuals struggle to retrieve relevant knowledge from long-term memory for effective discrimination, generating anxiety and a perceived loss of control. Moreover, prolonged immersion in the immediate gratification provided by digital devices fosters an erosion of meaning regarding real-world academic pursuits. Although individuals accumulate vast quantities of information, they fail to convert it into actionable wisdom that guides their life courses (Raheemullah, 2022).

### 1.3 Reflections on Pedagogical Paradigms: The Dysfunction of Traditional "Receptive Learning"

Professor Ye Lan offered a profound critique of modern education, noting that a critical systemic flaw is the substitution of developing the whole person, with a focus on life quality and existential well-being with achieving tasks, with a focus on exam scores, rankings, and explicit outcomes. Traditional receptive classrooms reduce human agents possessing existential autonomy to passive, mechanical objects, rendering education a soulless and stagnant process (Ye, 2002). Within this modality, teachers and students are objectified as instruments to maximize test scores and knowledge points, and the richness of human life is replaced by unidirectional symbolic exchange.

This reduction of human vitality leaves students lacking the internal "existential self-awareness" required to resist digital addiction when confronted with digital transformation. Furthermore, the tedious environment of receptive pedagogy easily induces academic burnout. Empirical evidence indicates that academic burnout significantly impairs academic performance and is accompanied by severe mental health challenges, including anxiety, depression, and emotional reactivity (Schaufeli et al., 2002). When the classroom fails to provide sufficient psychological reinforcement and embodied challenges, students naturally turn to mobile devices that offer high-frequency, low-barrier stimulation. A significant positive predictive relationship exists between smartphone dependence and academic burnout, which further exacerbates maladaptive attitudes toward learning (Samaha & Hawi, 2016).

## 2.Strategic Transition: From "Receptive Learning" to "Experiential Learning"

To counteract digital dependence and the educational dysfunction accelerated by artificial intelligence, pedagogical design must shift toward experiential learning. Rooted in embodied cognition theory, experiential learning translates into a practical pathway that emphasizes that learners must construct knowledge within physical and social environments through a perception-action feedback loop. Merleau-Ponty argued that the body is not an object of perception, but rather the subject of perception; cognition is the product of bodily activity and is fundamentally rooted in bodily experience (Su, 2001). Embodied learning maintains that knowledge acquisition cannot rely solely on abstract cognition; it must be mediated through students' perceptual insights and immediate physical experiences (Foglia & Wilson, 2013).

The experiential learning theory formulated by John Dewey and David Kolb posits that learning is a cyclical process encompassing a complete closed loop from concrete experience to abstract reflection (Kolb, 2014):

Concrete Experience: Learning originates from students' perception and action in authentic environments, such as project participation, experimentation, or social interaction.

Stage 1: Concrete Experience. Learning originates from students' perception and action in authentic environments, such as project participation, experimentation, or social interaction.

Stage 2: Reflective Observation. Learners interpret the meaning behind their experiences through reflective journaling or discussions, thereby regulating emotional responses.

Stage 3: Abstract Conceptualization. Based on reflection, experiences are synthesized into transferable logical models or theoretical frameworks.

Stage 4: Active Experimentation. Learners apply their newly formed understandings to novel contexts to test their validity, which in turn generates new concrete experiences.

This pedagogical model effectively compensates for AI's lack of a physical embodiment. Although AI can simulate the third stage (Abstract Conceptualization), it cannot authentically engage in physical-world interactions (Stages 1 and 4), nor can it experience the existential emotional resonance inherent in Stage 2.

Consequently, the core of education must shift from a representationalist epistemology to an embodied view of knowledge.

## 3.Evaluating the Intervention Effectiveness of a Life-Meaning Sharing Task on College Students' Smartphone Dependence

Based on a 2 *2 mixed experimental design previously conducted by our research team, this study demonstrates the efficacy of experiential pedagogy in preserving psychological resources and preventing digital dependence.

### 3.1 Participants and Experimental Design

The study initially recruited 86 undergraduate participants from a comprehensive university. During the data cleaning phase, 3 participants who failed the embedded attention-check items (lie-detection items) were excluded, yielding a final sample of 83 valid participants. The intervention group comprised 43 participants, and the control group comprised 40 participants.

### 3.2 Measurement Instruments

#### 3.2.1 Smartphone Dependence Propensity Scale

The Mobile Phone Addiction Tendency Scale for College Students developed by Xiong et al. (2012) was utilized. The scale consists of 16 items (e.g., "I feel uncomfortable if I have not used my mobile phone for a long time"), scored on a standard 5-point Likert self-report scale (all items are positively scored). Higher scores indicate more severe levels of smartphone dependence.

#### 3.2.2 Meaning in Life Assessment

This study employed the Chinese version of the Meaning in Life Questionnaire (MLQ) revised by Liu and Gan (2010), originally developed by Steger et al. (2006). The questionnaire comprises 9 items rated on a 7-point Likert scale (ranging from 1 = "Absolutely Untrue" to 7 = "Absolutely True"), with Item 2 being reverse-scored. The scale consists of two core dimensions:

Presence of Meaning (MLQ-Presence): Comprising Items 2, 6, 7, 8, and 9, this dimension measures the degree to which an individual perceives their life as meaningful. Search for Meaning (MLQ-Seeking): Comprising Items 1, 3, 4, and 5, this dimension assesses an individual's drive to actively seek meaning in life.

Because this intervention targeted the experiential dimension of meaning, only the 5 items from the MLQ-Presence subscale were administered.

### 3.3 Experimental Procedure and Implementation

The randomized controlled trial (RCT) protocol progressed sequentially through four phases: baseline allocation, pre-test assessment, intervention administration, and post-test tracking.

Allocation and Baseline Measurement: Following recruitment, participants were randomly allocated to either the life-meaning intervention group or the active control group.

Baseline data (pre-test) were subsequently collected via the online platform measuring the presence of meaning

(MLQ) and smartphone dependence propensity. Intervention Phase (8 Weeks): The intervention group completed an experiential task titled "Capturing and Sharing Meaning in Life." Participants were instructed to use their smartphones to capture moments in their daily lives that triggered a sense of meaning, thereby integrating experiential learning into daily life. Every Saturday, they submitted these photographs accompanied by written reflections to the researchers. Control Phase: The control group engaged in standard daily photography and received no prompts, cues, or guidance regarding meaning in life throughout the study.

Post-test Assessment: Immediately following the 8-week data collection period, a repeated-measures assessment was administered to both groups. Participants completed the same meaning-in-life and smartphone-dependence questionnaires used at baseline. The collected data were utilized for subsequent comparative analyses of intervention efficacy.

### 3.4 Results

#### 3.4.1 Intervention Efficacy on the Presence of Meaning

A repeated-measures Analysis of Variance (RM-ANOVA) was performed on the MLQ-Presence scores. The results indicated that the main effect of group was not statistically significant, whereas the main effect of time was significant. Crucially, the interaction effect between time and group was statistically significant. Simple effects analysis (see Table 1) revealed that the intervention group's scores remained stable between the pre-test and post-test, whereas the control group's post-test scores were significantly lower than their baseline scores. An independent samples t-test conducted on the change scores demonstrated a significant difference between the two groups, with the intervention group displaying a positive change score and the control group displaying a negative change score.

Table 1. Post Hoc Comparisons of Meaning Presence

| Comparison | Mean Difference | SE | df | t | p |
|---|---|---|---|---|---|
| Between-Groups Comparison | | | | | |
| Baseline: Intervention vs. Control | -1.825 | 1.093 | 79 | -1.669 | 0.495 |
| Post-test: Intervention vs. Control | 0.886 | 1.145 | 79 | 0.774 | 1 |
| Within-Groups Comparison | | | | | |
| Intervention: Baseline vs. Post-test | -0.395 | 0.579 | 79 | -0.682 | 1 |
| Control: Baseline vs. Post-test | 2.316 | 0.616 | 79 | 3.757 | .002** |

#### 3.4.2 Smartphone Dependence Scores

A repeated-measures Analysis of Variance was conducted on the smartphone dependence scores. As shown in Table 2, neither the main effect of group nor the main effect of time was statistically significant. However, the interaction effect between time and group was statistically significant. An independent samples t-test performed on the change scores of smartphone dependence revealed a significant difference between the two groups; the intervention group demonstrated a significantly lower change score in smartphone dependence compared to the control group.

Table 2. Comparison of Mobile Phone Dependence Scores Across Groups

| Cases | Sum of Squares | df | Mean Square | F | p | ω2 |
|---|---|---|---|---|---|---|
| Between-Subjects | | | | | | |
| Group | 184.7 | 1 | 184.7 | 1.205 | 0.276 | 0.001 |
| Residuals | 12114.3 | 79 | 153.3 | | | |
| Within-Subjects | | | | | | |
| Time | 35.35 | 1 | 35.35 | 1.826 | 0.181 | 0.001 |
| Time × Group | 83.2 | 1 | 83.2 | 4.297 | 0.041 | 0.005 |
| Residuals | 1529.77 | 79 | 19.36 | | | |

### 3.4.3 Research Conclusion

The pedagogical practices and controlled experiments conducted by our research group demonstrate that operationalizing the "experiential tracking and sharing of meaning in life" into concrete experiential learning tasks possesses irreplaceable pedagogical value for sustaining and enhancing individuals' presence of meaning. Experimental data reveal that under conventional pedagogical models lacking embodied engagement, students' presence of meaning and overall scores are highly susceptible to significant declines over time due to environmental influences. Conversely, the experiential pedagogy administered in this intervention—utilizing immersive and process-oriented instructional designs such as weekly records of meaningful moments—effectively exerted a protective effect on students' psychological resources, enabling their post-test indicators to maintain robust stability.

Particularly when addressing smartphone dependence—a critical practical challenge among contemporary university students—experiential pedagogy demonstrates unique educational advantages. In-depth analysis of behavioral change scores indicated that students who received experiential instruction exhibited a significantly greater reduction in smartphone dependence propensity than those in the control group. This empirical finding illustrates that the essence of experiential pedagogy lies in implementing embodied cognition and a real-world value orientation, thereby guiding students to transition from virtual spaces back to physical life experiences. In summary, developing and promoting experiential pedagogical models centered on shaping the meaning of life provides an effective pathway to mitigate digital dependence risks among college students. Furthermore, it represents an inevitable choice for higher education institutions seeking to deepen pedagogical reform and construct high-quality educational frameworks in the new era.

## 4.Future Pathways for Pedagogical Reform in the Digital Era

The return from receptive learning to experiential learning fundamentally redirects education from a barren world of symbols back to a vivid, existential life world. Although artificial intelligence in the digital era has precipitated a leap in efficiency, its inherent disembodied limitations prevent it from touching the core of education: existential self-awareness. Through theoretical analysis and empirical evidence, this study demonstrates that embodied experiential activities (such as sharing meaning in life) serve not merely as instruments to enhance instructional efficacy, but as critical remedies for societal challenges in the digital age, including smartphone dependence and academic burnout. By synthesizing concrete experience, reflective observation, and active social interaction, we can construct a novel pedagogy grounded in existential practice The essence of education lies in generating the vitality of human development. When we return the classroom to students, embodiment to cognition, and meaning to life, the ideals of pedagogical reform can be fully realized in practice.

In a landscape where artificial intelligence can assume responsibility for most foundational knowledge instruction, the role of instructors must transition from merely articulating ideals to actively practicing them. Professor Ye Lan maintained that exemplary educators must possess benevolence, learning to listen patiently, understand, and care; this emotional connection imparts profound significance to education.

Frontline educators should advocate for the "returning to students" principles championed by the New Basic Education Reform: return the classroom to students to revitalize instructional vitality; return the class collective to students to increase physical interaction and embodied engagement; return creativity to teachers to provide spaces for deep reflection; and return the autonomy of spiritual development to students, allowing them to become the subjects of learning reflection (Ye, 2002). Specifically, in the AI era, teachers must transition into "educational architects" who design challenging, interactive, and contextualized pedagogical activities. Through group tasks and improvisational debates, the fulfillment of social needs can be transferred into academic interactions. Teachers should also encourage students to maintain semi-structured reflective journals to cultivate cognitive regulation capacities. Concurrently, frontline teachers must adapt to technological advancements by mastering computational text analysis to broaden instructional evaluation mechanisms, thereby achieving a human-machine

integrated pathway for holistic education. In experiential learning, teachers must assume the role of "context designers," utilizing computational text analysis tools to assist qualitative inquiry and intervene deeply in the process of knowledge production. Artificial intelligence should not be viewed as a competitor replacing teachers, but as a powerful assistant aiding sample selection, data analysis, and manuscript drafting, thereby liberating teachers to invest more energy into authentic, embodied human-to-human interactions.

Future educational assessment must transcend unidirectional grading metrics by introducing AI-driven computational text analysis to evaluate students' learning processes. By analyzing unstructured data—such as students' reflective reports and classroom discussions—researchers can establish multimodal emotional and cognitive evaluation models. This assessment framework can precisely identify students' psychological stress and reveal internal shifts in learning motivation, prioritizing human agency over mere technological updates, and ensuring that technology serves comprehensive human growth.、

The shift from receptive to experiential learning represents more than a transformation of instructional methods; it is an awakening of existential self-awareness. Amidst the digital wave, only individuals equipped with profound embodied perceptions and clear life objectives can genuinely harness technology rather than be enslaved by it. The beauty of education lies in generating the vitality of human development. When we return the body to cognition and the classroom to life, the ideals of pedagogical reform will ultimately bear fruit in the field of practice.

## References:

[1] Foglia,L.,&Wilson,R.A.(2013).Embodied cognition.WIREs Cognitive Science,4(3),319–325.

[2] Gallese,V.,&Goldman,A.(1998).Mirror neurons and the simulation theory of mind-reading.Trends in Cognitive Sciences,2(12),493–501.

[3] Kolb,D.A.(2014).Experiential learning:Experience as the source of learning and development(2nd ed.).FT Press.

[4] Peters,M.A.(2005).Education,post-structuralism and the politics of difference.Policy Futures in Education,3(4), 436–445.

[5] Raheemullah,A.(2022).Dopamine nation:Finding balance in the age of indulgence by Anna Lembke,New York: Dutton,2021.Cambridge Quarterly of Healthcare Ethics,31(4),573–574.

[6] Samaha,M.,&Hawi,N.S.(2016).Relationships among smartphone addiction,stress,academic performance,and satisfaction with life.Computers in Human Behavior,57,321–325.

[7] Schaufeli,W.B.,Martínez,I.M.,Pinto,A.M.,Salanova,M.,&Bakker,A.B.(2002).Burnout and engagement in university students:A cross-national study.Journal of Cross-Cultural Psychology,33(5),464–481.

[8] Su,H.(2001).Phenomenology as existential philosophy:On Merleau-Ponty's phenomenology of perception. Zhejiang Social Sciences,(3),87–92.

[9] Sweller,J.(1988).Cognitive load during problem solving:Effects on learning.Cognitive Science,12(2),257–285.

[10] Ye,L.(2002a).Reconstructing the value orientation of classroom teaching.Educational Research and Experiment,(2),1–7.

[11] Ye,L.(2002b).Reconstructing the process orientation of classroom teaching:The second report on the theoretical and practical research of"New Basic Education"classroom teaching reform.Educational Research,(10),24–30.