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From Learning Outcomes to Assessment Evidence: Designing a Problem-Based Course on the Guangdong–Hong Kong–Macao Greater Bay Area Economy

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Abstract

Economics topics courses ask students to interpret dynamic regional issues, yet teaching often separates theoretical exposition from problem analysis. This paper develops a course design that integrates Outcome-Based Education (OBE) and Problem-Based Learning (PBL) in Economic Topics in the Guangdong-Hong Kong-Macao Greater Bay Area. OBE is used to specify assessable learning outcomes in disciplinary knowledge, applied analysis, and social responsibility; PBL translates those outcomes into open-ended tasks on regional industrial coordination, cross-border e-commerce and lo-gistics, and policy evaluation. The design aligns learning outcomes, modular content, classroom activities, and assessment evidence. Students move through problem framing, collaborative inquiry, data and policy analysis, presentation, and reflection. Assessment combines course products, process records, self-assessment, peer assessment, and teach-er judgment. A module-outcome-task matrix and a multi-source assessment framework are provided to improve alignment and reduce the subjectivity often associated with PBL. The design offers a course-level approach for connecting economic theory with regional practice while preserving transparent expectations and assessable evidence. Its value lies in the coherence of the instructional architecture rather than in claims of causal effectiveness, which require subsequent empirical evaluation.

Keywords

New Liberal Arts; Outcome-Based Education; Problem-Based Learning; Regional Economics; Instructional Design

1. Introduction

The New Liberal Arts agenda has renewed attention to how university courses connect disciplinary knowledge with complex social and economic problems. For

economics education, the challenge is especially visible in topics courses. These courses are intended to examine current regional, industrial, and policy issues, but they can easily reproduce the structure of conventional lecture courses: concepts and models are presented in sequence, cases are added as illustrations, and assessment remains concentrated in a final examination or paper. Chinese teaching research has examined teaching practices intended to connect postgraduate instruction in international economics with the analysis of contemporary economic issues (Chen et al., 2020). Students may therefore understand the vocabulary of regional economics without acquiring a reliable procedure for framing an unfamiliar problem, locating evidence, and defending a recommendation.

Economic Topics in the Guangdong-Hong Kong-Macao Greater Bay Area is well suited to a different design. The Greater Bay Area combines cross-border institutions, diverse industrial structures, international trade links, and rapid policy change. It offers material for applying regional economics, international trade, industrial organization, and public policy. At the same time, the complexity of the region creates a design problem: authentic issues are often too open-ended for students unless the course makes the expected learning outcomes, analytical steps, and assessment criteria explicit.

Outcome-Based Education (OBE) and Problem-Based Learning (PBL) address different parts of this problem. OBE begins with the learning outcomes students should demonstrate and aligns content, learning activities, and assessment with those outcomes (Biggs, 1996; Harden et al., 1999). PBL places learning in a problem situation that requires inquiry, collaboration, and the application of knowledge (Hmelo-Silver, 2004; Savery, 2006; Dolmans, 2019). When the two approaches are merely placed side by side, however, the course may still lack coherence. Detailed outcomes can remain detached from classroom action, while realistic problems can become engaging activities whose educational value is difficult to assess.

This paper develops an integrated course design for a 24-hour economics topics course. The central question is how learning outcomes, authentic problem situations, and assessment evidence can be organized as one instructional system. The design has four features: outcomes are stated as observable performances; course content is organized into three problem-centered modules; students work through a stable inquiry cycle; and assessment draws on both products and process evidence. The paper focuses on the architecture of the design and the conditions required for implementation. It does not treat the design itself as evidence of improved learning.

2. Conceptual Basis for Integrating OBE and PBL

2.1. OBE as an Alignment Framework

OBE shifts the point of departure from what an instructor intends to cover to what students should be able to demonstrate at the end of learning. In course design, this requires the instructor to define outcomes in observable terms, select learning

activities that give students opportunities to produce those outcomes, and use assessment evidence that matches the intended performance (Biggs, 1996; Harden et al., 1999). Recent Chinese work on OBE-based course evaluation similarly emphasizes the need to connect stated objectives with evidence of attainment (Zhang, 2024). The value of OBE is therefore not a longer list of objectives. Its value is alignment: a claim about analytical ability should be supported by an analytical task and by evidence that shows how the task was completed.

For an economics topics course, alignment is particularly important because the curriculum contains both conceptual knowledge and context-dependent judgment. Students need to explain regional economic mechanisms, but they must also decide which evidence is relevant, recognize institutional constraints, and communicate conclusions to a specified audience. These performances cannot be inferred from content coverage alone. They need to appear in the task design and in the criteria used to review student work.

2.2. PBL as Situated Inquiry

PBL begins with a problem rather than with a completed body of explanation. Students identify what they know, determine what they need to learn, locate and evaluate information, develop a solution, and revise it through discussion and feedback. This sequence supports contextual, constructive, self-directed, and collaborative learning (Hmelo-Silver, 2004; Savery, 2006; Dolmans, 2019). The evidence base also indicates that PBL outcomes depend on what is measured: benefits are more consistent for skill development and longer-term application than for short-term standardized recall (Dochy et al., 2003; Strobel & van Barneveld, 2009).

Authenticity alone is not sufficient. A problem can be realistic but too broad, too dependent on inaccessible information, or weakly related to the intended outcomes. In that case, students may assemble descriptive materials without using economic reasoning. PBL therefore requires structured openness. The instructor defines the problem boundary, the role students will assume, the form of the expected product, and the minimum evidence that must support the argument, while leaving room for different analytical routes and conclusions.

2.3. From Method Combination to Instructional Coherence

The complementarity of outcome orientation and inquiry-based course design is increasingly discussed, including work that combines OBE with design-based learning (Zhang et al., 2021). OBE answers what students are expected to demonstrate; PBL creates the conditions under which those demonstrations can be produced. Integration becomes meaningful when the outcome changes the design of the problem and when evidence from the problem-solving process is used to judge outcome attainment. In the present course, this relationship is expressed through

three linked elements: specified outcomes, problem situations, and evidence. Outcomes define the direction of learning, problems organize the learning activity, and evidence makes performance visible to students and instructors.

3. Course Design

3.1. Learning Outcomes

The course outcomes are organized in three dimensions. The knowledge dimension concerns regional economic concepts, the economic structure of the Greater Bay Area, and the interpretation of relevant policy frameworks. The analytical dimension concerns data collection, comparison, policy analysis, and the construction of feasible recommendations. The responsibility dimension concerns the ability to recognize stakeholder interests, distributional consequences, and the public implications of regional development choices. Each dimension is expressed through an observable product or performance rather than through general verbs such as "understand" or "be familiar with."

Table 1. Alignment of modules, learning outcomes, and problem-based products.

Module	Knowledge	Analysis	Problem and product
Industrial coordination and innovation	Explain innovation and industrial coordination mechanisms.	Compare constraints and complementary advantages.	Recommend a Hong Kong-Shenzhen coordination mechanism in a policy brief.
Cross-border e-commerce and logistics	Explain trade, logistics, and supply-chain concepts.	Collect and interpret trade or logistics evidence.	Identify one cross-border logistics bottleneck and produce a strategy report.
Regional policy evaluation	Interpret regional policies and transmission mechanisms.	Build an evaluation framework and assess consequences.	Evaluate a selected policy for a named stakeholder in a policy memorandum.

3.2. Modular Content and Problem Situations

The course is divided into three connected modules. The first examines regional industrial coordination and innovation. Students compare the complementary strengths and institutional constraints of Hong Kong and Shenzhen and prepare a concise brief on a coordination problem. The second module addresses cross-border e-commerce and logistics. Students work with trade, port, logistics, or financial information to identify a supply-chain bottleneck and propose an improvement. The third module focuses on regional policy evaluation. Students select a specific policy, construct an evaluation framework, and write a policy memorandum that distinguishes evidence, interpretation, and recommendation.

Cases are selected according to authenticity, currency, and analytical tractability. Public policy documents and open data sources are preferred because students can verify them independently. A case is included only when it can support the intended economic reasoning and when the available evidence is sufficient for student inquiry. This approach treats authenticity as an alignment problem involving the assessment task, the physical and social context, the form of performance, and the

criteria used to judge it rather than as a claim that a topic is merely real-world (Gulikers et al., 2004). It prevents the course from treating topicality as a substitute for analytical depth.

3.3. Learning Process

Each module follows the same learning cycle. First, the instructor launches the problem by presenting the context, the role of the student team, the expected product, and the assessment criteria. Students then clarify the problem, identify knowledge gaps, allocate responsibilities, and prepare an inquiry plan. During collaborative inquiry, they collect literature, data, policy documents, and case materials; apply relevant concepts; and record the basis for their judgments. The instructor provides short conceptual explanations and methodological support when these are needed for the task rather than separating all theory from application.

The cycle ends with product presentation, questioning, and reflection. Teams submit a written product and explain their reasoning to the class. Questions from the instructor and other teams test the consistency of the evidence and the feasibility of the recommendation. Students then revise the product or write a short reflection identifying what changed in their understanding. Presentation is not an additional activity after learning; it is part of the learning process because students must make their assumptions and evidence open to scrutiny. The revision stage also turns feedback into an activity students must interpret and use, rather than information delivered after grading (Nicol & Macfarlane-Dick, 2006).

3.4. Assessment Architecture

Assessment combines summative, formative, and multi-source evidence. Summative evidence includes the policy brief, analytical report, or policy memorandum produced in each module. Formative evidence includes inquiry plans, research notes, interim reports, and records of revision. Teacher assessment focuses on disciplinary accuracy, evidence use, analytical coherence, and the feasibility of the proposed action. Self-assessment asks students to explain changes in their reasoning and identify unresolved weaknesses. Peer assessment records each member's contribution and provides feedback on the clarity and persuasiveness of other teams' work. This architecture draws on authentic assessment, feedback for self-regulated learning, and learning-oriented assessment (Gulikers et al., 2004; Nicol & Macfarlane-Dick, 2006; Boud & Falchikov, 2006), while recognizing that peer assessment requires explicit procedures and moderation (Topping, 1998).

Table 2. Multi-source assessment evidence and its instructional purpose.

Evidence	Material collected	Evaluator	Purpose
Course product	Brief, report, memorandum, presentation	Instructor and peers	Assess accuracy, evidence use, coherence, feasibility, and communication.

Process evidence	Inquiry plan, source list, notes, interim report, revision record	Instructor	Diagnose progress and guide timely support.
Individual contribution	Task record and evidence-based peer description	Peers with instructor moderation	Make participation visible and reduce free riding.
Reflection	Learning log or short reflection after feedback	Student and instructor	Identify changes in reasoning and next learning steps.

The assessment criteria are released with the task rather than after submission. This timing allows the rubric to guide learning without prescribing a single answer. Peer scores are accompanied by brief descriptions of observable contributions, and the instructor reviews cases in which the score and the description are inconsistent. The purpose is not to multiply scores but to make the basis of judgment more transparent and to reduce the tendency for a shared group product to conceal unequal participation. This use of peer evidence follows the broader principle that peer assessment is most defensible when its purpose, criteria, and quality controls are made explicit (Topping, 1998).

4. Conditions for Implementation

4.1. Controlling the Scope of Authentic Problems

A workable problem should be open enough to permit alternative explanations but bounded enough to be completed with the available time and evidence. The task brief should specify the decision context, audience, product length, required evidence, and constraints. For example, “analyze regional logistics” is too broad, whereas “use publicly available evidence to identify one bottleneck affecting cross-border e-commerce logistics and propose a feasible response for a named stakeholder” creates a manageable inquiry space.

4.2. Providing Scaffolding without Replacing Inquiry

The instructor’s role changes from delivering all relevant knowledge in advance to calibrating the inquiry. Scaffolding may include a short explanation of an economic model, a guide to data sources, a sample analytical structure, or questions that expose unsupported assumptions. Useful questions include: What is the causal mechanism behind this claim? Which evidence could contradict it? Whose costs and benefits are omitted? What condition would make the recommendation infeasible? Such prompts preserve student responsibility while preventing open-ended work from becoming directionless, a balance that is central to theoretically informed PBL design (Hmelo-Silver, 2004; Dolmans, 2019).

4.3. Protecting Individual Accountability

Group work requires evidence of individual participation. Teams should establish roles and deadlines at the beginning of the task, but roles should not become

isolated pieces that are assembled only before submission. Interim discussion, shared research records, and peer descriptions of contribution help the instructor identify both collaboration and free riding. Individual reflection and questioning during presentation add further evidence that students understand the argument submitted in the group's name. These safeguards are consistent with peer-assessment research showing that validity depends on careful task design, criteria, and implementation (Topping, 1998).

4.4. Using Evidence for Course Adjustment

Assessment evidence should also inform teaching. Repeated weaknesses in defining variables, interpreting policy language, or connecting evidence to recommendations indicate where additional explanation or practice is needed. This feedback function is central to OBE: evidence is used not only to classify student performance but also to revise tasks, scaffolds, and criteria in the next module. It also accords with formative and learning-oriented assessment, which treat feedback and evaluative judgment as resources for future learning rather than as a final comment on completed work (Nicol & Macfarlane-Dick, 2006; Boud & Falchikov, 2006). Digital platforms can support the collection of drafts, comments, and contribution records, but the educational value depends on the quality of the evidence rather than on the volume of platform data.

5. Discussion

The design addresses a recurrent weakness in economics topics courses: the separation of theoretical coverage, practical activity, and assessment. OBE constrains the problem design by requiring each task to produce evidence of a stated outcome, consistent with constructive alignment (Biggs, 1996). PBL prevents the outcomes from remaining abstract by placing students in situations where they must use economic knowledge to make and defend a judgment (Dolmans, 2019). Assessment connects the two by showing what students produced, how they arrived at it, and where the reasoning remains incomplete.

The design also clarifies the meaning of student-centered learning. It does not remove structure or reduce the teacher's responsibility. Students have greater responsibility for inquiry and decision-making, while the instructor has greater responsibility for aligning outcomes, task boundaries, evidence requirements, and feedback. This balance is important in courses that use current regional issues, where information is abundant but not equally reliable and where apparently plausible recommendations may rest on weak causal reasoning.

The framework can be adapted to other economics topics courses, including trade policy, regional development, industrial policy, and local economic studies. Transfer requires replacement of the problem context, not abandonment of the alignment logic. The intended outcome must still be linked to a product, the problem must

remain analytically manageable, and the assessment evidence must correspond to the performance being claimed.

Several limits should be recognized. The paper presents a design, not an experimental evaluation. It cannot establish that the approach improves examination performance, higher-order thinking, or long-term transfer. Meta-analytic studies show that PBL findings vary with outcome measures, implementation, and comparison conditions (Dochy et al., 2003; Strobel & van Barneveld, 2009). Implementation also depends on teacher expertise, access to suitable cases and data, and time for feedback. Subsequent research should compare learning outcomes across cohorts, examine the reliability of assessment judgments, and investigate which elements of the design account for observed changes. These questions require data beyond the descriptive account offered here.

6. Conclusion

An economics topics course can connect theory with regional practice only when the relationship between outcomes, tasks, and evidence is designed in advance. The proposed OBE-PBL framework begins with observable learning outcomes, organizes content around bounded real-world problems, and uses products and process records to support assessment. In the Greater Bay Area course, the framework is applied to industrial coordination, cross-border e-commerce and logistics, and policy evaluation. The resulting design gives students a stable procedure for moving from problem definition to evidence-based recommendation while giving instructors a clearer basis for guidance and judgment. Its broader contribution is a practical account of how outcome orientation and problem-based inquiry can operate as one course system rather than as separate reform labels.

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