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A Dual-Loop, Four-Core, Three-Stage Pedagogical Model for AIGC-Enhanced Advertising Education: A Conceptual Framework

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Abstract: The rapid evolution of Artificial Intelligence Generated Content (AIGC) is reshaping advertising workflows and altering professional competency requirements. Traditional advertising education often lags behind these changes, characterized by outdated course content, insufficient AIGC expertise among instructors, and assessment methods that rely excessively on final examinations. In response, this study develops a "Dual-Loop, Four-Core Competencies, Three-Stage Progression" teaching model tailored for Advertising Appreciation and Design courses. Drawing on constructivist learning theory and human–AI collaboration principles, the model features an inner "Generation–Reflection" loop to cultivate critical judgment in AI-assisted creation and an outer "Teaching–Practice–Evaluation" loop to facilitate iterative curriculum refinement. It embeds four core competencies-data literacy, design thinking, digital tooling, and domain ethics-into three progressive learning stages: cognitive foundation, applied practice, and critical innovation. The model's evaluation framework combines formative (40%) and summative (60%) assessments, with the summative assessment's weighting system structured by the Analytic Hierarchy Process (AHP). This approach offers a theoretically grounded and practice-oriented framework for aligning advertising education with the evolving demands of the AIGC era.

Keywords: AIGC; Advertising Education; Human-AI Collaboration; Curriculum Reform; Analytic Hierarchy Process (AHP)

1. Introduction

Generative artificial intelligence (AIGC) technologies, represented by large language models and diffusion models, have deeply penetrated and reshaped core workflows in the advertising industry. These encompass market research, consumer insight mining, multi-modal content generation, and media placement strategies, driving significant improvements in creative productivity and media efficiency. Such industrial transformations inevitably impact higher education, particularly in practice-oriented disciplines like marketing and advertising. For traditional courses such as *Advertising Appreciation and Design*, critical questions arise: when AIGC can efficiently execute creative production, how should talent training objectives be reoriented? How should teaching models and content be adjusted?

Existing studies tend to focus on the technical applications of AIGC as a teaching or assignment tool, or on ethical concerns surrounding its use. However, few studies have proposed systematic design of overall teaching models, encompassing teaching steps, content, and assessment systems. Some practices adopt a "tool empowerment" approach, emphasizing training students to use AIGC tools for idea generation, while neglecting deeper strategic insight, aesthetic judgment, and humanistic care underlying advertising creativity-capabilities that remain irreplaceable in the AIGC era. Thus, this study takes the public elective course *Advertising Appreciation and Design* as a case for developing and illustrating a reformed pedagogical model aligned with the advertising industry's demand for interdisciplinary talent.

2. Literature Review and Industry Context

2.1 Reshaping of Advertising Talent Competencies by AIGC

AIGC technology, particularly multi-modal large language models and diffusion models, is freeing advertising practitioners from repetitive tasks, shifting their role toward "creative strategists" and "human–AI collaboration directors".

Consequently, the professional focus is transitioning from “laborious execution” to “strategic direction”. Instead of refining creative works entirely from scratch, practitioners now use AIGC to streamline strategy formulation, accelerate multi-modal concept iterations, and assume responsibility for the commercial and social impacts of these outputs.

Consequently, "T-shaped" specialists mastering singular skills face career obsolescence, while "π-shaped" talents with dual deep competencies gain prominence. Advertising’s "π-shaped" talents require: (1) strategic reasoning, capable of deriving precise communication problems from market, consumer, and brand insights; and (2) AIGC tool command, capable of efficiently collaborating with AI to deliver outputs aligned with strategic intentions. Advertising professionals must possess critical discernment to swiftly sift through, evaluate, and refine AI-generated outputs, thereby ensuring both informational accuracy and creative distinctiveness [1].The crossbar of “π” encompasses integrative innovation, aesthetic judgment, and ethical awareness.

2.2 Current Teaching Model Dilemmas in Advertising Courses

In the face of changing industry needs, advertising education faces three pressing issues. First, course content is often outdated, overemphasizing theoretical instruction and remaining disconnected from current market realities. Second, teaching methods often remain teacher-centered. Compounding this issue, faculty may lack the requisite AIGC expertise, which limits their ability to provide systematic training in higher-order thinking skills. Third, an over-reliance on final examinations for assessment fails to capture students’ comprehensive creativity and critical thinking[2]. These gaps exacerbate structural mismatches between talent supply and industry demand.

Several pilot applications of AIGC in education have emerged-ranging from intelligent student-centered learning systems [3-5] to “human-AI co-creation” Project-Based Learning (PBL) methods[6–8]. However, in creative disciplines such as art, design, and media, PBL is regarded as a naturally aligned pedagogical model. It mirrors the real-world workflow of creative industries, requiring students to engage fully in a creative process-from conceptualization and prototyping to the final presentation of a finished product. However, the systematic integration of AI-driven tutoring tools into creative PBL curricula, along with detailed case studies on course design and student performance metrics, remains an area that warrants in-depth exploration. Building on this, our study constructs a more integrated teaching model in response.

3. Research Methodology

This study adopts a conceptual proposal approach embedded within a design-based research (DBR) framework. This study aims to construct a theoretically grounded pedagogical model that responds to evolving competency requirements in advertising education amid the rise of Artificial Intelligence Generated Content (AIGC). The methodology comprises three stages:

Theoretical foundation building -A comprehensive review of existing literature on AIGC applications in advertising, competency frameworks in creative industries, and double-loop learning theory was conducted. This step established both the structural logic and competency dimensions of the proposed model.

Model conceptualization -Drawing on constructivist learning principles and human–AI collaboration theory, the proposed “Dual-Loop, Four-Core, Three-Stage” model was articulated, specifying its inner and outer loop mechanisms, core competency domains, and staged learning progression.

Framework design within DBR logic -Following DBR conventions, the model is structured for future iterative refinement through implementation, evaluation, and feedback cycles. However, the current study remains at the conceptual and design stage; no empirical classroom implementation or data collection has yet been conducted.

4. Construction of the “Dual-Loop, Four-Core Competencies, Three-Stage Progression” Model

To address the above challenges in a systemic and sustainable way, we designed an integrated teaching model grounded in both theoretical and practical considerations, as detailed below. This model aims to cultivate core competencies for AIGC-era advertising professionals, nurturing future talents with market insight, humanistic care, ethical awareness, and technological foresight.

4.1 Teaching Content: Static "Four-Core" Knowledge Matrix with Dynamic "Dual-Loop" Mechanism

Advertising professionals in the digital and intelligent age are expected to possess interdisciplinary knowledge, innovative practical skills, and data-technology literacy in order to adapt to industry trends such as the integration of digitalization and intelligentization, the rise of content and experiential marketing, and the mainstream adoption of cross-boundary integrated marketing[9]. The model replaces linear knowledge listing with a symbiotic framework: a static "Four-Core" knowledge matrix and a dynamic "Dual-Loop" operational mechanism. The Four-Core knowledge matrix includes: (1) Data Literacy(D1) -evidence-based strategy derivation via data collection, analysis, and insight translation; (2) Design Thinking(D2) -user-centered systematic innovation methodology covering insight mining, ideation, and strategy integration; (3) Digital Tooling(D3) -command of AIGC generation, prompt engineering, multi-modal content creation, and post-optimization; (4) Domain Ethics(D4) -integrating regulation awareness, risk mitigation, and ethical scrutiny into creative processes.

To integrate and activate these competencies, the model employs a dynamic "Dual-Loop" operational mechanism. It contains: first, "Generation–Reflection" inner loop -the core execution and quality control unit where students set goals via data literacy(D1) and design thinking(D2) , generate content with digital tools(D3), then evaluate results using design thinking(D2) and domain ethics,(D4) refining prompts until outcomes meet high standards. The second is the "Teaching–Practice–Evaluation" outer loop-a semester-scale evolutionary system where teachers deliver structured instruction, students apply skills in practice, and results inform teaching adjustments, enabling spiral advancement.

4.2 Teaching Process: Three-Stage Progressive Project Practice

While the dual-loop mechanism provides the theoretical backbone, its practical realization within classroom teaching requires a staged, project-based learning design, which accords with the cognitive law of progression from understanding, to application, and then to innovation.

Stage 1: Cognitive Foundation and Tool Familiarization - This stage emphasizes the systematic delivery of "Four-Core" theoretical knowledge, complemented by structured workshops dedicated to the mastery of AIGC-assisted design tools. Students engage in guided, scaffolded exercises that consolidate conceptual understanding while initiating the inner-loop cycle of "Generation–Reflection" at an introductory level.

Stage 2: Applied Practice and Process Integration - In this stage, students undertake collaborative, project-based tasks that emulate authentic client briefs from the advertising industry. The work requires the integrative application of all "Four-Core" knowledge (data literacy, design thinking, digital tooling, and domain ethics) within a high-frequency inner-loop cycle. The teacher's role transitions from direct knowledge transmitter to that of a developmental coach, facilitating students' autonomy and fostering reflective peer collaboration.

Stage 3: Critical Innovation and Paradigm Expansion - At this advanced stage, students are guided to critically interrogate current industry practices and the implications of AIGC deployment, extending their inner-loop engagement to abstract, theoretical, and model-construction levels. Emphasis is placed on producing analytical and critical reflection reports informed by seminar discussions and continuous monitoring of emerging technologies.

5. Evaluation System: Multi-Dimensional Formative and Summative Framework

To comprehensively evaluate the effectiveness of teaching, the proposed model integrates a multi-dimensional assessment system that combines process-oriented (formative) evaluation with outcome-oriented (summative) evaluation. The final course grade is composed of 40% formative assessment and 60% summative assessment. The formative assessment focuses on tracking students' learning processes, including teamwork, progressive mastery of the "Four-Core" competencies, and the quality of staged outputs. Its primary role is to provide continuous feedback for both teachers and students, enabling timely instructional adjustments and

fostering self-regulated learning behaviors. Assessment data are drawn from multiple sources, such as exercises completed in Stage 1, course participation records, and evidence of teamwork performance.

The summative assessment, accounting for the remaining 60%, is designed to measure students' attainment of targeted higher-order learning objectives. This component employs the Analytic Hierarchy Process (AHP), combined with Bloom's Taxonomy of Educational Objectives and industry requirements for "π-shaped" talents, to systematically deconstruct the overarching evaluation goal into a three-level structure-goal layer, criterion layer, and indicator layer with weights allocated as shown in Table 1.

Table 1. AHP-Based Summative Evaluation Indicator System

Goal Layer(A)	Criterion Layer(C)	Indicator Layer(P)	Weight (%)	Corresponding Outputs
Comprehensive Competencies of AIGC-era Advertising Innovators (100%)	C1 Strategic & Critical Thinking (40%)	P11 Precision in Problem Definition	15.0	Project proposal
		P12 Depth of Consumer Insight	10.0	Proposal; reflection report
		P13 Completeness of Ethical Review	15.0	Ethical considerations statement in proposal
	C2 Human–AI Collaboration Ability (35%)	P21 Complexity and Accuracy of Prompts	15.0	Key outputs with technical strategy statement
		P22 Quality of Output Optimization	10.0	Final ad materials
		P23 Multi-modal Content Integration	10.0	Final deliverables
	C3 Integrative Innovation Ability (25%)	P31 Originality of Creative Output	10.0	Creative performance
		P32 Consistency Between Strategy and Execution	7.5	Deliverables vs. strategy
		P33 Depth of Reflection and Expansion	7.5	Reflection and strategy expansion report

The weighting scheme places primary emphasis on strategic & critical thinking(C1)(40%) as the central evaluating dimension, while affirming proficiency in human–AI collaboration(C2)(35%) as a fundamental competence. Among its associated indicators, complexity and accuracy of prompts (P21) holds the largest proportion, emphasizing the ability to formulate precise prompts and communicate effectively with AI -an essential skill in contemporary creative practice. To render this latent competence observable and measurable, the assessment protocol requires students to submit both the key AI-generated outputs and a technical strategy statement as evidence of their ability to harness AI technology, which should elaborate on prompt design, stylistic integration, and iterative refinement strategies. The third criterion, integrative innovation ability (C3) (25%), evaluates whether the first two competencies can be synthesized into an innovative whole with both commercial and aesthetic value. This criterion enables the summative assessment to capture not only students' technical proficiency in AIGC application but also the depth of their creative integration.

6. Conclusion and Limitations

The proposed model responds to the evolving competency requirements of the advertising industry in the AIGC era, particularly the need for "π-shaped" professionals who possess depth in both strategic thinking and AI-assisted creative production, coupled with integrative innovation and ethical literacy. By embedding human–AI collaborative practices into the curriculum structure, the model not only addresses the alignment between higher-education learning outcomes and industry expectations but also enhances students' capacity for higher-order thinking, creative integration, and adaptive application in complex, technology-mediated contexts.

From a pedagogical perspective, the model advances scaffolded equity in learning, enabling students from diverse backgrounds to progressively acquire complex industry-oriented skills. It also promotes interdisciplinary convergence, integrating elements of media communication, data analysis, design methodology, and applied ethics. The double-loop mechanism cultivates iterative learning and reflective practice, closely mirroring the cyclic feedback processes

characteristic of real-world creative industries.

As a conceptual study, this work is limited in several ways. First, it does not report results from classroom implementation, meaning that the model's practical efficacy, student reception, and measurable learning outcomes remain unverified. Second, the weighting and evaluation frameworks, although informed by expert judgment and relevant literature, have not been statistically validated in a live teaching context. Third, the current framework offers only preliminary solutions to issues regarding the distinction between AI-assisted originality and human authorship, leaving conceptual and ethical boundaries to be further clarified. Finally, the assessment of students' deep critical thinking and innovative capability in AI-augmented production remains methodologically complex, warranting more sensitive and valid measurement tools.

7. Future Research

Future research should focus on implementing and evaluating the proposed model in authentic classroom environments, following the iterative cycles of DBR: design, enactment, analysis, and redesign. Specific priorities include:(1) Pilot implementation -introduce the model in Advertising Appreciation and Design courses, collecting both qualitative and quantitative data on learning outcomes, competency development, and student engagement; (2) evaluation refinement -validate the AHP weighting scheme using empirical evidence from student performance metrics and expert panels; (3) cross-context adaptation -explore the model's generalizability to other creative and design-related disciplines to assess transferability; (4) longitudinal tracking -examine how graduates who experienced the model perform in professional AIGC-driven roles over time to assess its impact on sustained competency development.

Through these steps, the model can evolve from a conceptual framework to a rigorously validated pedagogical approach that bridges educational theory and practice, contributing to the sustainable evolution of talent cultivation frameworks for the advertising and broader creative industries in the fast-changing AIGC era.

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