

Research on the Construction and Practice of the "Two-Way Feedback Mechanism between Teachers and Students" in the Implementation of Undergraduate Teaching Management Policies at Secondary Colleges of Private Universities

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Abstract: *In the implementation of teaching management at secondary colleges of private universities, the information interaction between teachers and students encounters blockages such as asymmetric paths, signal attenuation, and organizational constraints. This study focuses on the two-way feedback mechanism, analyzing the asymmetric distribution of upward and downward feedback paths, signal attenuation and noise interference in the interface, and the constraints imposed by organizational structure on feedback efficiency. Accordingly, it proposes hierarchical feedback nodes and trigger criteria based on the decomposition of teaching links, clarifies the collection of information categories, hierarchical processing, and attribution of responsibility, and constructs a double-loop closed-loop adjustment mechanism under asymmetric information conditions. At the same time, it designs three supporting paths: matching trigger conditions with response timeliness, redefining teacher-student roles and reshaping interaction rules, and integrating multi-source feedback data with visual linkage, so as to provide an operational framework for improving the quality of feedback in the implementation of teaching management.*

Keywords: *Private Universities, Secondary Colleges, Teaching Management Implementation, Two-way Feedback between Teachers and Students, Closed-loop Adjustment, Information Attenuation.*

Introduction

The implementation of undergraduate teaching management at secondary colleges of private universities is characterized by limited resource allocation authority, simplified organizational hierarchies, and the coexistence of professional barriers, which makes the traditional one-way directive management difficult to adapt to the needs of real-time information exchange between teachers and students in the teaching process. In the chain of teaching management, the effective operation of the feedback mechanism is directly related to whether teaching deviations can be detected and corrected in a timely manner. However, the feedback processes in many secondary colleges currently suffer from practical problems such as asymmetric paths, signal distortion, and processing delays, resulting in that upward opinions from the student side are difficult to translate into regulatory actions at management nodes, and downward feedback from the teacher side cannot precisely respond to students' learning difficulties. Therefore, it is necessary to systematically examine the construction logic and operational conditions of the two-way feedback mechanism between teachers and students from the internal perspective of teaching management implementation. The significance of this study lies in that it does not rely on external evaluations or macro frameworks, but embeds itself in the specific links of daily teaching activities in secondary colleges, exploring a set of design methods for a feedback mechanism that is hierarchical, accountable, and visualizable, so as to enhance the ability to capture front-line information and the responsiveness in teaching management implementation.

1. Theoretical Basis and Operational Logic of the Feedback Mechanism in Teaching Management Implementation

1.1 Functional Positioning of the Embedded Feedback Mechanism in the Process of Teaching Management Implementation

In the process of teaching management implementation, the feedback mechanism is not an external supplementary link, but rather a regulatory device embedded within the basic functions of planning, organizing, coordinating, and controlling. Its function is mainly reflected in the real-time detection of teaching operation status and the correction of deviations. Specifically, after various instructions at the implementation level are issued, both teachers and students produce corresponding behavioral responses and outcome outputs. The feedback mechanism is responsible for capturing the gap between these outputs and the expected targets, and then transmitting the gap information back to the management nodes. This process enables the management nodes to fine-tune subsequent instructions without interrupting the overall implementation process. Due to the limited resource allocation authority of secondary colleges in private universities, teaching management implementation often faces higher uncertainty. In this context, the feedback mechanism assumes the role of reducing information ambiguity, that is, providing management decisions with authentic signals from the front line of teaching. The intervention of the feedback mechanism also changes the way management nodes rely on the teaching process, shifting from reliance on pre-set plans to reliance on continuous calibration. From this perspective, the functional positioning of the feedback mechanism is close to that of an information calibrator within the teaching management system, rather than a mere evaluation tool^[1].

1.2 Structural Characteristics of Two-way Feedback between Teachers and Students in the Organizational Field of Secondary Colleges

The organizational field of secondary colleges in private universities is characterized by simplified hierarchies and the coexistence of professional barriers, which determines that the two-way feedback between teachers and students presents an asymmetric dual-channel structure. The feedback transmitted from the teacher side to the student side usually takes the forms of course progress reminders, assignment annotations, and explanations of assessment standards, with its flow being relatively clear and easy to track. In contrast, the feedback converging from the student side to the teacher side is more scattered, encompassing contents such as classroom comprehension, perceived workload, and evaluation of teaching pace, and the collection of such feedback often relies on the teacher's individual proactive attention. The structural characteristics of two-way feedback also manifest as a screening phenomenon in the vertical transmission of information, namely, students tend to feedback those issues they consider "solvable," while setting aside structural opinions concerning the overall course design. This screening behavior, in turn, affects the teacher's complete grasp of the teaching situation. In this structure, secondary colleges occupy the intermediate layer, bearing the function of aggregating scattered student feedback into summarized information usable for teaching management. At the same time, this intermediate layer also faces the challenge of balancing information overload and information distortion, and needs to preserve the key semantics of the original feedback during the aggregation process.

1.3 Coupling Relationship between Feedback Information Flow and the Closed-loop of Teaching Management

The complete flow path of feedback information from collection to application constitutes the substantive content of the closed-loop of teaching management. The coupling relationship is mainly reflected in the degree of match between the timing arrangement of information flow and the regulatory actions of management nodes. When feedback information can be collected, processed, and transmitted back within the same teaching cycle, management nodes can adjust subsequent teaching activities based on that information, thus forming a closed-loop adjustment. If the information flow takes several months or semesters, the feedback can only serve the next round of teaching arrangements, and the closed-loop effect is significantly weakened. A common phenomenon in secondary colleges of private universities is that students' feedback on a course is summarized only after the course ends, at which point it can no longer exert a corrective effect on the teaching experience of the same cohort of students. The key to improving the coupling relationship lies in shortening the processing cycle of feedback information and establishing response windows synchronized with the teaching rhythm. The sensitivity

of the closed-loop of teaching management directly depends on whether feedback information can be incorporated into the decision-making process at the appropriate timing, rather than on the richness of the information itself. Moreover, the effective operation of the closed-loop also requires management nodes to possess the ability to distinguish between reversible and irreversible adjustments, thereby avoiding making irrevocable changes within an unsuitable time window^[2].

2. Current Obstructive Phenomena and Cause Analysis of the Feedback Process in Secondary Colleges of Private Universities

2.1 Asymmetric Distribution of Upward and Downward Feedback Paths in the Teaching Management Chain

In the teaching management chain, the downward feedback path is usually transmitted to teachers and students through formal channels such as academic notices, minutes of teaching meetings, and course adjustment explanations, with a clear information flow and explicit directive attributes. In contrast, the upward feedback path mainly relies on teaching opinion forms submitted by students, in-class immediate Q&A, or informal after-class communication, and the information collection density and transmission efficiency of these methods are generally low. This asymmetric distribution manifests as: the time cost for management nodes to send downward instructions is far lower than the time cost required to recover authentic feedback from the front line of teaching. A common situation within secondary colleges is that teachers can promptly obtain downward information such as teaching progress arrangements, while students' upward opinions on course difficulty, lecture pace, and other aspects are difficult to be completely aggregated on the management chain. One of the reasons for this distribution disparity is that upward feedback needs to undergo screening and retransmission through multiple intermediate links, each of which may introduce information loss, whereas downward feedback hardly experiences a similar loss process. In addition, downward feedback is often accompanied by clear implementation deadlines, forcing the recipients to respond quickly, while upward feedback lacks a similar reverse pressure mechanism, resulting in its transmission rhythm being entirely dependent on the work inertia of the intermediate links.

2.2 Specific Manifestations of Feedback Signal Attenuation and Noise Interference in the Teacher-Student Interaction Interface

The teacher-student interaction interface is the initial site where feedback information is generated, and it is also the link where signal attenuation and noise interference are most prominent. Signal attenuation manifests as the continuous loss of details in the feedback content provided by students during the transmission process. For example, a student points out that "the audio speed of a certain chapter is too fast, with many linking sounds, making it difficult to take notes." After being retranslated by the class representative, summarized by the information officer, and organized by the academic assistant, this information may be simplified to "the listening course pace is relatively fast." The original references to specific chapters, linking sound issues, note-taking difficulties, and other concrete problems completely disappear, leaving teachers unable to implement precise improvements. Noise interference is reflected in the mixing of irrelevant or erroneous information into the feedback channel. For instance, students may attribute personal scheduling conflicts to excessive coursework, or teachers may misjudge the nature of a problem due to inaccurate student expressions when receiving oral feedback. The student-to-teacher ratio in secondary colleges of private universities is generally tight, and teachers have limited energy both in and out of class for receiving and distinguishing feedback, which further amplifies the degree of signal attenuation and noise interference. The transmission chain lacks a standardized information transcription format, and each intermediary re-encodes the original feedback according to their own understanding. The inconsistency of encoding rules causes the same issue to present significantly different appearances across different transmission paths^[3].

2.3 Constraints of Organizational Structure on the Processing and Transmission Efficiency of Feedback Information

The organizational structure of secondary colleges typically includes parallel departments such as teaching and research offices, teaching offices, student affairs offices, and laboratories, and the processing and transmission of feedback information require multiple handovers between these different departments. Each handover point constitutes a potential efficiency constraint, because

different departments have different classification criteria, priority determinations, and processing methods for feedback information. For example, the issue raised by students that "the experimental equipment responds slowly" may simultaneously involve three dimensions: equipment maintenance, course scheduling, and course content design. After the information flows to different departments, it is often difficult to reintegrate. The number of hierarchical levels in the organizational structure also restricts transmission efficiency, as information undergoes compression and restatement at each ascending level, and by the time it reaches the college management, a large amount of original detail has been lost. The administrative staffing in secondary colleges of private universities is relatively streamlined, and the personnel dedicated to teaching information processing is limited, resulting in a large amount of feedback information remaining at the collection stage without entering the links of in-depth processing and effective transmission. The phenomenon of information silos between departments further exacerbates the difficulty of feedback integration, as each department only handles the part directly related to its own functions, and cross-departmental feedback information is often repeatedly shelved at handover points.

3. Framework Design of the Two-way Feedback Mechanism for Teaching Management Optimization

3.1 Hierarchical Feedback Nodes and Trigger Criteria Based on the Decomposition of Teaching Links

We can decompose teaching activities into basic links in chronological order, including pre-class preparation, classroom instruction, after-class practice, and stage assessment, and we can set up independent feedback nodes for each link. The feedback node in the pre-class link is positioned to measure students' comprehensibility of preview materials, and we can set the trigger criterion as follows: when more than half of the students who have completed the preview task raise a request for supplementary explanation on a certain content item. The feedback node in the classroom instruction link focuses on the pace of explanation and the adaptability of cases, and its trigger criterion is that the same category of questions accumulates more than three times in the in-class immediate Q&A. The feedback nodes in the after-class practice and stage assessment links focus on the workload and difficulty distribution, and the trigger criterion is that the number of questions submitted by students within a unit time period exceeds the set threshold. This hierarchical design ensures that feedback no longer vaguely refers to the "overall situation of the course," but attaches to specific teaching actions. Each node corresponds to a unique trigger condition, which avoids ambiguous areas in the information collection phase and also provides a clear starting basis for subsequent processing.

3.2 Category Collection, Hierarchical Processing, and Responsibility Attribution of Two-way Feedback Information

The collected two-way feedback information should be classified into categories such as teaching pace, content difficulty, homework load, assessment methods, interactive experience, and classroom effectiveness according to content attributes, and different categories correspond to different processing levels. Teaching pace information involves adjustments to course progress and should be handled at the teaching and research office level; content difficulty information involves the depth of explanation and supplementary materials and should be handled at the course group level; homework load and assessment method information involves grading standards and workload distribution and should be handled at the program head level; interactive experience information involves teacher-student communication methods and classroom organization forms and should be handled by the instructor independently. The core of hierarchical processing lies in clarifying the ultimate responsible party for each category of feedback, thereby avoiding information idling between different departments. The attribution of responsibility adopts the approach of "first-contact responsibility plus hierarchical adjudication," which means that the person who first contacts the feedback information bears the duty of classification and distribution; if a certain level cannot handle the issue independently, the issue is escalated to the upper level, and that level provides a handling opinion and feeds it back to the information submitter^[4].

3.3 Formation of a Closed-loop Adjustment and Dynamic Correction Mechanism under Asymmetric Information Conditions

In the process of teaching management implementation, management nodes hold the overall planning of teaching arrangements, while teachers and students grasp the subtle deviations during the specific implementation process, and the two parties are in a typical state of asymmetric information. The design of the closed-loop adjustment mechanism needs to achieve dynamic correction of teaching behaviors without requiring complete information symmetry between the two parties. The specific approach is to design the feedback loop as a dual-loop structure with short-cycle and long-cycle loops operating in parallel. The short-cycle loop takes a single lecture or a single week of teaching as its unit, and handles matters that can be adjusted immediately, such as supplementing a case or slowing down the pace of a certain section of explanation. The long-cycle loop takes a semester or academic year as its unit, and handles adjustments involving the overall framework of the course, such as adding or deleting a teaching module or redesigning the assessment ratio. The core of the dynamic correction mechanism lies in that each adjustment action produces observable changes in teaching behaviors, and these changes enter the feedback channel again, forming a continuous iterative process. Under asymmetric information conditions, the role of management nodes is not to eliminate information disparities, but to design responsive interfaces that are sensitive enough so that local observations from teachers and students can trigger appropriate teaching adjustments at a low cost.

4. Supporting Paths for Embedding the Feedback Mechanism into the Operation of Teaching Management in Secondary Colleges

4.1 Matching Method between Feedback Trigger Conditions and Response Timeliness in Daily Teaching Activities

The feedback trigger conditions in daily teaching activities should be matched with different response timeliness according to the rhythm of teaching activities. In the pre-class preparation stage, the trigger condition is that the number of preview questions submitted by students reaches a set threshold, and the corresponding response timeliness is to complete the Q&A preparation before the next class. In the classroom instruction stage, the immediate feedback is triggered by students raising hands to ask questions or by the low-correct-rate items recorded in the classroom response system, and the response timeliness is to make content adjustments within the current class or provide supplementary explanations after class. In the after-class homework and experiment report stage, the feedback is triggered by objections raised by students after the submission of graded results, and the response timeliness is to provide a review opinion within three teaching days. The core of the matching method lies in binding each type of trigger condition to a clear time window; if the response exceeds the window without action, the feedback process is considered interrupted. The course schedules in secondary colleges of private universities are generally intensive, and the interval lengths between different course types vary significantly. Therefore, it is necessary to set differentiated response timeliness standards for theoretical courses, laboratory courses, and internship and practical training courses. Theoretical courses allow a maximum feedback response cycle of no more than one week, while laboratory courses, due to the continuity requirements of equipment and materials, require the feedback response to be compressed to before the next experiment begins.

4.2 Role Definition of Teachers and Students in the Feedback Process and Reshaping of Interaction Rules

In the two-way feedback process, teachers assume the dual role of both the receiving end and the responding end of feedback signals. They need not only to identify effective information from students' expressions, but also to return the processing results to students in an understandable manner. The role of students shifts from passive information providers to active feedback initiators, and each piece of feedback they submit carries an expectation of a response. The reshaping of interaction rules is embodied in three aspects: First, the initiation of feedback does not rely on specially organized opinion-collection activities, but is embedded in the two-to-three-minute open Q&A session reserved at the end of each class. Second, after receiving the information, the recipient needs to mark its status with tags such as "Read," "Processing," "Transferred," or "Closed," and these tags are visible to the initiator. Third, for cases where feedback on the same issue is continuously initiated but no effective response is received, an automatic escalation mechanism is established to push the issue to the upper-level

processing node. This rule design makes the rights and obligations of teachers and students more balanced in the feedback process, and also reduces information retention caused by ambiguous roles.

4.3 Integration, Visualization, and Linkage with Teaching Adjustment of Multi-source Feedback Data

Feedback data from multiple channels, including classroom observation, assignment annotations, after-class Q&A, teaching opinion solicitation, and student information officer feedback, differ in format and granularity. The first step of organizing is to establish a unified data field set, which includes six basic dimensions: feedback source, occurrence time, associated course and chapter, issue category, urgency level, and processing status. After the organization is completed, the data are presented through visualization, and the commonly used forms include feedback hotspot distribution maps, donut charts of issue category proportions, and line charts of response timeliness trends. The hotspot distribution map marks the three most frequently mentioned specific issues in each teaching chapter; the donut chart displays the proportions of categories such as teaching pace, content difficulty, and homework load; and the line chart shows the trend of the average time required for feedback response over a semester. The teaching adjustment phase directly utilizes these visual outputs. In the teaching meeting held once every four weeks, the course group decides whether to adjust the explanation strategies for subsequent chapters based on the hotspot distribution map, judges whether it is necessary to reallocate the investment of effort across various teaching links based on the donut chart, and evaluates whether the operational efficiency of the current feedback process is within an acceptable range based on the line chart. The three types of visual outputs collectively constitute the decision-making basis for teaching adjustment, thereby achieving a closed-loop linkage from data to action.

Conclusion

This study begins with the theoretical basis of the feedback mechanism in teaching management implementation, analyzes the typical obstructive phenomena and their causes in the feedback process of secondary colleges in private universities, proposes a framework of the two-way feedback mechanism for teaching management optimization, and designs supporting paths for embedding the feedback mechanism into operation. The study points out that the feedback mechanism should not be regarded as an external supplementary link of teaching management, but rather as a regulatory device embedded within the functions of planning, organizing, coordinating, and controlling; the asymmetric distribution of upward and downward feedback paths, signal attenuation and noise interference, and the information silo effect of organizational structure are the main factors constraining feedback effectiveness. Through hierarchical node decomposition based on the breakdown of teaching links, category collection and hierarchical processing, dual-loop closed-loop adjustment, as well as trigger timeliness matching in daily activities, reshaping of role rules, and data visualization linkage, a lightweight feedback mechanism applicable to secondary colleges of private universities can be formed. Future directions include: testing the transferability of this mechanism in secondary colleges of different types of private universities, exploring automatic feedback triggering tools based on learning analytics technology, and investigating the cumulative effects and boundary conditions of teaching adjustment behaviors in long-cycle feedback loops.

Fund Projects

This paper is supported by the 2026 University-level Teaching Reform Research and Practice Project of Zhengzhou University of Economics and Business (Project No. jg26155).

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