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Exploring Mathematics Curriculum Reform in Application-Oriented Undergraduate Education under the Philosophy of "Teach Less, Learn More"

-- A Case Study of Digitalized PBL Teaching Practice at Xi'an Eurasia University

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Abstract

Shaanxi Province has been steadily advancing the "classroom revolution" in local undergraduate universities and implementing a student-centered orientation to teaching reform. "Teach Less, Learn More" advocates that teachers offer precise and thought-provoking guidance while returning the space for inquiry to students, making it an important philosophy for addressing the long-standing problem of "heavy lecturing, light inquiry" in public mathematics courses. Grounded in the application-oriented positioning of undergraduate institutions in Shaanxi, this paper takes the digitalized PBL (project-based learning) reform of university mathematics courses at Xi'an Eurasia University as its sample. It analyzes the real contradictions of "more teaching, less learning" in conventional mathematics classrooms, and explains the intrinsic alignment between "Teach Less, Learn More" and PBL across four dimensions: the transformation of teacher and student roles, the upgrading of learning carriers, digital empowerment, and educational goals. Drawing on authentic teaching cases from the courses, the paper systematically explores implementation pathways for reforming university mathematics courses under digital empowerment, covering the restructuring of teaching processes, the reorganization of teaching content, the construction of multi-dimensional assessment, and the practical difficulties encountered together with optimization strategies. It thereby offers a practical reference for improving the quality and efficiency of public mathematics courses in peer institutions across Shaanxi Province.

Keywords

Teach Less, Learn More; university mathematics; PBL; digitalized teaching; application-oriented undergraduate education; Shaanxi universities.

1. Introduction: The Transformation of Application-Oriented Undergraduate Mathematics Classrooms in the Age of Digitalization

The digital wave has driven curriculum reform in local application-oriented undergraduate institutions across Shaanxi into deep waters. Against the backdrop of the national strategy for the digitalization of education, the shift in higher education from "teaching-centered" to "learning-centered" has become an inevitable trend [1]. As a core general course for students in economics, management, and engineering, university mathematics undertakes the educational task of consolidating mathematical foundations, training logical thinking, and cultivating data literacy. For local application-oriented undergraduate institutions, mathematics courses are not merely a matter of transmitting knowledge; they directly

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determine whether the mathematical modeling, data processing, and problem-solving abilities required of applied talent can be effectively delivered.

For a long time, however, mathematics classrooms in many universities have clung to the traditional model of "teachers lecturing to the bell, students passively drilling exercises." Teachers pursue full coverage of knowledge points, the classroom is dominated by knowledge transmission, and teaching exhibits a structural imbalance of "more teaching, less learning": students lack opportunities for independent thinking and collaborative inquiry, and their learning remains at the lower-order cognitive levels of memorization and comprehension, making it difficult to achieve the higher-order abilities in problem solving and knowledge transfer that applied talent demands [2]. This problem is especially pronounced in local undergraduate institutions, where students' mathematical foundations diverge markedly, class sizes are large and contact hours limited, and theory is disconnected from professional contexts—all of which further magnify the shortcomings of the traditional teaching model.

"Teach Less, Learn More" is precisely an important philosophy responding to these difficulties. It should be clarified that "Teach Less, Learn More" does not mean simply cutting teachers' lecturing time and leaving students to study on their own. Rather, teachers "teach precisely and guide well," abandoning exhaustive indoctrination in favor of heuristic instruction focused on key difficulties and cognitive obstacles; students "learn with joy and learn deeply," engaging in independent inquiry and collaborative practice through task-driven and digitalized resources to achieve deep learning [3]. Echoing this, PBL (Problem/Project-Based Learning) takes real, complex problems as the starting point of learning and drives students to actively construct knowledge in the process of solving project tasks [4]. The two are highly compatible in philosophy and mutually reinforcing in practice.

As an application-oriented private undergraduate institution in Shaanxi, Xi'an Eurasia University has encouraged its faculty to experiment with project-based teaching since 2010. PBL has now risen to become a systematically implemented teaching model across the university, and the School of General Education has established a dedicated PBL Research Center that provides course design training for faculty university-wide. On this basis, the university has carried out digitalized, PBL-driven teaching reform in public mathematics courses such as Advanced Mathematics and Probability Theory and Mathematical Statistics, attempting to ground the philosophy of "Teach Less, Learn More" in the mathematics classroom. Targeting such practical pain points as large-class instruction, divergent student foundations, and the disconnection between theory and professional contexts, it explores a paradigm of mathematics curriculum reform suited to local undergraduate institutions. Its exploratory experience was widely shared as a typical sample of teaching reform in application-oriented universities at the 2024 University PBL Forum [5].

2. The Real Dilemmas of "More Teaching, Less Learning" in Application-Oriented Undergraduate Mathematics Classrooms

Drawing on the current state of public mathematics teaching in application-oriented undergraduate institutions in Shaanxi and on course surveys conducted at Xi'an Eurasia University, traditional mathematics classrooms exhibit a structural contradiction between teachers "teaching too much" and students "learning too superficially." This contradiction is both a result of classroom teaching concepts not yet being thoroughly overturned and an outcome of the interplay among multiple factors such as assessment mechanisms and student habits. Its specific manifestations can be examined from four dimensions.

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2.1. Teaching Methods: Lecturing Dominates, Squeezing Out Space for Student Inquiry

Influenced by large-class instruction, limited contact hours, and the inertia of exam-oriented education, most mathematics classrooms rely primarily on lecture-based teaching. Teachers explain concepts, theorems, derivations, and worked examples in full, striving for complete coverage of textbook knowledge points. Most of the class time is occupied by one-way output from the teacher, while students' main tasks are to listen, take notes, and consolidate through after-class exercises, leaving few opportunities for independent reasoning, small-group discussion, or practical trial and error. As some researchers have pointed out, the mathematical problems students solve mostly remain at the level of paper-and-pencil tests, and "there are not many genuine opportunities for students to pose real problems they want to solve." Learning is confined to understanding formulas and completing exercises, so students easily become "problem-solving machines" and find it difficult to genuinely develop mathematical thinking. This classroom pattern of "emphasizing teaching over learning" is precisely the core contradiction that the "Teach Less, Learn More" reform seeks to resolve.

2.2. Teaching Content: Rigid Adherence to Textbook Paradigms and the Separation of Theory from Real Contexts

Course content follows the traditional organization of "concept—theorem—example," and teaching cases are mostly idealized textbook problems, lacking authentic scenarios connected to the university's various majors and Shaanxi's local industries. Mathematical knowledge is disconnected from real contexts such as economic and management data analysis, engineering estimation, and cultural tourism statistics. Students struggle to perceive the instrumental value of mathematics, their intrinsic motivation to learn is weak, and their ability to transfer and apply knowledge is limited. The "authentic, complex, problem-rich learning situations" emphasized by PBL are difficult to establish in traditional classrooms; abstract formulas become water without a source, and students can see neither where mathematics "comes from" nor where mathematics "goes."

2.3. Assessment and Evaluation: Summative Examinations Dominate, Neglecting Growth Throughout the Learning Process

Course assessment generally consists of regular assignments and quizzes plus midterm and final examinations, with the evaluation focus falling on formula memorization and computational problem solving—that is, the lower-order objectives of memorization and comprehension in Bloom's cognitive taxonomy. For higher-order competencies such as independent inquiry, teamwork, project modeling, and reflective iteration, there is a lack of observable assessment carriers, making it difficult to gauge the growth of students' abilities during the "more learning" process. This uniformity of assessment in turn reinforces the behavioral inertia of teachers "emphasizing lecturing" and students "emphasizing drilling," forming a closed loop that is hard for reform to break through.

2.4. Learning Habits: Passive Dependence Among Students and Uneven Self-Directed Learning Ability

Having just entered university, most students continue the passive, listening-based learning habits of secondary school and are accustomed to teachers explaining knowledge points thoroughly. When confronted with independent inquiry and project tasks, their self-regulation and metacognitive reflection abilities prove inadequate. If teachers continue to take on everything and deliver indoctrinating instruction, it is very difficult for students to complete the shift from "passive reception" to "active inquiry," and "more learning" can hardly be truly realized. Survey data from the course questionnaire at Xi'an Eurasia University show that after

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the implementation of project-based learning, students showed significant positive gains in learning goals, learning enhancement mechanisms, and their perception of mathematics; however, improvements in the dimensions of self-regulation and intrinsic learning motivation were not significant. This result confirms that cultivating students' autonomy is a long-term and arduous challenge, and it also demands a higher level of design artistry from teachers in "teaching less."

3. The Intrinsic Logical Alignment Between "Teach Less, Learn More" and the Digitalized PBL Model

"Teach Less, Learn More" does not negate lecturing. University mathematics is abstract in concept and rigorous in logic, so necessary theorem derivations and explanations of difficult points cannot be entirely discarded. In essence, "teaching less" means selective lecturing combined with heuristic guidance, while "learning more" means inquiry-based learning with scaffolding, tasks, and feedback. Together they point toward a shift in teaching objectives from knowledge indoctrination to the cultivation of higher-order thinking. Digitalized, empowered PBL provides an operational carrier for grounding "Teach Less, Learn More" in the mathematics classroom, and their alignment is reflected in four dimensions [6].

3.1. Transformation of Teacher and Student Roles: Teachers Move from "All-Encompassing Lecturers" to "Learning Designers"

"Teach Less, Learn More" requires that teachers no longer take on the entire output of knowledge, handing basic concepts and simple derivations over to students to complete independently before class; in class, teachers offer guidance and clarification only on common difficulties and cognitive sticking points, rather than directly giving all the answers. Under the PBL model, the teacher's role is precisely that of project designer, resource provider, and process facilitator, focusing on designing driving, authentic questions and building learning scaffolds, and intervening appropriately when students encounter obstacles in their inquiry—thereby achieving "teaching less." Students, in turn, shift from knowledge receivers to problem solvers, completing project tasks through consulting materials, small-group discussion, and modeling practice, thus genuinely putting "learning more" into effect. This role transformation is a concentrated embodiment of PBL's design principles: "problem-oriented, hands-on, all-member collaboration, facilitated guidance, and sharing of outcomes."

3.2. Upgrading the Learning Carrier: Authentic Projects to Support Students' Inquiry-Based Learning

The class time freed up by "teaching less" must not become a learning vacuum; it must be supported by high-quality tasks that carry students' learning activities. PBL uses interdisciplinary, authentic projects as its carrier and embeds mathematical knowledge points within project tasks, so that students actively mobilize and integrate mathematical theory in the process of completing projects, achieving "learning by doing" and preventing independent learning from becoming a mere formality. As emphasized in the PBL practice at Xi'an Eurasia University, the core of PBL lies in "looking beyond the textbook to understand the textbook and beyond the discipline to understand the discipline," applying abstract knowledge in specific contexts.

3.3. Digital Tools as Empowerment: Expanding the Spatiotemporal Boundaries of "Teach Less, Learn More" Inside and Outside the Classroom

Relying on smart teaching platforms, knowledge graphs, and mathematical software such as Python and MATLAB, the chain of learning before, during, and after class can be connected throughout. Before class, students self-study the basic content using micro-lectures and online

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resources, while teachers collect learning data to precisely identify the content for focused classroom instruction, achieving "teaching less" on demand. During class, lecturing time is compressed to leave room for small-group discussion, project refinement, and presentation of outcomes. After class, students submit project outcomes through the platform, conduct peer assessment, and receive teacher feedback, extending inquiry-based learning and overcoming the practical difficulties of monitoring learning and the delayed feedback that characterize large-class instruction. Digital tools enable "teaching less" to rest on precise diagnosis of learning conditions, allow "learning more" to break through the spatiotemporal constraints of the classroom, and let deep learning continue to occur.

3.4. Convergence of Educational Goals: Jointly Oriented Toward Cultivating Core Mathematical Competencies

Both philosophies break away from the narrow view that "being able to solve problems means learning mathematics well." They no longer treat knowledge memorization and exercise drills as the sole objective, focusing instead on developing higher-order cognitive abilities such as analysis, evaluation, and creation. "Teach Less, Learn More" focuses on awakening students' active thinking, while PBL trains students' data analysis, critical thinking, teamwork, and knowledge transfer abilities through complex projects. With unified goals, the two jointly serve the talent cultivation requirements of application-oriented undergraduate education in Shaanxi.

4. Implementation Pathways for PBL Reform in Mathematics Courses Under the Guidance of "Teach Less, Learn More"

The mathematics curriculum reform at Xi'an Eurasia University insists on the complementarity of traditional lecturing and PBL, rather than setting the two in opposition. Supported by digitalization, it systematically advances reform across three dimensions—teaching process, teaching content, and the assessment system—striving to translate the philosophy of "Teach Less, Learn More" into detailed, concrete, and implemented practice.

4.1. Restructuring the Teaching Process: Building a Closed Loop of "Pre-Class Study—Focused In-Class Instruction—Post-Class Deep Learning"

To put teachers' "teaching less" into effect, the first task is to make choices about what is lectured in class: simple concepts and basic derivations are left for students to complete independently before class using online micro-lectures and task sheets; teachers use preview data from the teaching platform to pinpoint students' common difficulties. Rather than flatly explaining the entire textbook, the class focuses on focused instruction and clarification of key and difficult points, clearing cognitive obstacles and releasing more class time to students.

Teaching Case 1: A blended classroom implementation case of "Monotonicity and Extreme Values of Functions"

In the Advanced Mathematics section on "Monotonicity and Extreme Values of Functions," the traditional model has the teacher deliver a complete in-class explanation of definitions, theorem derivations, and worked examples, with nearly all of the 45-minute period devoted to lecturing. After the reform, "Teach Less, Learn More" is practiced through a closed loop of "before class—during class—after class":

First, pre-class study (front-loading "more learning"). The teacher posts micro-lecture videos and learning task sheets on the digital platform, requiring students to independently study the monotonicity criterion and the definition of extreme values and to complete basic self-assessment items. The platform automatically tallies the learning data and finds that most students can understand the definitions but are vague about the idea that "a stationary point is not necessarily an extreme point," and that some students cannot distinguish extreme values

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from maximum and minimum values. This precise diagnosis of learning conditions provides the basis for "teaching less" in class.

Second, focused in-class instruction (precise "teaching less"). Of the 45-minute class, the teacher spends only 15 minutes clarifying students' common misconceptions, without repeating the textbook word for word. The remaining 30 minutes are given to students for small-group inquiry tasks: given the single-day sales profit function of a local milk-tea shop in Shaanxi, groups discuss (i) finding the stationary points of the profit function, (ii) determining which points are extreme points, and (iii) calculating the maximum single-day profit. Students work through calculations and discussion in groups while the teacher circulates and observes, asking guiding questions only when students hit logical sticking points rather than giving direct answers. Each group sends a representative to present its solution approach, and student-to-student peer assessment is conducted.

Third, post-class deep learning (extended "more learning"). After class, the groups continue their extended inquiry: how the extreme values of profit would change if costs fluctuated, submitting a brief inquiry report that the teacher annotates and responds to online.

Through this design, teachers shift from "covering all the knowledge" to "resolving students' genuine confusions," and students shift from passive listening to applying knowledge to solve business simulation problems, achieving an organic unity of "teaching less" and "learning more."

During class, a blended format of "focused instruction and clarification + small-group project discussion + presentation of outcomes" is adopted: the teacher's lecturing time is moderately compressed and does not occupy the entire period; students discuss PBL driving questions in small groups and iterate on preliminary plans, while the teacher circulates and offers guidance and inspiration only when thinking gets stuck, rather than giving project answers directly. After class, students' "more learning" is put into effect: groups continue to refine project tasks, use mathematical software for data processing and modeling, and produce learning outcomes such as mind maps, project posters, presentation slides, and research reports. The teacher pushes extended resources online and provides process-oriented feedback, closing the loop of deep learning inside and outside the classroom.

It should be emphasized that "teaching less" here does not mean reducing the depth of instruction; rather, it means shifting the focus of the teacher's work from "repeating knowledge" to "task design, diagnosis of learning conditions, and guidance of thinking." Likewise, students' "learning more" does not mean an increase in the number of exercises drilled, but an increase in inquiry-, collaboration-, and creation-oriented learning activities.

4.2. Reorganizing Teaching Content: Using Projects as Carriers to Connect with Professional and Local Shaanxi Application Scenarios

Following the philosophy of "Teach Less, Learn More," the reform breaks the absolute constraints of textbook chapters and reorganizes knowledge points around authentic PBL projects as carriers, embedding mathematical theory in real contexts. Project design adheres to three principles: being grounded in the talent cultivation needs of the university's various majors; incorporating local industries and real social cases in Shaanxi; and accommodating the completeness of the mathematics disciplinary knowledge system.

Teaching Case 2: A Probability Theory and Mathematical Statistics project, "Let the Data Speak to You"

This project is aimed at second-year students in economics and management and corresponds to the chapters on "descriptive statistics, parameter estimation, and hypothesis testing." In traditional teaching, the teacher lectures on concepts and formulas in sequence while students complete textbook exercises after class; students only master calculations and do not know

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what real problems statistical knowledge can solve. Practicing "Teach Less, Learn More," the teacher compresses in-class formula indoctrination and turns the learning task into a complete project: conducting a statistical survey on the daily consumption of residents in Xi'an, Shaanxi Province.

In the specific implementation, the teacher "teaches less": only two class periods are devoted to focused instruction on the core logic of sampling methods, confidence intervals, and hypothesis testing, while complex formula derivations are left to students to self-study from online resources before class; the teacher focuses on explaining the project implementation framework and key considerations for data collection, and poses the driving question—whether there is a gender difference in the monthly dining expenditure of university students in the Xi'an area. Students' "more learning" is accomplished through group collaboration and the integration of in-class and out-of-class work: (i) groups design survey questionnaires, conduct online and offline sampling surveys, and collect sample data; (ii) they use Excel and Python to clean the data, perform descriptive statistics, and draw histograms and box plots; (iii) they apply interval estimation and hypothesis testing to analyze consumption differences; and (iv) they complete project posters and slide presentations, explaining their data analysis conclusions and proposing suggestions for rational consumption. In the outcome presentation and reflection stage, a project roadshow is arranged in class, with each group reporting its results and other groups asking questions and offering evaluation; students write project reflection journals summarizing their mistakes and gains in using statistical methods.

This project combines abstract statistical knowledge with local social life in Xi'an. Rather than mechanically plugging numbers into formulas, students go through the complete process of "posing a question—collecting data—conducting statistical analysis—drawing conclusions," fully embodying PBL's characteristics of being "student-centered and oriented toward real problems."

Teaching Case 3: A comprehensive calculus project in Advanced Mathematics, "Precise Cost Control: Engineering Cost Management from a Mathematical Perspective"

This project is aimed at students in civil engineering and engineering cost management, comprehensively applying knowledge points such as derivatives, definite integrals, and differentials. Traditional classrooms teach differentials and integrals chapter by chapter, fragmenting the knowledge points so that students do not know how calculus applies to engineering costing. After the reform, a PBL project was designed against the background of a small local municipal renovation project in Shaanxi.

On the teacher's side of "teaching less," rather than deriving all the integration formulas from scratch in class, the teacher pushes learning resources before class for students to review the applications of definite integrals, and focuses in class on clarifying how to translate real engineering problems into integral mathematical models, explaining the thinking path of modeling without providing a complete calculation process. On the students' side of "more learning," groups are given the cost variation function for a section of municipal road renovation and complete the following tasks: (i) establish a mathematical model of engineering quantity and cost; (ii) use calculus to calculate the total project cost; (iii) analyze the impact of material price fluctuations on cost and provide cost warning recommendations; and (iv) use MATLAB to plot visualized cost variation curves, ultimately submitting a project research report. At the same time, the project integrates the professional values of honesty and integrity, strict cost control, and the elimination of waste in engineering costing, combining knowledge learning with value formation.

Beyond the project designs above, the teaching reform also takes into account the accessibility of "more learning": mathematical history, mathematical culture, and ideological and political elements of the curriculum are moderately incorporated, integrating value formation into

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project inquiry; tiered sub-tasks are set to accommodate both students with weak mathematical foundations and those with capacity to spare, adapting to the divergent foundations of application-oriented undergraduate students and ensuring that students at different levels can all participate in the inquiry-based "more learning" process.

4.3. Innovating Teaching Assessment: Building a Comprehensive Evaluation System Integrating Process and Summative Assessment

If assessment still relies solely on a final examination paper, the "Teach Less, Learn More" reform will be difficult to implement. The reform breaks the single model of "one final paper determines the grade" and, supported by the digital teaching platform, establishes a comprehensive evaluation system integrating knowledge, ability, and competency, achieving a reasonable balance between summative and process assessment.

Summative assessment retains the final examination, focusing on core mathematical concepts and basic computational ability, thereby safeguarding the knowledge baseline of the mathematics course. Process assessment focuses on observing the complete process of students' "more learning." Drawing on the campus digital teaching platform, it collects diverse evidence, including completion of pre-class self-study tasks, mind maps, PBL project posters, presentation slides, project research reports, group peer assessment, and students' self-reflection journals. Assessment looks not only at final project outcomes but also at the entire process of group division of labor and collaboration, the research process, plan iteration, and reflective improvement, measuring students' comprehensive competencies such as data analysis thinking, innovative awareness, and teamwork.

Assessment Case: A multi-dimensional scoring rubric for PBL projects (excerpt)

Table 1. Multi-dimensional scoring rubric for PBL projects (excerpt)

Evaluation Dimension	Scoring Criteria	Weight
Application of mathematical knowledge	Accurate selection of knowledge points, reasonable model construction, rigorous calculation process	40%
Performance in the inquiry process	Clear division of labor within the group, complete research/data collection, evidence of iterative plan revision	25%
Presentation of outcomes	Clear logic in posters and slides, standardized visualizations, conclusions that fit the real context	20%
Reflection and collaboration	Authentic self-reflection journals, objective group peer assessment, ability to summarize project shortcomings	15%

The course practice questionnaire at Xi'an Eurasia University shows that project-based learning can significantly improve students' learning goals, learning enhancement mechanisms, and perception of the value of mathematics; however, improvements in students' self-regulation and intrinsic learning motivation require a longer cycle, calling for continuous optimization of instructional design and strengthened reflection training. This once again confirms the important role of digitalized assessment in tracking students' long-term growth.

5. Challenges Facing Reform Implementation and Optimization Strategies

In application-oriented undergraduate institutions in Shaanxi, grounding "Teach Less, Learn More" and digitalized PBL in public mathematics courses cannot simply copy foreign models.

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Instead, it must confront such real challenges as teacher competence, student adaptability, and contact hours and large-class instruction, and adhere to a localized, gradual approach.

5.1. At the Teacher Level: Updating Teaching Philosophy and Enhancing Interdisciplinary and Digital Instructional Design Competencies

Combining "Teach Less, Learn More" with the PBL model places higher demands on the comprehensive abilities of mathematics teachers. Teachers must not only be proficient in mathematical theory but also possess comprehensive abilities in developing project cases, interdisciplinary integration, using digital tools, and organizing and facilitating project processes. Some teachers, long accustomed to lecture-based classrooms, are prone to two extremes: one is continuing to lecture to the bell, reducing PBL to a classroom ornament; the other is completely letting students fend for themselves, lacking learning scaffolds, so that project learning becomes an empty show and the mathematical knowledge objectives are lost.

In terms of countermeasures, regular teaching and research training should be carried out relying on educational science planning projects of Shaanxi Province and on-campus teaching and research projects. On the one hand, theoretical study of "Teach Less, Learn More" and PBL teaching should be deepened, cross-committee collective lesson planning should be conducted, and a school-based, interdisciplinary mathematics case library should be jointly developed with faculty from various majors. On the other hand, teachers' ability to use digital tools and design assessment rubrics should be enhanced, promoting the organic integration of curriculum ideological and political education into project tasks and achieving a trinity of knowledge transmission, ability cultivation, and value guidance.

5.2. At the Student Level: Gradually Cultivating Autonomy and Building Graded Learning Scaffolds

Students long accustomed to passive listening find it difficult to adapt to an inquiry-based learning model in one step. Some students lack self-regulation ability and, when faced with complex projects, feel at a loss or "free ride" within their groups. Survey data have also confirmed that improving students' self-regulation and intrinsic learning motivation is a difficult point in the reform.

In terms of countermeasures, the reform should proceed step by step, avoiding rolling out PBL across all courses at once. In the early stage of a course, micro-projects should be set up, providing students with task sheets, mind map templates, and problem scaffolds, and teaching them methods for group division of labor, literature retrieval, and project reflection. The reflection journal component should be strengthened to improve students' metacognition and self-regulation, and learning progress should be fed back promptly through the digital platform to enhance students' sense of control over their learning, gradually guiding them from passive listening to active inquiry.

Supporting Mini-Case: A micro transitional project—"Mathematical Estimation of Shared Bicycle Parking on Campus"

In the early stage of the course, a micro-PBL task requiring fewer class hours is assigned as a transition to complex projects. Students use knowledge of limits and estimation to estimate the total number of shared bicycles parked on campus during peak hours. The project cycle is short and the difficulty low, helping students become initially familiar with the process of group cooperation and mathematical modeling, reducing their apprehension about large projects and building momentum for subsequent in-depth inquiry.

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5.3. At the Curriculum Support Level: Resolving the Practical Contradiction Between Large-Class Instruction and Limited Contact Hours

University mathematics is generally taught in large classes with a limited total number of contact hours, whereas project inquiry requires an investment of time, often producing the practical contradiction that "doing projects means not finishing the textbook schedule." In terms of countermeasures, the overall course design should be optimized, abandoning the pursuit of focused in-class instruction covering all textbook content and moving some basic content to pre-class online self-study; core required content should be distinguished from extension content, safeguarding the baseline of core knowledge while completing extension content through projects; a school-based digital resource library should be built, including micro-lectures, a project case library, and assessment rubric templates, to reduce teachers' lesson preparation costs; and tiered grouping mechanisms should be explored to optimize the organization and management of group projects under large-class conditions and safeguard the quality of project learning.

6. Conclusion

Shaanxi Province is vigorously advancing the classroom revolution in local undergraduate universities and advocating a shift from "teaching-centered" to "learning-centered," and "Teach Less, Learn More" is an important philosophy for implementing this reform orientation. For abstract, broadly-targeted general foundational courses such as university mathematics, simply compressing teachers' lecturing time does not equal successful curriculum reform; the key lies in whether the class time released can be taken up by high-quality learning activities. The course practice at Xi'an Eurasia University shows that, with digitalized PBL as the carrier and by balancing traditional lecturing with project inquiry, teachers achieving precise, heuristic "teaching less" and students completing inquiry-based "learning more" through authentic projects can effectively address the shortcomings of traditional mathematics classrooms—heavy on indoctrination, light on inquiry—enhance students' perception of the applied value of mathematics, and cultivate their comprehensive competencies for solving real problems.

Of course, mathematics curriculum reform guided by "Teach Less, Learn More" cannot be accomplished overnight. Cultivating students' self-regulation, teachers' interdisciplinary instructional design, and the organization of large-class projects all require continuous iterative optimization. Public mathematics reform in application-oriented undergraduate institutions in Shaanxi should be grounded in each institution's own student profile, connect with local industries and the talent cultivation needs of various majors, refuse to copy external models, and continuously explore localized implementation pathways, so that university mathematics courses genuinely serve the goal of cultivating applied talent.

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