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Original Paper

Deconstructing and Reconstructing University Classroom Authority in the Age of Generative AI: Practical Reflections on a Project-Based Learning Reform

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Abstract

The rapid proliferation of generative artificial intelligence is fundamentally reshaping higher education, challenging the traditional lecture-based, knowledge-transmission model of classroom instruction. This paper offers a reflective analysis based on the author's first-hand teaching experience at a Chinese university with a finance and economics focus, where two AI-related courses are offered: a general-education AI literacy course for all undergraduates and an advanced deep learning course for computer science majors. The analysis reveals that AI, as a near-perfect knowledge transmitter, has rapidly devalued the knowledge-delivery function of traditional classrooms. Teachers find themselves caught between the narrowness of their own specialised training and the explosive, fast-moving breadth of AI, while student engagement continues to decline. In response to this crisis, the author's school officially launched a teaching reform in the spring semester of 2026, shifting its core approach from "knowledge-point instruction" to "project-based learning" (PBL). For the general-education course, which enrols a large number of students from social science and humanities backgrounds, the reform emphasises individual creation using off-the-shelf AI tools, aims at developing a perceptual understanding of AI principles, and involves minimal or no coding. For the computer science majors, in contrast, the advanced course adopts more technically intensive, code-based projects. This paper describes in detail the initial implementation and emerging challenges of this differentiated reform, and reflects on the necessity and pathways for transforming the teacher's role from "knowledge authority" to "learning environment designer."

Keywords

Generative AI, project-based learning, higher education, teacher role, teaching reform, AI literacy

1. Introduction

Generative artificial intelligence, exemplified by large language models and autonomous agents, is triggering an unprecedented transformation in higher education. Unlike any previous technology, generative AI does more than retrieve information—it actively generates coherent, contextually appropriate responses, solves complex problems, and even produces original content. This poses a fundamental challenge to the university classroom: if AI can answer knowledge-based questions more accurately, more patiently, and more comprehensively than a human professor, what remains irreplaceable about traditional, lecture-based, knowledge-transmission instruction?

My own school, the School of Computer and Artificial Intelligence at Southwestern University of Finance and Economics, finds itself at the forefront of this disruption. I currently teach two courses: a general-education "Introduction to Artificial Intelligence" course open to all undergraduates across the university, and an advanced "Deep Learning" course for senior students within my own school. Over the past two years, I have increasingly felt a "crisis of meaning" in both classrooms. Students have grown increasingly reliant on tools such as ChatGPT, Claude, and various agent-based systems to complete assignments, generate code, and grasp concepts, often bypassing the instructor entirely. Though physically present in class, many are visibly disengaged. In mid-term course feedback, one student wrote: "I can learn faster and better on my own with AI—I only come to class to fulfil the attendance requirement."

This experience is far from unique. According to publicly available media reports, the School of Artificial Intelligence at Shanghai Jiao Tong University recently disclosed similar observations at a teaching seminar: many AI majors are more familiar with cutting-edge applications such as agents and LLMs than their professors; they use AI tools with greater enthusiasm and creativity; while older faculty members, constrained by their training backgrounds and the pace of change, struggle to keep up. These reports resonated widely and confirmed my own classroom observations. A deeper structural issue underlies this: the most advanced AI technologies are now concentrated in large corporations such as OpenAI, Google, and DeepSeek, not within universities. University faculty lack comparable resources and access to proprietary data. The iteration cycle of AI—measured in months—far outpaces the capacity of academics, whose doctoral training has prepared them as narrow specialists in one subfield, to cover the explosive breadth of the entire AI domain.

Compounding this is a university-wide mandate requiring all undergraduates to complete an AI literacy course. Students from finance, law, business administration, and the humanities enter with vastly different levels of mathematical and programming preparation. A uniform curriculum leaves some students lost and others bored; teaching to the middle satisfies no one.

In response to these challenges, my school officially launched a project-based learning (PBL) reform in the current semester (spring 2026). The core idea is to move away from the systematic, chapter-by-chapter delivery of knowledge points, and instead to engage students in completing concrete, authentic projects through which they actively acquire knowledge. However, because the general-education course includes many students from non-technical backgrounds, the reform adopted a differentiated approach. For the deep learning course—taken by computer science majors—the reform uses code-intensive projects in which students must implement, train, and evaluate models. For the general-education course, the reform significantly lowers the technical barrier: students work individually with off-the-shelf AI tools, with the aim of developing a perceptual understanding of how AI operates and what its boundaries are. Minimal or no coding is involved. This differentiated design is intended to enable every student to participate within their own capabilities, rather than being defeated by a uniform technical standard.

This paper draws on my personal experience in this reform process, documenting the challenges observed, the concrete implementation of PBL in two distinct course contexts, and the preliminary outcomes and difficulties encountered. I hope this practitioner's account contributes a grounded, frontline perspective to the broader conversation on teaching reform in the age of AI.

2. Literature Review

Research on artificial intelligence in education has grown exponentially in recent years. Early studies focused on intelligent tutoring systems and adaptive learning platforms (VanLehn, 2011). More recently, scholars have examined the impact of generative AI on student assessment, academic integrity, and creativity (Zhai et al., 2021; Chan & Hu, 2023). However, much of this work concentrates on the student side—how AI can enhance learning or be misused—with considerably less attention paid to the teacher side, particularly the practical and psychological challenges instructors face when their knowledge authority is undercut by AI.

The literature on project-based learning is well established. Thomas (2000) characterises PBL by its focus on authentic problems, student-centred inquiry, sustained investigation, and public final outputs. A substantial body of empirical research has demonstrated that PBL can enhance motivation, critical thinking, and collaboration (Bell, 2010; Kokotsaki et al., 2016). Koehler and Mishra's (2009) TPACK framework emphasises the integration of technology, pedagogy, and content knowledge, but in the age of AI, this integration has become exponentially more difficult to achieve.

Some scholars have begun to explore the intersection of AI and PBL (Zawacki-Richter et al., 2019), suggesting that AI can serve as an "intelligent assistant" within PBL rather than as a replacement for it. Nevertheless, empirical, practice-based reflections that treat PBL as a systematic response to the "AI-replaces-the-traditional-classroom" crisis remain scarce—especially in the context of Chinese universities with predominantly non-STEM student populations. This paper attempts to address that gap by documenting a concrete, ongoing reform effort in a Chinese finance and economics university.

3. Challenges Facing the Traditional Teaching Model

Drawing on classroom observations from the spring semester of 2026, together with informal exchanges with colleagues and students after class, I identify four interconnected challenges confronting the traditional model of AI instruction.

3.1 The Tension Between Narrow Specialisation and the Explosive Breadth of AI Knowledge

AI is inherently interdisciplinary, drawing on mathematics, statistics, computer science, cognitive psychology, ethics, and numerous application domains. A typical doctoral programme, however, trains researchers to be "narrow experts"—they spend years developing deep expertise in one algorithm, one dataset, or one theoretical subfield. The result is that a computer vision specialist may know little about reinforcement learning; a natural language processing expert may be unfamiliar with graph neural networks. This depth is the foundation of academic rigour, but in the AI classroom, students expect their instructor to have a command of the entire field.

When students ask about the latest agent frameworks (e.g., AutoGPT, LangChain) or recent multimodal model releases, I often cannot answer immediately. They then turn to their own AI assistants, which seem to know everything. This not only erodes the instructor's epistemic authority but also reinforces a reasonable student suspicion: "Why should I listen to a lecture when AI can answer my question in three seconds?"

3.2 Generational and Technological Asynchrony

Today's undergraduates are digital natives. They have grown up with new technologies and are naturally curious about new tools. In my deep learning class, I observed that many students had already used Hugging Face models, fine-tuned small LLMs, or built simple agents on their own. They enthusiastically exchanged experiences during breaks. Meanwhile, some of my senior colleagues—and I myself, to a lesser degree—were still learning the basics of prompt engineering.

One student wrote in course feedback: "To be honest, I understand the material faster if I ask ChatGPT to explain it." This technological asynchrony places the instructor in an awkward position: students become de facto experts, while the teacher appears to lag behind.

3.3 Frontier Knowledge Is Concentrated in Industry, Marginalising University Faculty

Unlike previous technological revolutions, today's AI breakthroughs are largely driven by large corporations with massive computational resources and proprietary datasets. Major advances—LLMs, reinforcement learning from human feedback (RLHF), agentic workflows—are rarely published in academic journals in a timely manner. Instead, they appear as blog posts, technical reports, or commercial APIs.

University faculty, especially those in non-elite institutions, lack comparable resources. Funding pressures and publication requirements push them toward incremental contributions rather than frontier exploration. This structural gap means that even the most diligent professor cannot keep up with industry's iteration speed. When discussing the latest OpenAI or DeepSeek release in class, I often find myself having read the news only hours before the lecture—a situation that is both unsustainable and pedagogically unsatisfying.

3.4 The Dilemma of Heterogeneous Student Backgrounds in General-Education Courses

The university's mandate that all students complete an AI literacy course is well-intentioned, but its implementation is fraught with difficulty. In a class of over one hundred students, some have solid backgrounds in computing and mathematics, while others have never taken calculus or linear algebra. The assigned textbook assumes a technical background, making it incomprehensible for many and too elementary for others. Simplifying the material bores the stronger students; delving into technical details loses the weaker ones.

In classroom feedback, a considerable number of students expressed high levels of anxiety, complaining that the course was too difficult and irrelevant to their majors. Ironically, AI tools exacerbate this gap: stronger students use AI to produce high-quality assignments, while weaker students cannot even formulate effective queries.

4. The Reform in Practice: Reconstructing the Classroom Through PBL

In response to these systematic challenges, my school officially launched a project-based learning reform in the spring semester of 2026. The core idea is to move away from the sequential delivery of knowledge points by the instructor, and instead to design authentic, challenging AI projects through which students actively acquire knowledge, collaborate to solve problems, and produce tangible outcomes. The instructor's role shifts from "knowledge transmitter" to "project designer, resource provider, and process facilitator."

The implementation differs between the two courses, as described below.

4.1 The Specialised Course: From Listening to Deep Learning to Doing Deep Learning

In the advanced "Deep Learning" course for computer science majors, the traditional model followed a predictable sequence: neural network principles → backpropagation → CNN/RNN/Transformer → small assignments → final exam. In the AI era, students can master this content on their own, with AI available for instant Q&A.

The reformed design: At the beginning of the semester, the instructor provides a set of real-world project topics (e.g., "a Chinese text classification system based on pre-trained models," "deployment optimisation for a lightweight image recognition model," "training a simple game AI with reinforcement learning"—specific topics adjusted according to recent industry developments). Students form teams of 3–4 and select one project to pursue throughout the semester. The instructor no longer lectures chapter by chapter, but instead:

- **Just-in-time instruction**: Based on common knowledge gaps that emerge from the teams' progress, the instructor organises short "workshop-style" micro-lectures (e.g., "how to design a loss function," "how to tune hyperparameters without breaking everything," "how to evaluate models"), each lasting 20–30 minutes, addressing only real problems rather than covering extraneous theory.
- **Regular project reviews**: Every 2–3 weeks, teams present their progress, challenges, and

solutions, receiving feedback from both the instructor and other teams. These presentations constitute a crucial learning space—students learn at least as much from each other's failures and breakthroughs as from any lecture.

- **Assessment**: Final project defence, project report, and code repository; no traditional closed-book final examination.

Preliminary observations: Student attendance has been notably higher than in previous lecture-based offerings of the same course (since project progress depends on team collaboration, absences affect teammates). In-class and after-class discussion has increased substantially. In the reflection sections of project reports, many students noted: "I used to forget everything after the exam, but now, because I have to actually build something, I naturally search, ask, and experiment—it stays with me much longer." A difficulty remains, however: some students, accustomed to passive listening, felt anxious early on, asking "Why isn't the teacher lecturing?"

4.2 The General-Education Course: Individual AI Creation and Developing a Perceptual Understanding of AI Principles

The general-education course presents the greatest challenge. Over one hundred students from finance, law, business administration, humanities, and other non-technical majors—most with no programming background—approach the idea of "doing a project" with apprehension. The reform was therefore designed around a core principle: do not intimidate students, do not impose coding requirements, and ensure that every student can, in their own way, "use AI once, think about how it works, and reflect on the experience."

(1) Project framing: Using off-the-shelf AI tools to create "one's own work"

The student's task is not "to write an AI program" but "to use AI tools to complete a creative project related to their own major or interests." Topics are completely open. Illustrative examples from the pilot include:

- A law student used Kimi/Tongyi Qianwen to generate a "prompt design for AI-assisted contract review" and evaluated the accuracy and potential omissions in the AI-generated clauses.
- A finance student used ChatGPT to generate a technical analysis report on a particular stock, then compared the AI's recommendations against actual market performance.
- A journalism student used AI to generate three different versions of the same news story and compared the differences in stance and informational bias across versions.
- A human resources student used AI to generate a job description and then designed a flowchart for "using AI to screen CVs."
- An art student used Midjourney or Jimeng AI to generate a series of themed illustrations and documented which prompts worked well and which produced unexpected or failed results.

None of these projects required students to write a single line of code. All could be completed using off-the-shelf AI tools (web or app-based). Deliverables could take the form of an analytical report, a prompt portfolio, a collection of AI-generated works, or an AI tool usage guide—no fixed format was imposed.

(2) Where does the "academic content" lie?

Although no coding is involved, each project must include a "reflection and evaluation" section in which students address three questions:

- "What did AI do well in this task, and what did it do poorly?" — guiding a perceptual understanding of AI's capabilities and boundaries.
- "If you were to improve this, what direction would you take?" — guiding an understanding of underlying concepts such as training data, bias, and hallucination.
- "How can you tell whether the AI's output is trustworthy?" — fostering a critical, reflective stance toward AI use.

These three questions constitute the "academic core" of the general-education project. The goal is not for students to understand backpropagation, but to gain, through direct hands-on use, a first-hand sense of what AI can do, what it cannot do, and what it should not do. This is the foundational level of AI literacy.

(3) Classroom format: Workshop + sharing, not lectures

Each 90-minute session is divided into:

- First 15 minutes: The instructor introduces the week's theme (e.g., "How does AI 'understand' language?", "Why does AI 'hallucinate'?", "Is AI biased?"), presenting only conceptual frameworks, with no mathematics or code.
- Middle 45 minutes: Students work individually or in pairs on their projects, with the instructor circulating for one-on-one Q&A—essentially coaching students on how to converse with AI and how to design effective prompts.
- Final 30 minutes: Three or four students share their progress or challenges with the entire class for group discussion.

Across the entire semester, no more than four sessions include any substantive "lecturing." Most class time is devoted to hands-on work and peer sharing. The instructor's core work shifts from "preparing lecture notes" to "designing project guidelines, providing individual feedback, and moderating discussions."

(4) Preliminary feedback and difficulties

As the reform is still in its early stages, observations remain preliminary:

- On the positive side: In classroom feedback, a majority of students expressed that the course was "more interesting than I expected" and "I didn't know AI could do these things." Some student projects exceeded expectations—humanities and social science students, in particular, demonstrated impressive critical judgment when evaluating the quality of AI outputs.
- On the challenging side: A considerable number of students still felt lost. They expressed anxiety about the absence of standard answers and the need to define their own tasks, repeatedly asking: "Am I doing this right?" "How many points is this worth?" This reflects a deep tension between years of exam-oriented training and the open-ended, self-directed demands of PBL. This remains a key area for further guidance and support.

5. Reflections and Emerging Challenges

While the initial outcomes of PBL are encouraging, the reform has also surfaced new challenges that warrant careful reflection.

5.1 PBL Does Not Eliminate Teacher Knowledge Gaps, but It Changes the Nature of the Problem

Project-based learning does not make the teacher's "knowledge lag" disappear—students may still encounter tools the instructor has never seen. However, unlike in the traditional classroom, the PBL instructor is not expected to be omniscient. The teacher's role shifts to that of "learning organiser" and "problem diagnostician": helping students frame problems, pointing them towards resources, and offering feedback at critical junctures. When a student asks about a tool I do not know, I can honestly say, "I am not very familiar with that—why don't you explore it and share with the class next time." In a PBL context, this is not a dereliction of duty but a demonstration of lifelong learning.

This does, however, impose new demands on the instructor. While one need not know every answer, one must be able to judge which questions are worth pursuing and provide insightful feedback during project reviews. This requires broader academic vision and stronger instructional design skills—precisely the areas in which traditional doctoral training is weakest.

5.2 The Risk of Polarisation in Student Autonomy

PBL depends heavily on students' self-direction and intrinsic motivation. In the general-education course, the more proactive students thrived, producing projects of considerable depth. Others, accustomed to passive reception, felt disoriented—sometimes even more anxious than in a traditional course—because no one was prescribing their learning schedule, and they did not know where to begin.

In response, we introduced a "milestone" mechanism, breaking the overall project into smaller stages with clear, low-threshold "must-do" items and higher-level "challenge" options, allowing students to choose their level of engagement. This has alleviated some anxiety, but ensuring that PBL does not become "the strong get stronger, the weak give up" remains a work in progress.

5.3 The Challenge of Assessment

Traditional closed-book examinations, however mechanical, are transparent and seemingly fair. PBL project-based assessment inevitably involves substantial subjective judgment, and grading criteria are difficult to quantify. Some students have observed: "The same project might get very different scores from different instructors." We have adopted a composite assessment system—project report + presentation + peer evaluation + process documentation—to reduce reliance on any single dimension. However, this has multiplied the grading workload and demands even greater experience and judgment from the instructor.

5.4 Institutional Friction: Aligning PBL with Existing Scheduling, Workload, and Administrative Systems

Perhaps the greatest challenges lie outside the classroom. Our university's scheduling system is still built around "lecture hours," and teaching workload is calculated as "hours × student numbers." PBL, however, requires substantial out-of-class guidance, project reviews, and individual feedback sessions—activities that the current system does not easily recognise as "teaching workload." Furthermore, student evaluations of teaching still privilege criteria such as "clarity of presentation" and "richness of content." The fact that PBL instructors "lecture less" may be misinterpreted by some students as "not doing their job," potentially affecting evaluation scores. These institutional obstacles cannot be resolved at the individual faculty level, yet they are critical to the sustainability of PBL.

Despite these difficulties, I remain convinced that PBL is the only viable direction for responding to the AI-induced crisis in the classroom. Not because it is perfect—on the contrary, it is messy and difficult—but because in a world where AI has already mastered knowledge transmission, the classroom has no reason to exist unless it becomes a space for "doing, reviewing, and reflecting on projects."

6. Conclusion

This paper has offered a reflective account of the impact of generative AI on university teaching and the project-based learning reform currently underway in my school at Southwestern University of Finance and Economics.

Generative AI has thrown the traditional knowledge-transmission model of classroom instruction into a crisis of meaning. The teacher's epistemic authority has been technologically deconstructed, and student engagement has steadily declined. This is not a short-term fluctuation but an irreversible technological shift. Complaints are futile; the only productive response is to adapt. The PBL reform launched by my school this semester is one such adaptation. By engaging students in authentic projects through which they actively construct knowledge, the classroom shifts its function from "listening" to "doing, discussing, and presenting"—a function that AI cannot yet replicate. Our early experience, particularly with the differentiated design for social science and humanities students—focusing on individual AI creation, perceptual understanding of AI principles, and minimal or no coding—suggests that lowering technical barriers can indeed enhance participation and engagement.

PBL is not, however, a panacea. In our actual implementation, it has encountered multiple practical difficulties: the risk of polarisation due to unequal student autonomy, the challenge of fair and transparent assessment in project-based work, and the friction between PBL practices and existing institutional systems for scheduling and workload accounting. More fundamentally, our experience shows that this reform demands from teachers a new and higher-order set of competencies—not "knowing more" about AI, but "designing better projects" and "guiding more precisely" through timely feedback. The differentiated approach for non-technical students, while lowering the entry threshold, has also exposed a persistent tension in practice: many students find the open-ended nature of PBL tasks anxiety-inducing, a legacy of years of exam-oriented training that no single semester of reform can fully resolve.

These practical reflections lead me to a concluding observation. When AI has already become a near-perfect transmitter of knowledge, the university teacher's role cannot remain what it was. The classroom must become a space where students do, present, discuss, and reflect—not simply listen. This is what our PBL reform attempts to enact, and though it is still evolving and far from flawless, it points toward a direction that I believe is both necessary and defensible. I will continue to document this reform as it unfolds, and I hope that other frontline teachers will share their own practical experiences. Perhaps the most honest position we can take, in practice, is to acknowledge that we are no longer the sole possessors of knowledge—and then to act accordingly, by redesigning our classrooms around what only human teachers can still offer: judgment, dialogue, and the capacity to learn alongside our students.

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