

Research on the Application of AI Dynamic Evaluation in the Teaching Reform of Marketing Courses

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Abstract: In marketing courses, traditional evaluation methods struggle to capture the cognitive changes in students' strategic analysis and creative generation phases. AI dynamic evaluation offers a solution to this dilemma by collecting behavioral data in real time, generating personalized feedback, and dynamically adjusting teaching content. This study clarifies the differences between dynamic and static evaluation, constructs a cyclic iterative model of evaluation and learning, designs transformation rules from behavioral data to evaluation indicators, proposes strategies for content difficulty adjustment and learning path modification, builds a three-tier multi-dimensional indicator system, explains the positive influence logic of AI evaluation on learning engagement, and redefines the evaluation function in two-way feedback between teachers and students. The research shows that AI dynamic evaluation can transform external scoring into an organic component of the learning process, providing both a technical path and theoretical support for curriculum teaching reform.

Keywords: AI dynamic evaluation, marketing courses, teaching reform, personalized feedback, learning engagement

Introduction

Marketing courses are application-oriented, requiring students to master multi-level abilities including theory, strategic reasoning, and creative generation. Traditional examinations and group reports focus on learning outcomes, making it difficult to reflect the cognitive changes and effort levels of students during problem-solving processes; this evaluation model is clearly mismatched with the actual needs of the course. AI dynamic evaluation technology can continuously record learning operation trajectories, automatically identify knowledge gaps, and instantly deliver targeted feedback, thereby enabling refined management of the learning process. Exploring the application of AI dynamic evaluation in curriculum teaching reform has clear significance: on one hand, it breaks through the limitations of summative evaluation and helps teachers more accurately grasp class-wide learning conditions and individual differences; on the other hand, it provides immediate learning support and reduces efficiency losses caused by feedback delays. In terms of necessity, current marketing courses generally face challenges such as reduced class sizes and intensified ability differentiation, and traditional manual evaluation proves insufficient in both timeliness and precision. Therefore, constructing an AI dynamic evaluation framework that adapts to the characteristics of marketing courses and integrates the three-cycle loop of "technology-competency-ideological and political education" has become a core issue that the reform of marketing intelligent teaching urgently needs to address.

1. Theoretical Foundations of AI Dynamic Evaluation and Curriculum Adaptation Logic

1.1 Core Concepts and Technical Features of AI Dynamic Evaluation

1.1.1 Definitional Differences between Dynamic and Static Evaluation

Dynamic evaluation emphasizes continuously capturing learners' cognitive changes during the learning process, whereas static evaluation only measures learning outcomes at a single point in time. By analogy, static evaluation is like taking a photograph, while dynamic evaluation is like recording a video. AI technology makes this video-like evaluation feasible, because it can automatically record

every operation and every modification that students make when completing marketing tasks, rather than only looking at the final submitted plan^[1].

1.1.2 AI-Driven Real-Time Data Collection and Processing Mechanism

AI dynamic evaluation relies on three technical modules: behavioral log collection, natural language understanding, and real-time scoring algorithms. Behavioral log collection records students' clicks, dwell time, and modification trajectories; natural language understanding is used to analyze textual answers in open-ended marketing case analyses; real-time scoring algorithms then convert this information into readable feedback signals. These modules work collaboratively to ensure that evaluation results are generated almost immediately after the behaviors occur.

1.1.3 Technical Path for Personalized Feedback Generation

Personalized feedback goes beyond simple right-or-wrong judgments and delivers precise recommendations based on students' knowledge gaps. For example, when a student incorrectly applies the cost-plus pricing formula to a demand-oriented pricing scenario, the system instantly generates a counterexample illustration. This path is essentially a synergy between conditional rule matching and lightweight machine learning models, enabling accurate feedback without requiring large-scale data training. In the marketing intelligent teaching system, this path further interfaces with the case database for curriculum ideological and political education; when the system detects that a decision-making plan neglects social responsibility, it automatically pushes ethical reflection prompts, thereby achieving an extension from technical feedback to value guidance.

1.2 Deconstruction of Evaluation Needs for Teaching Objectives in Marketing Courses

1.2.1 Layered Evaluation Requirements for Knowledge Memorization and Theoretical Application

Marketing courses require students to memorize a large number of terminologies while also applying them to interpret real-world cases. Traditional multiple-choice questions can hardly distinguish memorization from application, whereas dynamic evaluation, through a sequential task of "first selecting concepts and then matching cases," allows AI to automatically identify students' stumbling blocks and accurately differentiate between knowledge gaps and transfer difficulties.

1.2.2 Difficulties in Process-Oriented Evaluation of Strategic Analysis and Creative Generation

Strategic analysis often does not have a single correct answer; for instance, different students may propose two alternative solutions — low-end penetration or high-end differentiation — for the same market entry problem. The difficulty in evaluation lies in how to determine whether the process by which students derive their solutions is reasonable. Evaluation of creative generation is even more challenging, because the quality of creativity itself is subjective. AI dynamic evaluation addresses this by breaking down the steps of creative generation (problem identification, information retrieval, and solution combination) and scoring each step separately, rather than simply providing an overall comment.

1.2.3 Limitations of Traditional Examinations and Group Reports in Capturing Process

Many marketing courses use a final examination paper or require a group report at the end of the semester, but both methods tend to conceal the actual effort process of individual students. The paper only shows whether answers are right or wrong, and the report only shows the final few pages submitted. A student might have consulted a large amount of materials and produced several versions of a plan throughout the entire semester, yet ultimately loses points due to poor formatting, and this process is wasted. AI dynamic evaluation can incorporate these intermediate products into the evaluation scope^[2].

1.2.4 Implicit Evaluation Needs for Ideological and Political Education Goals

Marketing courses carry the educational objectives of ideological and political education, such as business ethics and social responsibility. Traditional evaluation fails to capture students' considerations of value dimensions like consumer rights and fair competition in marketing decision-making. AI dynamic evaluation can extract value keywords and reasoning paths through semantic mining of decision-making plans and ethical scenario simulation, thereby incorporating ideological and political literacy into process-oriented evaluation and providing measurable evidence for the internalization of ideological and political education within the "technology-competency-ideological and political education" loop.

1.3 Intrinsic Correlation Model between Dynamic Evaluation Mechanism and Learning Process

1.3.1 Evaluation Initiation Logic of Behavior-Triggered Evaluation

Dynamic evaluation is not initiated by teachers at will; rather, every key operation of students automatically triggers an evaluation. For example, when a student clicks the "increase the advertising budget" button in the simulated marketing decision-making software, the system immediately judges whether this action is reasonable under the current market parameters. This initiation logic transforms evaluation from being externally imposed into a natural component of learning activities, so that students may not even perceive that they are being evaluated.

1.3.2 Correction Path of Feedback Signals on Cognitive Structure

Feedback signals exert two types of correction effects on students' cognitive structure: one is reinforcement, which means that a stable knowledge node is formed after correct behavior is confirmed; the other is replacement, which means that erroneous cognition is cleared and reconstructed after being explicitly negated. In marketing courses, a common misconception is that "lowering prices always increases sales"; AI feedback will prompt students to consider competitors' price-matching responses and changes in profit margins, thereby helping students replace this oversimplified model.

1.3.3 Cyclical Iterative Closed-Loop of Evaluation and Learning

The core of the entire model is a closed-loop: learning behavior → AI evaluation → immediate feedback → behavioral adjustment → a new round of evaluation. This closed-loop can be cycled many times within a short period; for example, students may adjust their marketing mix five or six times within ten minutes and receive feedback each time. This high-frequency iteration significantly improves learning efficiency, because students do not need to wait until next week's homework grading to know where they went wrong; instead, they can correct it on the spot.

2. Design of Teaching Reform Path Based on AI Dynamic Evaluation

2.1 Real-Time Collection of Learning Behavior Data and Mapping to Evaluation Indicators

2.1.1 Design of a Multi-Source Behavioral Data Collection Framework

Learning behavior data mainly come from three channels: clickstream records from the online learning platform, revision trajectories in the assignment system, and participation logs from classroom interaction tools. The online platform records students' pause and replay counts when watching videos; the assignment system preserves changes in draft versions before each submission; and the classroom interaction tools collect response times for quizzes and polls. By integrating these data, it is possible to reconstruct a relatively complete picture of a student's self-study status outside class and their level of engagement during class.

2.1.2 Transformation Rules for Mapping Behavioral Data to Evaluation Indicators

Click data alone have no pedagogical significance; they need to be transformed into interpretable evaluation indicators. The transformation rules include three types: frequency thresholds, time windows, and sequence patterns. For example, if a student revises a cost-plus pricing exercise five times before submitting, the system maps this behavioral sequence to the indicator of "difficulty in understanding the formula." During the transformation process, some noisy data—such as accidental clicks or a large batch of operations after a long pause—are removed to ensure the authenticity of the indicators^[3].

2.1.3 Dynamic Adjustment Mechanism for Indicator Weight Allocation

The indicator weights for learning behavior data are dynamically adjusted according to the stage: in the early stage of the course, emphasis is placed on video completion rate; in the middle stage, the weight for the frequency of strategic adjustments increases; and in the final stage, the frequency of cross-chapter knowledge retrieval becomes dominant. The weights are automatically calibrated based on the distribution of overall class performance, rather than being manually preset, thereby avoiding evaluation bias caused by differences in question difficulty. The system additionally establishes an independent weight channel for the ideological and political education dimension, integrating factors such as participation in business ethics discussions and the frequency of social responsibility keywords, to form a comprehensive profile, ensuring that the evaluation of ideological and political literacy is not diluted by knowledge and skill indicators.

2.2 Strategies for Dynamic Adjustment of Teaching Content Driven by Personalized Feedback

2.2.1 Matching Logic between Feedback Types and Teaching Content

Personalized feedback includes four types: corrective, extended, value-guidance, and encouraging. Corrective feedback targets conceptual errors and instantly pushes explanatory snippets; extended feedback provides advanced cases or further reading after basic proficiency is achieved; value-guidance feedback addresses marketing decisions involving social responsibility or ethical conflicts, pushes ethical dilemma cases and key points of industry norms, and embeds micro-resources for ideological and political education to trigger reflection on social impact; encouraging feedback maintains the learning rhythm. The matching logic is dynamically adjusted based on students' current accuracy rate, task completion speed, and the value tendencies demonstrated in their plans, thereby achieving resonance between professional competence and value guidance.

2.2.2 Real-Time Adjustment Rules for Ascending and Descending Content Difficulty

When AI evaluation finds that a student's accuracy rate is below 50% in three consecutive pricing exercises, the system will lower the difficulty level of the practice problems pushed to that student by one level and supplement with micro-lectures covering prerequisite knowledge points. Conversely, if a student still has sufficient remaining cognitive resources after completing the basic tasks, the system will unlock an additional competitive analysis module. This adjustment rule adopts a stepwise rather than a leapfrog change, so as to prevent students from experiencing frustration due to abrupt shifts in difficulty.

2.2.3 Generation and Dynamic Correction of Personalized Learning Paths

Each student's initial learning path is determined by the results of the placement test, and is subsequently revised continuously with the ongoing input of dynamic evaluation. The correction of the path is based on the learning efficiency indicator, which is the number of skill points correctly completed per unit of time. When the efficiency falls below the threshold, the path is adjusted toward a more fine-grained breakdown of knowledge points; when the efficiency exceeds the threshold, the path skips redundant repetitive practice segments. The entire correction process does not require manual intervention by the teacher, but periodic summary reports are generated for teaching reference.

2.3 Integration of Evaluation Results with Classroom Interaction Activities

2.3.1 Import Mechanism of Evaluation Data in the Pre-Class Questioning Session

Five minutes before class, the AI system compiles the weak knowledge points identified from students' pre-class self-tests into a high-frequency error list, and displays it to the course instructor on the classroom interactive terminal. The instructor can directly initiate discussions around these error questions, without having to ask "What does everyone not understand?" This import mechanism connects the previously loose pre-class preview with in-class questioning, thereby reducing the time of awkward silence in the classroom.

2.3.2 Real-Time Scoring and Intervention Strategies in Group Discussions

In group discussion sessions, the AI system analyzes each group's discussion activity level and accuracy of concept usage through speech recognition and keyword extraction. When a group has no effective speech for two consecutive minutes or frequently uses incorrect marketing terms, the system pushes a prompt question to the group's interactive screen. This intervention does not directly tell the answer, but instead guides the group to refocus in the right direction through questioning^[4].

2.3.3 Reverse Adjustment of Teaching Pace Based on In-Class Quiz Results

After the in-class quiz is completed, the AI dynamic evaluation system immediately generates a distribution chart of the class-wide accuracy rate and a clustering result of error types. If the accuracy rate of a certain question is below 60%, the system will suggest that the instructor pause the next teaching segment and spend three to five minutes re-explaining the corresponding knowledge point. If a certain type of error (for example, confusing market penetration with market development strategies) appears intensively among multiple students, the system will mark this content as a common issue that needs collective correction. The instructor adjusts the pace of the latter half of the class based on this information, rather than rigidly following the lesson plan.

3. Improvement of Teaching Effectiveness and Directions for Reconstructing the Evaluation System

3.1 Hierarchical Construction of a Multi-Dimensional Dynamic Evaluation Indicator System

3.1.1 Basic-Level Indicators: Knowledge Mastery and Skill Proficiency

Basic-level indicators focus on students' mastery of core marketing concepts and basic tools, including the accuracy of reproducing terminology definitions, the completeness of written recall of classic models, and the speed of completing simple calculation problems. Such indicators can be directly obtained through the AI automated scoring system without requiring manual intervention.

3.1.2 Advanced-Level Indicators: Strategic Reasoning and Contextual Transfer Ability

Advanced-level indicators measure students' ability to transfer knowledge to unfamiliar marketing contexts, including the rationality of the reasoning path in case analysis, the trade-off performance in multi-variable decision-making, and the flexibility of strategy adjustment under different market conditions. The AI system captures these abilities by setting up contextual transformation tests. The quantification of this layer of indicators is relatively difficult; however, the real-time tracking feature of dynamic evaluation provides a feasible measurement approach.

3.1.3 Extended-Level Indicators: Creative Generation and Cross-Module Integration

Extended-level indicators measure advanced marketing capabilities, including the originality score of advertising slogans, the density of cross-chapter knowledge retrieval in promotional plans, the innovativeness of resource allocation in simulated entrepreneurship, and the quality of embedding ideological and political elements such as awareness of social responsibility and the concept of sustainable development within the plans. The AI system integrates semantic similarity comparison, knowledge graph path analysis, and value theme detection for evaluation, so as to prevent templated responses from receiving high scores and to avoid value expressions that remain superficial. The weights of this layer of indicators are relatively low in the early stage and gradually increase as abilities improve in the later stage; among them, the weight of value-judgment indicators reaches its peak during the phase of real project practice, thereby pulling the "technology-competency-ideological and political education" loop into complete closure.

3.2 The Positive Influence Logic of AI Evaluation on Sustained Learning Engagement

3.2.1 Immediate Feedback Shortens the Time Delay between Action and Outcome

Under the traditional evaluation model, students usually have to wait several days after submitting assignments before they can see their grades and comments, and this period is long enough to cool down many people's learning enthusiasm. AI dynamic evaluation compresses the feedback delay to a few seconds, so that students can know what they got wrong as soon as they finish a pricing multiple-choice question. This immediacy makes it easier for students to associate "correct operations" with "receiving recognition," and thus they are more willing to continue moving forward^[5].

3.2.2 Dynamic Difficulty Adjustment Reduces the Probability of Learned Helplessness

When students repeatedly make errors on the same type of marketing analysis questions, the AI system automatically lowers the difficulty of subsequent questions and supplements prerequisite knowledge. This adjustment mechanism prevents students from completely giving up due to being stuck on one point for too long. Conversely, for fast learners, the system continuously provides challenging extended tasks to prevent them from getting distracted by boredom. In essence, it keeps every student within their own zone of "being able to learn without feeling fatigued," making learning engagement naturally easier to maintain.

3.2.3 The Visualized Growth Trajectory and the Development of Ideological and Political Literacy Enhance the Sense of Learning Meaningfulness

The ability curve chart generated by the AI dynamic evaluation system not only displays the progress of marketing skill points, but also separately presents the growth footprints of ideological and political literacy, such as "social responsibility sensitivity" and "ethical decision-making tendency." Even if the absolute score is temporarily not high, as long as the curve as a whole moves upward, students can perceive their dual growth in both professional competence and value orientation, thereby strengthening their sense of learning meaningfulness and self-efficacy. This visualized record, which

integrates professional progress with personal development, is more effective in sustaining the willingness for continuous engagement than a mere final grade.

3.3 Repositioning of the Evaluation Function in the Two-Way Teacher-Student Feedback Loop

3.3.1 Role Transformation from One-Way Scoring to Two-Way Information Exchange

Traditional evaluation presents a one-way model in which teachers grade and students receive scores. AI dynamic evaluation reconstructs this into a two-way information exchange mechanism: students' behavioral data convey their mastery status to the system, and the system simultaneously outputs analytical results to both teachers and students. What teachers obtain is no longer a single score, but a class-wide competence distribution map; students, likewise, shift from passive waiting to actively identifying their own problems. Evaluation thus transforms from an external verdict into a medium of teaching communication, in which the distribution map of ideological and political literacy is presented in parallel with the professional competence map, thereby facilitating teachers' comprehensive grasp of educational outcomes.

3.3.2 Support of Teacher-Side Data Analysis for Classroom Teaching Decision-Making

The AI system provides teachers with clustered and annotated teaching recommendations, rather than raw data accumulation. For example, when the system identifies that "40% of the class share a common bias in predicting promotional mix effectiveness," the teacher can use five minutes of class time to clarify this issue collectively. Such support reduces the time cost of speculating about students' learning status based on experience, and allocates classroom time precisely to the difficulties that truly need to be addressed, thereby achieving a transition from "guessing students' confusion" to "identifying the cognitive crux with certainty." The system simultaneously pushes matched entry points for ideological and political education, such as the ethical connection between this bias and the risk of exaggerated advertising, thereby assisting in naturally embedding value guidance within the process of knowledge clarification.

3.3.3 Cultivation Path for Students' Self-Evaluation Ability

Through continuous use, AI dynamic evaluation trains students' metacognitive judgment of their own learning status. When a discrepancy arises between the system's evaluation and students' self-expectations, they are guided to reflect on the causes of the gap; after repeated comparisons, they gradually develop the ability to identify their weak points even without the system. This process of internalizing an external tool into a learning habit holds transferable value for sustained learning after the course. When self-evaluation extends to the domain of value judgment, students begin to proactively examine the social impact of their marketing plans, which signifies that the ideological and political dimension simultaneously achieves a transformation from external evaluation to internal self-awareness.

Conclusion

This study elaborates on the application logic of AI dynamic evaluation in the teaching reform of marketing courses from three levels: theoretical foundations, reform paths, and effectiveness enhancement. Dynamic evaluation achieves the integration of learning and evaluation through mechanisms such as behavior triggering, immediate feedback, and cyclic iteration. Based on the collection of multi-source behavioral data and indicator mapping, it can drive the dynamic adjustment of teaching content and embed evaluation results into classroom interaction activities. The constructed three-tier indicator system measures knowledge mastery, strategic reasoning, and creative generation abilities respectively; immediate feedback, difficulty adjustment, and visualized growth trajectories jointly enhance sustained learning engagement. The teacher-student evaluation function shifts from one-way scoring to two-way information exchange, with teachers obtaining data-supported decision-making bases and students gradually internalizing their self-evaluation ability. Future research may focus on the transfer effects of AI dynamic evaluation in different types of marketing courses, as well as optimizing data collection granularity and storage mechanisms while protecting privacy, so as to improve the system's interpretability and lightweight level.

Fund Projects

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