A Study on the Development of Teaching Pathways for Advertising Competitions Empowered by Knowledge Graphs

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Abstract: This study addresses the practical challenges encountered in competition-driven advertising education by proposing an innovative teaching approach centered on knowledge graphs as core cognitive tools. It begins by constructing a three-tiered knowledge network comprising conceptual, relational, and case-based layers, which systematically maps the advertising discipline alongside the specific competencies required for competition success. Building on this framework, the study designs an integrated "Graph-Competition-Classroom" teaching model that demonstrates how knowledge graphs can establish a stable cognitive structure through the intertwined phases of prompt deconstruction, collaborative inquiry, and reflective iteration. This model continuously provides structured support for both competition preparation and classroom interaction, thereby enhancing the overall efficacy of advertising pedagogy. Practice has shown that this model helps students build a systematic knowledge framework and strategic thinking. It also to some extent promotes the transformation of teachers' roles from lecturers to designers of cognitive frameworks, providing an operational model reference for the intelligent teaching reform of practical courses in the liberal arts.

Keywords: Knowledge Graph; Advertising Studies; Academic Competitions; Pedagogical Reform; Pedagogical Model

1. Introduction

With the advancement of the "New Liberal Arts" initiative, bridging theoretical knowledge with industry practice has become pivotal to enhancing the quality of talent cultivation. Within liberal arts courses such as *Advertising Studies*, academic competitions—owing to their prominent practical nature—have emerged as a crucial link between theory and industry application [1]. Confronted with open-ended competition prompts, students often struggle due to the absence of a systematic knowledge framework and strategic thinking, resulting in a lack of both a holistic analytical perspective and effective problem-solving approaches in advertising creation. Consequently, developing a pedagogical model that fosters systematic thinking has become a critical focus in the reform of advertising education.

As a significant branch of artificial intelligence, knowledge graphs offer comprehensive and innovative solutions for curricular reform. Compared to traditional linear teaching resources, knowledge graphs possess core advantages in systematizing knowledge integration, visually presenting relational connections, and supporting navigable learning pathways, thereby markedly enhancing teaching efficiency and learning outcomes [2,3].

Currently, extensive research has been conducted on the application of knowledge graphs in education. Some scholars emphasize their role in reconstructing course knowledge systems; for instance, Hao Zhiqiang analyzes the fundamental concepts and characteristics of knowledge graphs to explore their applications in curriculum content integration, structural redesign of course systems, and the association and recommendation of teaching resources [4]. Qin Qijing, using a new media content creation course as a case study, investigates knowledge graph technologies and digital reconstruction methods grounded in theory-driven content restructuring and modular design [5]. Another strand of research focuses on personalized learning support: Dong Miao examines personalized learning path recommendation strategies based on disciplinary knowledge graphs, demonstrating their efficacy in accommodating learner differences [6]. Zhang Chao further analyzes the functionality of knowledge graphs in curriculum structure construction, discussing teaching support mechanisms tailored to individual variability [7]. Within the realm of competition-based

teaching, most studies underscore the importance of "learning through competition", primarily addressing aspects such as competition organization and case-based pedagogy. Chen Ming, grounded in practice-oriented perspectives, regards the "Grand Advertising Competition" as both a platform for educational reform and a case study in applied research [8].

In conclusion, the current research has obvious gaps: On one hand, the application of knowledge graphs is mainly concentrated on explicit knowledge structures in science and engineering courses. In practical courses of liberal arts such as advertising, there is a lack of mature models for constructing knowledge graphs that are adapted to the characteristics of the discipline and the requirements of competitions. On the other hand, most related research focuses on the technical construction of the graphs, but there is a lack of in-depth discussions at the mechanism level on how to deeply integrate the graphs into the teaching process and drive the dynamic collaborative process of competition practice [9]. Based on this, this research aims to explore and construct a teaching model with knowledge graphs as the core cognitive tool, which can effectively connect disciplinary knowledge and competition practice. It is expected to promote the transformation of competition teaching from experience-based to science-based design and from result-oriented to thinking-oriented education paradigm [10].

2. Designing a Graph-Based Mapping from Knowledge to Competence

2.1 Knowledge System Design Oriented Toward Competition Practice

The construction of the knowledge graph begins with responding to a fundamental contradiction in the teaching of advertising: students' theoretical knowledge is stored in a point-like manner, unable to be connected into a line for problem-solving when needed. This is specifically manifested as students being able to remember and understand core concepts and basic theories, but often having no idea where to start when faced with a real business proposition. The root cause lies in the fact that traditional course teaching focuses on the systematic imparting of disciplinary knowledge, while high-level competitions and practices require the cross-disciplinary integration and creative application of knowledge, which present a clear gap in connection.

Therefore, the primary purpose of the design of the graph is not to digitize the chapters of the textbook, but to re-weave knowledge, making it into a cognitive network that can simultaneously carry the internal logic of the discipline and the path of practical generation. Secondly, on the basis of forming the knowledge network, it is necessary to activate the static knowledge points and embed them into a dynamic and directional association structure. The existence of the nodes and connections in the graph is entirely for the purpose of serving a clear goal: when students face competition questions, they can follow these pre-set thinking paths and independently transform theory into specific strategies and creativity, completing the entire process from problem cognition to solution output. For students, the application of the knowledge graph mainly manifests in the following two aspects:

Firstly, knowledge undergoes a structured reorganization whereby isolated points are intricately woven into a coherent conceptual network, grounded in the intrinsic workflow of advertising campaigns and marked by explicit hierarchical and causal relationships. During the learning process, when a particular knowledge node is activated, the entire related cluster simultaneously emerges, compelling students to shift their cognition from isolated "point" retrieval to a holistic "systemic" perspective, thereby constructing a comprehensive global cognitive framework.

Secondly, through path-guided strategies, the implicit process of strategic reasoning is externalized into visually navigable and traceable logical chains within the knowledge graph, culminating in concrete solutions. Confronted with competition prompts, students no longer engage in unfettered or aimless exploration; rather, they proceed along predefined trajectories of directed deduction and creative divergence, transforming strategy generation into a rigorous, evidence-based, and methodical cognitive endeavor instead of relying on serendipitous intuition.

2.2 Construction of a Three-Tier Integrated Knowledge Network

To achieve an effective mapping from knowledge to ability, based on the actual situation of course construction, a knowledge

network was constructed, which gradually deepens from the conceptual level, the relational level to the case level. This network fully presents the disciplinary structure of advertising studies and clearly reflects the comprehensive ability spectrum required for competition creation.

At the conceptual ontology layer, this framework systematically catalogs the core conceptual entities inherent in the entire advertising practice—from strategy formulation to execution—including foundational cognitive units such as brand positioning, target audience, media strategy, creative concepts, and messaging techniques. This establishes a solid, shared professional baseline for student cognition. When analyzing cases or discussing proposals, students can quickly invoke these precisely delineated concepts, ensuring that within teams and industry dialogues, a uniform, semantically clear language system is employed—constituting the first step toward developing systematic understanding.

At the relational logic layer, through the establishment of relationships such as "derivation", "inclusion", and "application", abstract strategic thinking is deconstructed into a series of observable and emulable cognitive steps. This guides students in comprehending how theory informs practice and how knowledge transforms into actionable frameworks. Learners engage in exercises along these predetermined yet flexible pathways, thus converting the tacit sense of "strategic intuition" into a progressively mastered and repeatedly reinforced skill of strategic inference.

At the competition case layer, the model addresses the challenge of translating "knowing" into "doing" by providing embodied and perceptible references for abstract theories and strategic frameworks. By deconstructing award-winning works and anchoring them within the preceding conceptual and relational networks, students gain lucid insights into how concepts are precisely invoked and logical chains artfully articulated. Facing new briefs, they receive intuitive guidance on "how to proceed", significantly diminishing trial-and-error costs during creative execution and accelerating the practical transition from strategic conception to finished deliverables.

3. Design of the Ternary Integrated Teaching Model: "Knowledge Graph – Competition – Classroom"

3.1 Deconstructing Competition Prompts through Graph Navigation

In practical pedagogy, teachers guide students to employ the knowledge graph as a specialized analytical instrument, embedding competition prompts within the graph's conceptual framework to facilitate precise entry points amidst expansive thematic domains. Taking as an illustration the welfare lottery public service theme titled "Youth at Its Prime, Advancing Together Toward the Future" from the 17th National University Advertising Art Competition (hereafter "Grand Advertising Competition"), this approach systematically incorporates all levels of the knowledge graph's analytical strata, thereby achieving a meticulous decomposition from overarching thematic concepts down to granular creative strategies.

The teacher first instructs the students to apply the core knowledge points in the conceptual ontology layer and systematically place the public welfare propositions within the knowledge graph for analysis. For instance, students need to strategically position and define the demands of the proposition, determine whether the core of the proposition is to evoke "emotional resonance" or advocate "action participation", and whether the target audience is "college students" or "social youth", and directly invoke and activate the basic concept nodes such as "advertising appeal" and "target audience" in the graph.

Based on this, students, by following the logical connections of the diagram, deduce the relationships and construct narratives. They break down the grand public welfare theme and match it to specific creative dimensions such as "helping the elderly" and "assisting the disabled". This directly links to the deeper conceptual entities and project cases in the diagram, transforming the abstract propositions into a series of strategies with theoretical basis and logical anchors.

Finally, students obtain crucial references for creative transformation through the case competition stage. After they have determined the creative direction at the strategic level, the system-linked real winning cases from previous "Great Advertising Competition" in the knowledge map allow them to deconstruct similar cases, go beyond abstract strategic descriptions, and specifically learn how to

transform "emotional resonance" and "value advocacy" and other demands into actionable visual symbols, story frameworks, and copywriting techniques. Thus, they can bridge the gap from strategic conception to specific execution and directly guide their creative practices.

3.2 Operation of the Ternary Integrated Teaching Model: "Knowledge Graph – Competition – Classroom"

Upon completing the graph-guided deconstruction of competition prompts, the instructional process transcends mere strategic formulation, naturally progressing—through reliance on the same knowledge graph—into the immersive cycle of "inquiry, creation, and iteration." This evolution actualizes a dynamic triadic synergy among the knowledge graph, competition tasks, and classroom practices. At this juncture, the knowledge graph metamorphoses from a static analytical scaffold into a vibrant, collaborative platform that facilitates joint inquiry and cognitive construction.

At the onset of collaborative exploration, the knowledge graph serves as a unified professional reference system, fundamentally transforming the underlying dynamics of group collaboration. Whereas traditional group discussions often falter due to divergent conceptual interpretations or varied perspectives, a discussion anchored to a shared knowledge graph channels all members' focus toward clearly annotated conceptual nodes and logical pathways, ensuring discourse is grounded in a lucid and collectively endorsed professional framework. For instance, when deliberating the welfare lottery's "Support for Persons with Disabilities", team members swiftly pinpoint core concepts such as "assistive technology" and "social inclusion" within the graph, simultaneously accessing related dimensions like the ethical imperative of "technology for good" and societal case studies on "employment support." This structured approach supersedes vague, subjective impressions with precise, well-defined cognitive landmarks.

As the depth of creative collaboration increases, the knowledge graph takes on the function of collecting and strengthening collective thinking. New insights generated by group members during the analysis of cases and the exchange of ideas will be recorded in real time in the shared knowledge graph of the group or class in the form of annotations, new connection lines, etc. Through annotations based on real practice, the graph evolves from a preset static tool into a dynamic knowledge base that consolidates the immediate thinking of the class. Other groups can also see these annotations and gain cross-group inspiration when exploring related propositions, thereby building a continuously evolving and collectively constructed cognitive community.

During the iterative refinement phase, the knowledge graph furnishes students with concrete cognitive cues to critically evaluate and deepen the substance of their creative works. The traditional unidirectional feedback paradigm—where teachers merely identify issues and students passively implement revisions—transforms into an active, self-diagnostic process empowered by structured knowledge tools. For example, one group addressing the "Elderly Care" theme initially anchored their public service advertisement on a specific action point, "community canteens", yet their proposal primarily highlighted the service format, notably lacking emotional resonance. The teacher guided them back to the graph to reexamine the interconnected concepts under the "Elderly Care" node.

Through graph-based associative retrieval, students discerned that "Elderly Care" encompasses not only diverse service modalities but also intimately relates to abstract notions such as "emotional companionship", "social value", and "intergenerational dialogue." Inspired by these insights, the group shifted their creative focus from enumerating service offerings to unveiling the emotional significance and underlying values—crafting a narrative around "the waiting and concern behind a simple bowl of food", exploring how community eldercare can restore social bonds and emotional belonging for the elderly. Consequently, their conception evolved from a straightforward depiction of tangible "things" and "actions" into a profound excavation of "emotion" and "meaning", marking a pivotal leap in the thematic depth of their creation.

By embedding the knowledge graph comprehensively throughout the entire process—from prompt deconstruction and collaborative inquiry to reflective iteration—the

iterative enhancement of works unfolds simultaneously with the progressive evolution of students' cognitive architectures. This fosters an organic integration of the "Knowledge Graph–Competition–Classroom" triad. Competition tasks stimulate the intensive application of the graph; classroom activities orchestrate cooperation and reflection anchored on the graph; and the graph itself endures as a stable cognitive framework continuously supporting both competition practice and classroom interaction. The triad anchors and amplifies one another, collectively constituting a holistic pedagogical ecosystem aimed at cultivating students' systematic strategic thinking and complex problem-solving capabilities.

4. Pedagogical Reflections and Model Refinement

4.1 The Fundamental Transformation of the Teacher's Role

The implementation of this model places higher demands on teachers' ability to design courses and their ability to dynamically regulate the classroom. The primary task of teachers no longer involves imparting specific knowledge, but rather designing and maintaining a knowledge map as a structural cognitive framework. Here, the role of teachers undergoes a fundamental reconfiguration. They must possess the ability to integrate interdisciplinary knowledge and design it visually. The core challenge and value lie in this aspect, and it is the key to the successful operation of the model.

During the teaching process, the role of the teacher has further evolved into a guide and mentor for the learning process. The core task is to lead students to conduct autonomous exploration, diagnose problems, and optimize strategies based on the map, thereby shifting the focus of teaching from "product creation" to the training of "thinking processes".

4.2 Cultivating Students' Higher-Order Thinking

The innovative pedagogical model, empowered by knowledge graphs and concurrently driven by competitions, delineates a clear trajectory for nurturing students' higher-order cognitive abilities and serves as a pivotal catalyst for the development of metacognitive skills. The knowledge graph functions as a structural cognitive bridge between abstract competency goals and concrete creative practice, enabling students to weave disparate, fragmentary points of knowledge into cohesive strands that translate into tangible practical capabilities.

Propelled by academic competitions, the knowledge graph assumes the role of a "cognitive map" for students to strategically plan their learning and engage in reflective adjustments, thereby granting them lucid visibility and control over their cognitive pathways. Consequently, this model accomplishes more than the mere completion of a competition entry; it fundamentally equips students with methodologies for learning and critical thinking through experiential engagement, laying a sustainable cognitive foundation for navigating the complexities of future professional landscapes.

4.3 Innovation and Transferability of the Teaching Paradigm

The core merit of this study transcends the knowledge graph as a mere instrumental tool, culminating in the formulation and validation of a transferable pedagogical paradigm effectively applicable to other humanities-based practical courses such as journalism, communication, and brand management. The paradigm's successful transference hinges on three critical dimensions: firstly, curricular objectives must foreground the cultivation of strategic and integrative competencies; secondly, the construction of knowledge graphs must achieve profound alignment with the disciplinarily central cognitive frameworks to ensure intrinsic coherence between the tool and scholarly logic; thirdly, instructional processes must be restructured and iteratively refined to embed the tool deeply into the learning cycle. Ultimately, the efficacy of this pedagogical model is contingent upon its capacity to leverage technology as a conduit for the robust cultivation of students' systemic thinking and metacognitive acumen.

5. Conclusions

This study concentrates on the pragmatic challenge of the disjunction between theory and practice within advertising competition pedagogy, systematically constructing and elucidating a pedagogical model centered on knowledge graphs as pivotal cognitive instruments. The findings demonstrate that

deeply embedding knowledge graphs throughout the entire instructional trajectory—from problem deconstruction and collaborative inquiry to reflective iteration—effectively mitigates students' difficulties in knowledge mobilization and addresses the fragmentation of strategic thinking. The core contribution of this model lies in its transformation of pedagogical logic: shifting from linear knowledge transmission towards a cyclical cognitive construction, and transitioning from an exclusive focus on artifact production to fostering the development of metacognitive processes. This research aspires to provide a pragmatic blueprint for reforming advertising education and serves as a paradigmatic reference for leveraging intelligent technologies to cultivate complex problem-solving abilities in liberal arts disciplines.

Admittedly, the practical explorations herein are not without limitations. Primarily, the efficacy of the model is heavily contingent upon the scientific rigor of the initial knowledge graph design and the pedagogical reconstruction skills possessed by educators, which imposes considerable demands on the instructional team. Additionally, the current inquiry emphasizes model formulation and process explication; the long-term impacts and adaptability of the model across diverse cognitive styles among students remain to be rigorously validated through longitudinal experimental designs and sustained data tracking.

Consequently, future research will advance along two principal directions: firstly, fostering the integration and intelligent enhancement of technological tools by exploring the synergistic interplay between generative artificial intelligence and knowledge graphs to achieve breakthroughs in dynamic resource generation and personalized learning path recommendations; secondly, developing precise formative assessment instruments that transcend singular evaluations of competition outputs, establishing an evaluative system capable of quantitatively measuring students' strategic thinking progression and the degree of knowledge integration, thereby propelling this pedagogical model from an effective teaching practice toward a more scientifically robust and generalizable empirical framework.

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