

Construction of a Collaborative GPBL + BOPPPS Teaching Model Empowered by AIGC Innovation and Practice in Teaching the *Audio-visual Language* Course

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ABSTRACT

Amid the iterative advancement of digital intelligent technologies, AI-generated content (AIGC) has injected fresh momentum into teaching reforms for digital media-related courses. This study centers on *Audio-visual Language*, a core foundational course for students pursuing majors in digital media, film, and animation. It tackles key challenges in traditional *Audio-visual Language* teaching: high technical barriers to creative practice, a noticeable disconnect between theory and practice, insufficient support for personalized learning, and a lack of robust training in creativity and aesthetic development. To address these issues, the research develops a “progressive, fully closed-loop” collaborative teaching model that combines Growth-oriented Project-Based Learning (GPBL), AIGC technology, and the BOPPPS blended teaching framework. Rooted in the three-dimensional course objectives of “knowledge, competence, and literacy,” the model reconstructs curriculum content around progressive projects, leverages innovative teaching approaches, and refines teaching outcomes through a four-dimensional, fully closed-loop evaluation system. Tested and validated through teaching practice during the 2024-2025 academic year, this model effectively reduces the technical barrier to audiovisual creation, notably boosts students’ audiovisual production capabilities, innovative thinking, and aesthetic literacy, while elevating both the quality of course teaching and students’ overall learning experiences. In doing so, it offers a practical pathway for the digital transformation of other similar audiovisual-focused courses.

Keywords: *AIGC, GPBL+BOPPPS collaborative teaching model, Audio-visual language, Teaching innovation.*

1. INTRODUCTION: THE INEVITABLE NATURE OF CURRICULUM REFORM IN THE CONTEXT OF NEW LIBERAL ARTS DEVELOPMENT

Against the dual backdrop of the rapid iteration of digital intelligent technologies and the advancing development of China’s New Liberal Arts initiative, educational digital transformation has emerged as a core issue in higher education reform. The 2025-released “*Outline for Building an Education Powerhouse (2024 – 2035)*” explicitly mandates “deepening the development of new engineering, new medicine, new agriculture, and new liberal arts, while strengthening the synergy between science

and technology education and humanities education.” The “new” in this context lies in breaking traditional disciplinary silos, embracing digital technologies, and strengthening students’ capacity to use digital tools to address real-world challenges. This approach aims to cultivate top-tier innovative talents in the “Four New Fields”—new industries, technologies, employment forms, and development models — to drive industrial innovation and growth [1]. Such guidance steers the digital transformation of liberal arts programs and fosters the integrated development of art and technology.

As a foundational core course for digital media, film animation, and related disciplines, *Audio-visual Language* plays a pivotal role in establishing

theoretical frameworks, cultivating creative abilities, and fostering aesthetic literacy. The quality of instruction in this course directly influences students' subsequent professional studies and their adaptability in industry. Yet traditional *Audio-visual Language* teaching has long grappled with several key challenges. First, high technical thresholds in creative practice create a rift between theory and application, leaving students struggling to turn abstract concepts like cinematography and montage into tangible creative work. Second, the "one-size-fits-all" teaching model conflicts with students' varying foundational levels, highlighting a scarcity of personalized guidance resources and hindering the implementation of tailored instruction. This scarcity of personalized guidance resources undermines the effective implementation of student-centered, tailored teaching. Third, an overemphasis on theoretical instruction at the expense of creative development results in inadequate aesthetic cultivation and cultural connotation in student work, often leaving it lacking humanistic resonance and innovative character.

Meanwhile, the emergence of AI-generated content (AIGC) technology presents new opportunities to address these issues. Its advantages in content creation, personalized adaptation, and efficient feedback are steadily transforming how audiovisual courses are taught. Against this backdrop, integrating AIGC technology with advanced pedagogical approaches to develop teaching models that align with New Liberal Arts development requirements has become pivotal to reforming the *Audio-visual Language* course. This study tackles these core teaching challenges by integrating Growth-Oriented Project-Based Learning (GPBL), the BOPPPS blended teaching framework, and AIGC technology to develop a "progressive, fully closed-loop" collaborative teaching model. This model seeks to break down barriers between theory and practice through course content restructuring, pedagogical innovation, and assessment system optimization, while enhancing personalized learning support and fostering creative and aesthetic development. It offers an actionable, scalable, practical pathway for the digital transformation of similar courses.

2. "GPBL+AIGC+BOPPPS" COLLABORATIVE TEACHING MODEL

To tackle the three core challenges outlined above, this study constructs an advanced, fully closed-loop *Audio-visual Language* teaching model integrating GPBL, AIGC, and BOPPPS. With student competency development as its core, the model blends the strengths of these three pedagogical approaches and technologies into an organic whole. Through measures such as curriculum restructuring, teaching methodology innovation, and assessment system optimization, it employs an experimental research paradigm with experimental and control groups to validate teaching effectiveness.

2.1 GPBL: Growth Project-Based Learning

GPBL is an enhanced version of traditional Project-Based Learning (PBL) that centers on the core principle of student-centeredness. It features three progressive project tiers: foundational, intermediate, and advanced. This design turns abstract teaching objectives into tangible, practical tasks, enabling students to achieve stepwise skill enhancement through learning by doing. Overseas scholars place significant emphasis on integrating project-based teaching with audiovisual media education, stressing the cultivation of students' innovative thinking and practical abilities. For instance, Bower and Sturman (2015) applied project-based teaching to digital media courses. Using real-world industry projects as vehicles, they guided students to complete audiovisual creation tasks in teams, effectively enhancing students' practical skills and teamwork abilities [2].

2.2 BOPPPS Blended Learning Approach

As a closed-loop teaching process model, it covers six stages: introduction, objectives, pre-assessment, participatory learning, post-assessment, and summary. This ensures the entire teaching process remains focused on learning outcomes and generates comprehensive feedback. AIGC leverages tools such as text-to-image generation and intelligent editing to provide materials generation, personalized adaptation, and efficient feedback services for teaching. The BOPPPS teaching methodology emphasizes teacher-student interaction and learning outcome feedback, effectively boosting students' in-class engagement

and safeguarding teaching effectiveness. Smith and Jones (2023) applied the BOPPPS methodology to *Audio-visual Language* courses at American universities. Their practical results showed this approach increased students' classroom participation by 25% and raised course satisfaction from 70% to 90% [3].

2.3 Application of AIGC in Audio-visual Instruction

In recent years, as AIGC technology has advanced, numerous scholars have begun exploring its application in audiovisual education. Research has primarily focused on the use of AIGC tools in scriptwriting, storyboard generation, and other processes, achieving notable pedagogical outcomes. Zheng Gong and Yong Li (2025) explored the impact of AIGC technology on cinematic audiovisual language, noting that AIGC can effectively lower the threshold for audiovisual creation and offer new approaches to *Audio-visual Language* teaching[4]. Harrison and Vincent (2024) underscored in their study published in *Frontiers* that AIGC holds immense potential in education. It offers personalized learning support for students, reduces teachers' repetitive workload by over 30%,

and drives the shift from teacher-centered to student-centered teaching models[5]. Zixuan Li and Mei Ma (2025) analyzed the technological origins and modal expansions of AIGC in empowering audiovisual communication, proposing application pathways for AIGC in audiovisual instruction[6].

2.4 Development of the “GPBL+AIGC+BOPPPS” Collaborative Teaching Model

The core logic of this model lies in building a trinity of synergistic systems: Project Framework, Technology Empowerment, Process Assurance. GPBL serves as the core vehicle for learning, anchoring the educational objective of integrating theory, practice, and aesthetics. AIGC provides technological support for practice, overcoming technical barriers and compatibility challenges in traditional teaching. BOPPPS provides standardized teaching procedures to ensure precise implementation and closed-loop optimization across all teaching stages. These three elements in synergy form an educational ecosystem characterized by “project-driven, technology-empowered, and process-closed-loop” approaches. (“Figure 1”)

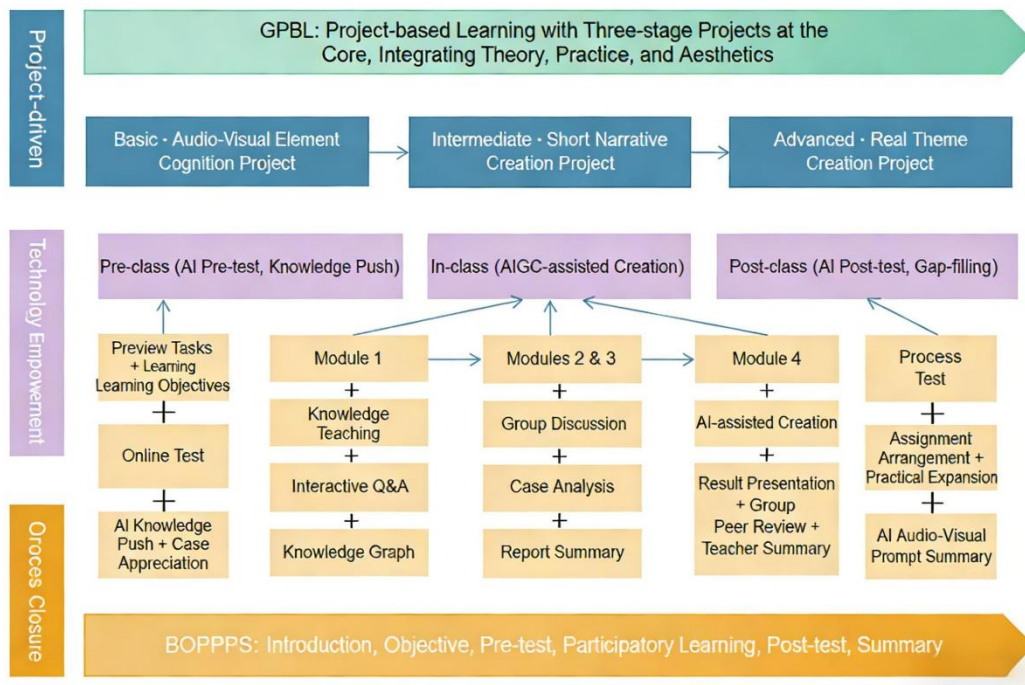


Figure 1 “GPBL+AIGC+BOPPPS” collaborative teaching model.

This model systematically addresses three major pain points in curriculum reform. Addressing the challenge of “high technical barriers to creation and

disconnect between theory and practice”, the model uses GPBL to decompose audiovisual language theory into step-by-step project tasks, making

abstract knowledge directly serve practical creation. AIGC tools replace complex technical operations, allowing students to turn creative ideas into reality without mastering professional filming or editing skills. BOPPPS participatory learning focuses on hands-on practice, while post-assessment feedback reinforces knowledge integration, driving deep convergence between theory and practice. To address “insufficient personalized learning support and difficulty implementing tailored instruction,” AI teaching assistants are deployed during the BOPPPS pre-assessment stage to diagnose individual learning gaps and deliver personalized preparatory resources. Post-class assignments are designed to tier tasks for advanced learners to select autonomously, while AIGC tools generate customized materials on demand. Combined with targeted comments in post-assessment and summary sessions, this achieves precision teaching. For the problem of “insufficient creative training and aesthetic cultivation”, GPBL integrates aesthetic objectives throughout its three-tiered projects. This spans from foundational lens aesthetics analysis to advanced cultural theme creation. BOPPPS incorporates creative and aesthetic peer reviews into its participatory teaching and assessment phases, achieving synergistic enhancement of students’ creative training and aesthetic cultivation.

3. PRACTICAL APPLICATION OF THE “GPBL+AIGC+BOPPPS” MODEL

This model centers on the GPBL growth-oriented, project-driven framework, anchored on the core need to integrate theory and practice.

AIGC technology serves as an empowerment platform, reducing technical barriers to creativity and supporting personalized learning for students. BOPPPS blended teaching provides process assurance, ensuring the integrity and interactivity of all teaching segments. The organic integration of these three elements forms a teaching closed loop of “learning by doing, gaining insight through creation and precise teaching”, which synergistically promotes the integrated development of knowledge delivery, competence cultivation, and aesthetic nurturing.

3.1 Reconstructing Curriculum Content: Deep Integration of Progressive Projects and AIGC Technology

With three-stage projects as the core, the course content is divided into four modules: Theoretical Foundation, Technical Practice, Project Tasks, and Iterative Outcomes. This enables students to proactively learn theories and apply technologies as they complete projects, achieving personalized learning and targeted guidance. This content system aligns with students' cognitive development patterns, guiding them to progressively enhance their creative capabilities from basic to advanced levels. In addition, the introduction of authentic projects, such as academic competitions and industry collaborations, links teaching, competitions, and professional practice, thereby enhancing the practicality and relevance of the curriculum content. (“Table 1”)

Table 1. Three-Stage Project as the Core: Deconstruction of Four Major Teaching Content Modules

Three-Stage Project	Theoretical Support	Technical Practice	Progressive Project (GPBL)	Outcome Iteration & Summary
Foundation Stage	Chapter 1: Overview of Audiovisual Language	Integration Logic of AIGC and Audiovisual Creation & Basic Tool Introduction	Audiovisual Element Cognition Project: Focus on the task of "shot language visualization",	Outcome Iteration: Work Revision & Optimization Outcome Presentation & Reporting: Peer Review, Instructor Summary
	Chapter 2: Visual Language: Shot Framing	Prompt Design Methods for AIGC Shot Framing Generation	transforming theoretical knowledge such as five basic visual elements, shot scales, angles, composition, and shot forms into AIGC creation instructions	
	Chapter 3: Shot Forms	Different Motion Shots (Shooting + AIGC)		
Intermediate Stage	Chapter 4: Scene Scheduling	Key Points of Scene Scheduling Design in AIGC Virtual Scenarios	Short Narrative Creation Project: Student teams lead creative directions, focusing on training scene scheduling control capabilities, with supporting explanations of film and television work creative copy and storyboard script creation. Use large language models to assist script writing, optimize narrative logic, and generate storyboard scripts and key shot frames	
	Chapter 5: Grammatical Structure of Audiovisual Language	Logic and Optimization Methods for AIGC Narrative Script Generation		

Three-Stage Project	Theoretical Support	Technical Practice	Progressive Project (GPBL)	Outcome Iteration & Summary
Advanced Stage	Chapter 6: Montage, Editing & Transitions	Optimization of AIGC Editing and Transition Effects	Real Theme Creation Project: Introduce real-demand projects such as discipline competitions, local cultural tourism promotion, and intangible cultural heritage visualization, clarifying industry production standards. Student teams complete the entire creative process with AIGC, achieving seamless integration of "teaching-competition-industry"	Outcome Summary: Students continuously improve their personal "Audiovisual Language Prompt Design Guide" based on chapter content
	Chapter 7: Auditory Language	Methods for AIGC Sound Effects and Music Generation		
	Chapter 8: Digital Special Effects	AIGC Advanced Project Creation		

3.1.1 Foundational Stage (Chapters 1-3): Audiovisual Element Recognition Project

Focusing on the visualization of cinematographic audiovisual language task, this stage translates theoretical knowledge—including the five fundamental visual elements, shot sizes, angles, and composition—into AIGC creation prompts. In teaching sessions, teachers first explain theoretical concepts before guiding students to use AI models such as Doubao AI and Seedance 2.0. Students input descriptive prompts such as “close-up shot + warm-toned lighting + indoor scene” into these models, which generate corresponding visual images. They then use models like Kling AI and MiniMax AI to input prompts such as “camera movement technique + object motion within the frame”, producing simple camera movement clips. By comparing and analyzing the audiovisual differences between their generated works and classic film clips, students deepen their grasp of theoretical concepts.

3.1.2 Intermediate Stage (Chapters 4-5): Short Narrative Creation Projects

This stage focuses on developing students’ scriptwriting and scene-staging abilities while further enhancing their application of AIGC tools. Key learning content includes scriptwriting, storyboard design, shot composition, and basic editing. To create a 30-second advertising short film, students use large language models to assist with scriptwriting, optimize narrative logic, and produce storyboard scripts and key shot visuals. Student teams take charge of creative direction, while AIGC handles technical tasks such as visual asset generation. Final video editing is completed using software like CapCut or Adobe Premiere.

3.1.3 Advanced Stage (Chapters 6-8): Authentic Theme Creation Projects

This stage connects education, competitions, and industry practice, cultivating students’ comprehensive creative and practical application capabilities. The curriculum incorporates practical projects such as academic competitions, local cultural tourism promotions, and audiovisual adaptations of intangible cultural heritage, clarifying formal industrial production standards for creation. Students collaborate in teams to complete thematic creation projects using AIGC tools for the full creative workflows, receiving personalized guidance from both course instructors and industry experts. Outstanding students’ works are selected for academic competitions or promotional collaborations with local cultural tourism departments. These achieve seamless integration between education, competition, and industry.

3.2 Integration and Innovation in Teaching Methods

To precisely address three major teaching challenges, this study organically integrates GPBL, AIGC and BOPPPS into a closed-loop system of “goal orientation-technology empowerment-process assurance”. Unlike existing studies that adopt a single teaching method or standalone technology application, this collaborative teaching model leverages the complementary strengths of these three elements. GPBL’s progressive project-driven approach bridges the gap between theory and practice; AIGC technology empowers teaching and learning by lowering technical barriers and enhancing personalized learning support; BOPPPS blended teaching ensures instructional integrity and interactivity, ultimately fostering a powerful “1+1+1>3” synergistic effect.

3.2.1 *Core Framework: GPBL* *Progressive Project-Driven Learning*

With three-tier projects as the core, each project is divided into specific task modules: theoretical learning, technical operation, creative practice, and outcome iteration. It guides students to progressively complete these modules. Team collaboration is implemented throughout the project process, assigning distinct roles to each student within the team (e.g., screenwriter, director, cinematographer and editor) to achieve a clear division of labor and coordinated cooperation. Teachers act as facilitators and supervisors, providing theoretical guidance and technical support throughout the project. They also guide students to solve creative problems independently. Additionally, the program actively builds partnerships with off-campus practice bases, film and advertising companies, as well as new media platforms, forging strong industry-academia collaboration. This provides students with more opportunities to apply their skills in real-world creative applications and helps them accumulate abundant practical experience.

3.2.2 *Creative Platform: AIGC* *Technology*

To ensure AIGC technology effectively empowers audiovisual creation and production, the first step is to establish an “AI Tool Resource Library”. It includes tutorials on tool use, audiovisual language prompt design guides, and other relevant resources to overcome the traditional teaching challenge posed by high technical barriers to creation. Once students have finished their foundational audiovisual language studies, teachers introduce the basic principles, functional characteristics, and applicable boundaries of generative AI, allowing them to build a cognitive framework for AIGC technology through hands-on practice. Subsequently, set practical themes or creative tasks to guide students in fully leveraging their own creative strengths alongside the advantages of AIGC technology, achieving complementary human-machine collaboration. Teachers also encourage students to actively explore advanced techniques for operating AI tool. For example, students take the lead in creative design while AI undertakes foundational material generation. This cultivates students’ mastery of technology rather than dependency, forming a

progressive mechanism in which technological application triggers aesthetic reflection and value recognition that feed back into technological optimization. Ultimately, this achieves students’ deepened AI application and enhanced aesthetic education competencies.

3.2.3 *Process Assurance: BOPPPS* *Blended Teaching*

By integrating online and offline learning resources, the six-stage BOPPPS teaching model is embedded into every class session and project phase, ensuring the integrity and interactivity of the entire teaching process. Before class, AI teaching assistants assign personalized foundational theory learning tasks, such as AI animation tutorials for students with a weaker grasp of the basics and industry case studies for advanced learners. During class, interactive teaching is delivered through activities such as film analysis, group discussions/debates, and real-time word clouds. Core audiovisual creation prompts are distilled and summarized, with AIGC technology assisting practical creation. Students then showcase and present their final creative outcomes in class. After class, knowledge graphs intelligently push targeted quizzes and supplementary learning resources to students. Learners summarize their core content from the course and complete their personal ‘Audiovisual Language Prompt Design Guide’.(“Figure 2”)

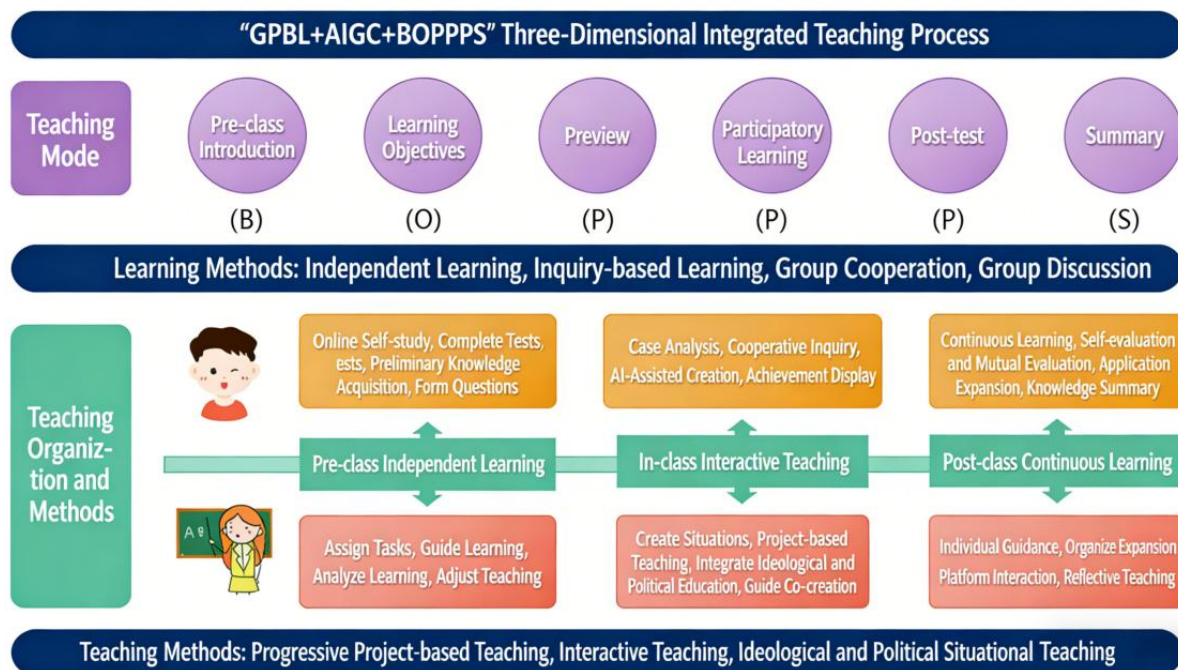


Figure 2 The teaching process of three-dimensional integration: GPBL + AIGC + BOPPPS.

3.3 Optimization of the Four-Dimensional Closed-Loop Evaluation System

Course evaluation is anchored in the core principles of 'assessment driven by learning outcomes and learning enhanced through assessment'. It closely aligns with the three major course objectives of knowledge, skills, and quality, and adopts a four-dimensional closed-loop evaluation system consisting of AI preliminary assessment, peer review, teacher feedback, and industry evaluation. This system employs a multifaceted assessment approach that integrates formative and summative evaluations, technical assessments, and aesthetic judgments, as well as institutional and industry evaluations. It enables a comprehensive, objective, and accurate evaluation of students' learning outcomes and leverages the guiding role of evaluation to foster students' autonomous learning and creative development.

3.3.1 Assessment Formats

Formative assessment focuses on the entire process of three-stage progressive project creation and supplementary practical activities, emphasizing evaluation of students' theoretical application skills, technical execution abilities, team collaboration

performance, and phased creative outputs. Specific components include: 1) Assessment of Foundational Practice (audiovisual element visualization creation); 2) Assessment of Intermediate Practice (narrative short film creation); 3) Assessment of Supplementary Practice (shot-by-shot analysis of classic films). Formative assessment spans the entire course duration.

Summative assessment centers on the outcomes of advanced practice (authentic theme creation), focusing on evaluating students' comprehensive creative abilities, innovative thinking, cultural connotation expression, and the practical adaptability of outcomes. Student work is scored against competition requirements and industry standards, with optimization suggestions aligned with professional expectations. Students are encouraged to participate in academic competitions and industry-oriented projects, ensuring evaluations remain closely aligned with industry needs. Designed around the industry's actual demands, the assessment incorporates an analysis of the practical applicability and communication effectiveness of the work. A centralized review is completed at the end of the course (Week 17).

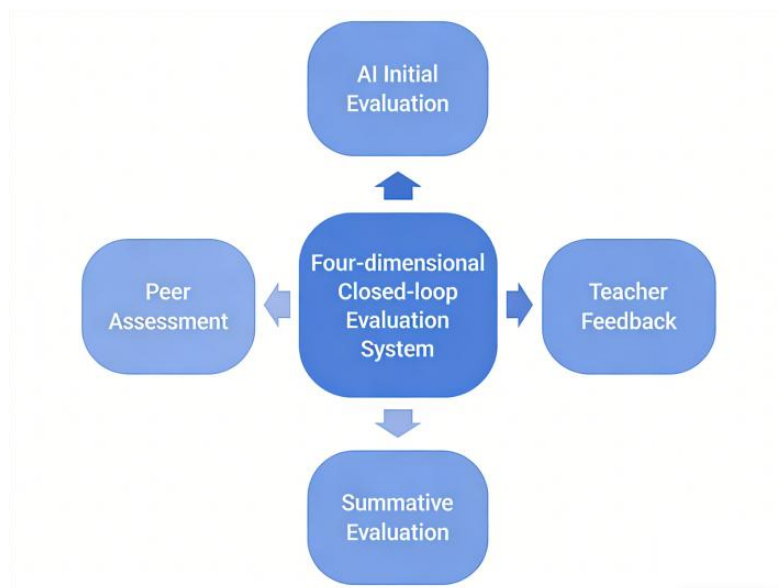


Figure 3 Four-dimensional closed-loop evaluation system.

3.3.2 Assessment Formats

The summative assessment accounts for 50% of the total score, determined by the course's advanced project evaluation. Formative assessment also accounts for 50% of the total score, consisting of AI preliminary evaluation (10%), peer assessment (20%), and teacher feedback (20%). AI preliminary evaluation uses AIGC intelligent assessment tools to conduct initial evaluations of students' works across multiple dimensions, including technical compliance, content completeness, narrative pacing rationality, and color compatibility. It generates quantitative reports for students, offering real-time feedback and targeted revision suggestions. Peer assessment takes place after each project is completed. All teams showcase their work on the course platform, share their creative concepts, and conduct anonymous peer reviews. Scores are assigned based on dimensions such as creative innovation, narrative logic, and aesthetic value, fostering students' critical thinking. Instructor feedback involves teachers comprehensively evaluating students' project completion, theoretical mastery, technical proficiency, and team collaboration performance, providing tailored guidance for further revisions.

3.3.3 Evaluation Criteria and Feedback Mechanism

To align with the development trends of the New Liberal Arts and closely integrate with the educational philosophy of local application-

oriented universities, the *Audio-visual Language* course has restructured its objective framework in accordance with the requirements of new quality productive forces and professional talent cultivation goals. The framework is divided into three core dimensions: knowledge, competence and quality. It is closely aligned with both industry standards and academic competition evaluation criteria to ensure the objectivity and fairness of all assessments.

The knowledge dimension assesses students' mastery of core audiovisual language theories and their innovative integration of interdisciplinary knowledge. It also evaluates their depth of understanding regarding AIGC tool application principles and industry standards, as well as the accuracy of theoretical application in creative practice. The competence dimension evaluates students' audiovisual appreciation skills, AIGC collaborative creation abilities, teamwork capabilities, problem-solving capacities, and creative implementation proficiency. Key evaluation focuses include the narrative coherence, technical execution standardization, and human-machine collaboration adaptability of their final works. The quality dimension examines students' aesthetic perspectives, cultural confidence, innovative thinking, and ethical awareness. It scrutinizes aesthetic qualities such as the uniqueness of creative concepts, artistic expressiveness, social influence, and the expression of cultural connotations within works, alongside adherence to originality and copyright compliance in AIGC creation.

Additionally, a closed-loop feedback mechanism is established to promptly provide evaluation results and revision suggestions to students. This guides them in refining their work based on feedback, enabling the iterative improvement of their professional skills. Regular collection of student evaluations and suggestions regarding teaching models and instructional effectiveness will optimize and refine both the teaching framework and assessment system.

4. THE EFFECT OF COURSE TEACHING REFORM AND INNOVATION

The GPBL+AIGC+BOPPPS collaborative teaching model was put into practice through reforms, including course content restructuring, teaching method innovation, and evaluation system optimization. Its effectiveness was verified using an “experimental group-control group” research paradigm.

4.1 Practical Validation of the Teaching Model

Four classes of Digital Media Technology majors from the 2021 and 2022 cohorts at Guangzhou Institute of Science and Technology were selected as research subjects. The 2021 cohort (Classes 3 and 4, totaling 113 students) was designated as the control group and received traditional instruction. This group followed the same course content as the experimental group but did not utilize AIGC technology, GPBL or BOPPPS teaching approaches. The 2022 cohort (Classes 1 and 2, totaling 120 students) served as the experimental group, implementing the GPBL+AIGC+BOPPPS collaborative teaching model. Prior to the experiment, an independent samples t-test was conducted on the academic performance of both groups in their foundational professional courses. Results showed no significant difference in scores between the groups ($P>0.05$), confirming comparable learning foundations suitable for experimental research.

4.1.1 Before Implementing the Teaching Model

Pre-tests were administered to students in both the experimental and control groups to assess their proficiency in audiovisual language and foundational knowledge of AIGC applications. Results indicated that 85.1% of students had never

used AIGC tools, while 78.3% perceived audiovisual creation as challenging. Next, Instructors also underwent training on AIGC tool use, GPBL project design, and the application of BOPPPS methodology to ensure proficiency in implementing the collaborative teaching model. Finally, an “AI Tool Resource Library” was established, including operational tutorials to provide students with learning resources.

4.1.2 During the Teaching Practice Phase

The three-stage progressive project-based teaching and the six-stage BOPPPS teaching process were strictly implemented. In the experimental group, teachers guided students through the three-stage projects step by step and used AIGC tools to support teaching. Personalized guidance was provided throughout project implementation. Formative data, including project completion status, learning progress, and instructor feedback, was recorded. The control group, by contrast, adopted a traditional teaching approach: theoretical lectures, software demonstrations, and assignment distribution. It did not use AIGC tools, GPBL, or the BOPPPS methodology.

4.1.3 Post-Course Evaluation

After the course ended, final creation projects from both groups were collected. Two industry experts and two faculty members evaluated the projects based on creativity, technical proficiency, aesthetic value, and cultural significance. Additionally, a learning satisfaction questionnaire was also distributed to experimental group students to measure their satisfaction with the collaborative teaching model, learning outcomes, and personalized guidance. Finally, questionnaire responses and course evaluations were compiled and statistically analyzed using SPSS 26.0.

4.2 Analysis of Teaching Model Implementation Results

4.2.1 Enhanced Quality of Talent Development

Data from teaching practice indicate that the experimental group achieved an average score of 82.3, surpassing the control group's average of 70.6 by 11.7 points. Statistical analysis confirmed a significant difference between the two groups ($P<0.05$), demonstrating that the collaborative teaching model significantly improves students'

mastery of knowledge. In the final project evaluations, the experimental group had an excellence rate of 48.75%, a 22.08 percentage point increase over the control group's 26.67%, reflecting a significant advantage in the quality of students' practical work. In terms of academic competition participation, the experimental group won awards for 8 projects at provincial or higher levels, compared to just 2 awards for the control group. This further underscores the model's effectiveness in cultivating students' innovative and practical capabilities.

Survey results revealed that student satisfaction with the *Audio-visual Language* course increased from 82 points (out of 100) before the teaching reform to 91 points, marking a notable improvement in their learning experience. Specifically, among all course design elements, students expressed the highest approval for AI-assisted knowledge delivery and creative practice sessions. They are widely recognized as effectively lowering learning barriers and boosting learning interest. Based on the above data, it can be concluded that the GPBL+AIGC+BOPPPS collaborative teaching model effectively enhances students' learning satisfaction and experience, thereby promoting comprehensive improvement in audiovisual creation skills and overall literacy.

4.2.2 *Enhanced Quality of Talent Development*

According to instructors feedback, the appropriate application of AIGC models has effectively reduced repetitive guidance tasks during the course. This allows teachers to focus more on providing creative guidance to students, refining overall course design, and offering personalized teaching support. In turn, this has significantly improved teaching efficiency and pertinence. Platform teaching logs show that AI teaching assistants in the experimental group provided an average of 32.3 minutes of personalized guidance per student. This tailored support, unavailable to the control group, represents a key manifestation of teaching quality enhancement.

Following evaluations of student work by industry experts, the experimental group's submissions demonstrated superior innovation, technical proficiency, and aesthetic quality compared to the control group. These works were more in line with current industry job requirements and had greater practical application value. This dual feedback from educators and industry

professionals confirms that the GPBL+AIGC+BOPPPS collaborative teaching model effectively improves the overall quality of the *Audio-visual Language* course. It achieves both better teaching results and higher efficiency.

4.3 *Value of Teaching Model Application and Promotion*

The GPBL+AIGC+BOPPPS collaborative teaching model adapts to diverse disciplinary teaching needs. Its clear operational procedures and high replicability align well with current trends in the digital media industry, giving it significant application and promotion value. This value manifests across three dimensions: theoretical integration, practical implementation, and industry alignment.

4.3.1 *At the Theoretical Research Level*

This study integrates AIGC technology, GPBL project-based learning, and the BOPPPS teaching approach to construct a "progressive, fully closed-loop" GPBL+AIGC+BOPPPS collaborative teaching model. It enriches the integration pathways and research outcomes of artificial intelligence technology and project-based learning within the field of audiovisual language instruction. Simultaneously, adopting an interdisciplinary perspective that integrates the social sciences, humanities, and arts, the study explores digital transformation pathways for audiovisual language instruction. This further expands the theoretical scope of digital aesthetic education and offers valuable theoretical references for digital teaching reforms in other humanities and arts courses.

4.3.2 *At the Teaching Practice Level*

This study addresses critical pain points in traditional *Audio-visual Language* teaching. Through concrete course implementation, the model fully verifies its feasibility and effectiveness demonstrating its ability to address various practical challenges in traditional teaching. The model is complemented by a clear "Three-Stage Project Design Guide", "AIGC Tool Application Manual", and "Assessment System Operational Specifications". These resources not only effectively lower the technical barriers for students' audiovisual creation, enhance their creative abilities and learning satisfaction, but also provide a replicable, scalable, and standardized teaching

model for similar audiovisual courses in higher education institutions.

4.3.3 *At the Industry Integration Level*

This research closely aligns with the development trends of the film and television industry, driven by AIGC technology, focusing on the demand for interdisciplinary talent. Students trained through this model have both a solid theoretical foundation and strong practical application capabilities, meeting the core requirements of industry positions. Meanwhile, this research offers a feasible pathway for integrating industry-academia research into the reform of film and television courses in higher education. It contributes to the development of New Liberal Arts and the innovative improvement of talent cultivation models in higher education.

5. CONCLUSION

This study tackles key issues in the traditional teaching of the Audio-visual Language course in higher education. Integrating AIGC technology, GPBL project-based learning, and the BOPPPS teaching approach with current trends in artificial intelligence and the requirements of higher education reform, it constructs a “progressive, fully closed-loop” collaborative teaching model. Through restructuring course content, innovating teaching methods, and optimizing the assessment system, this model effectively solves prominent problems in traditional teaching: high technical barriers, a disconnect between theory and practice, inadequate personalized learning support, and insufficient creative training and aesthetic cultivation. This represents an innovative breakthrough in teaching methodology.

Practical teaching validation demonstrates that the GPBL+AIGC+BOPPPS collaborative teaching model effectively lowers technical barriers for students’ audiovisual creation. It significantly enhances their audiovisual production skills, innovative thinking, and aesthetic literacy, while also improving student learning satisfaction and course teaching quality. This model achieves a profound integration of digital technology, higher education, and arts instruction. With its clear operational workflow and strong replicability, this model provides a practical reference for teaching innovation in similar audiovisual courses at universities. Boasting high operability and wide practical applicability, it is highly significant for

advancing the digital transformation of humanities and arts courses and supporting the development of new liberal arts disciplines.

Despite achieving certain outcomes, this study has limitations that require further refinement. First, the practice cycle was relatively short. Covering only two semesters, the study calls for long-term follow-up research to verify the model’s sustained impact on students’ creative capabilities and long-term development. Second, the scope of participants was limited. The model was tested only with digital media technology students at Guangzhou Institute of Science and Technology. Therefore, its adaptability across different types of universities and disciplines needs further exploration. Third, the depth of AIGC technology application was insufficient. Currently, AIGC applications in teaching primarily focus on scriptwriting, material production, and preliminary work evaluations. Integration with higher-level creative processes, such as the expression of cultural connotations, requires further improvement. Fourth, the impact of AIGC on students’ innovative thinking deserves closer attention. Although it lowers technical barriers, AIGC may negatively affect students’ independent, innovative thinking, which requires improved instructional guidance and regulation in future practice.

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