

# Improving the Efficiency of Teaching Management in Universities: Research on Notification Dissemination Mode Based on Wechat Mini Program

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**Abstract:** Currently, in the teaching management of colleges and universities, the problem that students may not receive important teaching notifications in time or fail to receive them completely is becoming increasingly prominent, resulting in the need for a more flat communication method between academic secretaries and students. This article proposes a teaching management communication method based on the WeChat mini program platform to address this issue. This method relies on the WeChat official account, customizes and develops WeChat broadcast applet, and sends the teaching notice to each student in a point-to-point manner by importing the student's QQ mailbox information in advance. After reading the email message, students need to click the confirm button to complete the notification loop. Practical testing has shown that this method significantly improves work efficiency in teaching management, ensuring that students receive important information in a timely manner, thereby optimizing the teaching management process.

**Keywords:** University Teaching Management; Communication Methods; WeChat Mini Program; Teaching Notice; Work Efficiency

## 1. Introduction

With the rapid development of information technology, the communication methods in university teaching management are constantly changing. However, the problem of students being unable to receive teaching notifications in a timely manner or not fully receiving them still exists. The asymmetry of information communication can easily lead to a decrease in the efficiency of organizing teaching activities, and even affect the normal progress of

teaching plans. Therefore, exploring an efficient, convenient, and easy to operate communication method is of great significance. The core goal of university teaching management is to achieve rapid transmission and effective management of information, ensuring information exchange between teachers and students. Nevertheless, in the current diversified information dissemination environment, balancing information coverage and accuracy remains an important issue.

The widespread application of information technology has provided new ideas for teaching management. Especially in the construction of digital campuses, advanced communication technology can effectively improve management efficiency and service quality. WeChat, as one of the most influential instant messaging tools in China, has a wide user base and rich functional interfaces, and has gradually become an important bridge for information communication between university teachers and students. In this context, utilizing the technological advantages of WeChat mini programs to optimize teaching management processes has become an innovative practice direction.

In addition, traditional teaching management models are also facing new challenges under the impact of the wave of information. How to further improve management efficiency while ensuring the accuracy and coverage of information transmission through emerging tools such as WeChat mini programs has become a focus of attention for university administrators. This article proposes an innovative solution based on specific cases to address these issues.

## 2. Related Work

In the field of university teaching management, there have been many studies on the application of information technology,

especially mobile-based communication tools have received widespread attention in recent years. The relevant work mainly focuses on the following aspects:

### **2.1 Improvement of Teaching Notification Method**

Traditional teaching notification methods include announcements in the academic affairs system, group emails, WeChat groups, and QQ group notifications. Although these methods can meet notification needs to a certain extent, they generally have problems such as low efficiency, insufficient information coverage and lack of feedback loop. Yu et al.<sup>[1]</sup> studied the teaching notification method based on the SMS mass messaging platform, but found that this method made it difficult to track students' reception and reading status in real time, and the operating costs were high. In contrast, mobile instant messaging tools provide a more convenient notification channel.

### **2.2 Application of WeChat Ecosystem in Teaching**

In recent years, the openness and high user stickiness of the WeChat ecosystem have made it gradually become an important tool for the information construction of universities. Ye et al.<sup>[2]</sup> developed a sign-in system based on WeChat official account, which completed classroom attendance by scanning QR codes, significantly improving management efficiency. However, the system is mainly oriented towards classroom management and has limited functional support for teaching notifications. In addition, most existing studies focus on the implementation of a single function and fail to comprehensively optimize the teaching management process.

### **2.3 Functional Expansion and Application of WeChat Mini-Programs**

As a lightweight application, WeChat Mini Program has attracted widespread attention in the education industry due to its features of no installation required, fast loading and seamless integration with the WeChat ecosystem. Luo et al.<sup>[3]</sup> designed a course selection system based on WeChat mini-programs, which optimized students' course selection experience through multi-terminal synchronization and real-time feedback. Nevertheless, the system's design focuses on interactivity, and closed-loop

processing of notification management is still lacking. What's more, most mini-programs still need further improvement in terms of information security and system stability.

### **2.4 Research on Closed-Loop Feedback Mechanism**

Introducing a closed-loop feedback mechanism in information transmission has become an important method to improve communication efficiency. Wang et al.<sup>[4]</sup> proposed a closed-loop feedback mechanism based on mobile applications for student attendance and homework submission management in experimental courses. However, the closed-loop feedback of this study is more targeted at classroom scenarios, and there is a lack of in-depth exploration of the broad application scenarios of teaching notifications.

### **2.5 Data-Driven Teaching Management Optimization**

With the development of big data technology, research on teaching management optimization based on student behavior data has gradually emerged. Huang et al.<sup>[5]</sup> provided support for teaching decisions by analyzing students' learning behavior data. Although the introduction of data analysis technology has improved the level of intelligent teaching management, existing research mainly focuses on teaching activities themselves and fails to organically combine data-driven and information transmission processes.

In summary, current research provides a variety of solutions for the information of teaching management in colleges and universities, but there is still room for improvement in the closed-loop management of teaching notifications, user experience optimization, and data-driven function expansion<sup>[6]</sup>. In response to these problems, this paper proposes a teaching management communication method based on WeChat applet, which combines functions such as point-to-point notification sending, reading feedback tracking and intelligent reminders, providing new ideas for the information development of teaching management.

## **3. Problem Analysis**

The traditional ways of publishing teaching notices in colleges and universities mainly include the following:

①Announcements in the teaching management system. The teaching management system is an important part of the information construction of colleges and universities, and publishing notices through the announcement module is a common function. However, due to the low frequency of students logging into the teaching system on a daily basis, coupled with the poor optimization of the interface design and user experience, the content of the announcement is often ignored or not read in time.

②Offline notifications. Offline notifications mainly rely on classroom bulletin boards, class meetings, grade meetings, etc. Although this method is intuitive, it has certain limitations. For example, students need to take the initiative to go to a specific location to check the information, or must rely on the teaching staff to organize centralized notifications. This is not only inefficient, but also easy to cause some students to miss key information due to lack of timeliness.

③WeChat group and QQ group notifications. With the popularization of instant messaging tools, teachers or teaching secretaries have become the mainstream method in recent years to publish teaching notices through WeChat groups and QQ groups. This method has improved the speed of information transmission, but its disadvantages are also obvious. On the one hand, group chat information has strong mobility, and important notifications are easily covered or even forgotten by other chat content; on the other hand, the reception and reading of notifications are difficult to track, and managers cannot judge whether the information is effectively delivered to each student.

Although these traditional methods can cover most students to a certain extent, their disadvantages cannot be ignored:

1. Low efficiency of information transmission: For example, announcements in the academic management system are easily ignored, and notifications in WeChat and QQ groups may be buried in a large number of chat records, making it difficult to ensure the validity of the information.

2. Lack of closed-loop feedback: Under the current model, it is difficult for administrators to obtain clear feedback on whether students have received notifications, read and

understood them. This one-way transmission method lacks tracking and supervision, which may cause some students to miss important information.

3. Operational complexity: Some notifications require multiple manual operations by academic staff, such as repeatedly publishing the same content on multiple channels, which not only increases the workload but also reduces overall efficiency.

In addition, the diversity of college student groups further exacerbates the challenges of notification methods. Students of different majors and grades have obvious differences in their preferences for information acquisition channels. For example, junior students may rely more on centralized notifications such as class meetings, while senior students prefer to obtain information through instant messaging tools. Such diverse needs make it difficult for a single notification method to meet the expectations of all students, thereby reducing the overall effectiveness of the notification. Therefore, how to develop a notification method that can adapt to the needs of different students and is efficient has become a key problem that needs to be solved in college teaching management.

At the same time, the rapid development of mobile Internet provides technical support for solving this problem. In recent years, the penetration rate of smart phones among college students has been close to 100%, and mobile applications have gradually become an important tool for students' daily life and learning. Through questionnaire surveys, it was found that more than 80% of students prefer to receive teaching notifications through mobile terminals, believing that this method is more convenient and efficient. This data shows that mobile-based information solutions have a good user base and application prospects.

Moreover, college managers are also in urgent need of a low-cost and efficient information means to cope with the increasingly complex needs of teaching management. In the traditional model, the asymmetry of information transmission not only increases the workload of managers, but also may have a negative impact on the organization and promotion of teaching activities. Therefore, optimizing the notification method with the help of modern information technology can not only improve work efficiency, but also

significantly improve the overall level of teaching management. As a lightweight mobile application, WeChat applet has gradually become an important tool for the information of college teaching management with its characteristics of no need to download and install, convenient operation and high user stickiness. This lays a solid foundation for the development of teaching notification solutions based on WeChat mini-programs.

#### **4. Application of WeChat Mini Programs in Teaching Management**

In response to the above problems, this paper developed a WeChat broadcast applet, which aims to optimize the various functions of teaching management and has achieved remarkable results in practice.

##### **4.1 System Architecture Design**

The mini program adopts a modular design, and the overall system architecture is divided into three core modules to ensure comprehensive functions and easy operation:

**User management module:** This module automatically imports students' QQ mailbox information and binds it with students' WeChat accounts by connecting with the school's academic affairs system. When students use the system for the first time, they will be required to authenticate and bind their identities to ensure that each student receives targeted notifications and avoid omissions due to inaccurate information.

**Notification release module:** The academic secretary can send teaching notifications with one click through the mini program background. This module provides a variety of notification type options, including course schedules, exam notifications, homework submissions, etc. The academic secretary only needs to enter the notification content in the background, and the system will automatically push it to the students' QQ mailbox and WeChat to ensure timely communication of the information.

**Feedback confirmation module:** To ensure that every notification can be received and understood by students, students need to complete feedback confirmation of the notification by clicking the "Confirm" button in the mini program after reading the email. This mechanism forms a closed-loop management, helping academic staff to track

students' notification reading status in real time.

##### **4.2 Main Functions**

This applet has several key functions, aiming to optimize all aspects of teaching management:

**Point-to-point notification delivery:** All teaching notifications will be sent directly to students' QQ mailboxes, avoiding the risk of information omission and delay. Compared with traditional mass email methods, point-to-point sending can ensure that every student can receive relevant notifications in a timely manner, which is especially important when dealing with urgent notifications.

**Reading status tracking:** This function can record the notification reading status of each student in real time, including whether it has been read and confirmed. Through the academic management background, staff can easily check the reading situation of each student to determine whether they need to remind them again or take other measures.

**Statistics and reminders:** To further improve the arrival rate and feedback rate of notifications, the system will automatically push reminders for unconfirmed notifications. Notifications that students have not confirmed will be automatically pushed to WeChat within a certain period of time, reminding students to read and confirm them in time. This function greatly reduces manual intervention and improves work efficiency.

**Multi-platform synchronization:** Notification content can not only be synchronized to students' WeChat applet, but can also be pushed to the school's WeChat public account and the announcement module of the academic management system. With this feature, the coverage of notification information has been significantly improved, ensuring that students can receive important information in a timely manner no matter which platform they are on.

##### **4.3 Technical Implementation Details**

This mini program adopts a development model with separated front-end and back-end. The front-end is developed based on the WeChat mini program framework to ensure the compatibility and fluency of the mini program on different devices. The back-end is built using Node.js, which can quickly process a large number of requests and seamlessly

connect with the school's existing academic management system to achieve real-time synchronization and updating of data.

**Data security:** Considering the sensitivity of student personal information, this mini program adopts multiple encryption algorithms to ensure data security. During data transmission, all information is encrypted to prevent external attacks and information leakage. At the same time, the system also sets strict access rights, and only authorized personnel can manage notification content to ensure data security and privacy protection.

**Efficient performance:** The system background handles concurrent requests through load balancing technology to ensure stable operation even in high concurrency situations. The database adopts a distributed architecture, which effectively improves data query and storage efficiency and meets the needs of large-scale users.

#### 4.4 Innovation Analysis

Compared with traditional teaching notification tools, this applet has achieved innovation in many aspects:

1. **Closed-loop management:** By introducing a reading confirmation mechanism, ensure that every notification can be effectively received by students and feedback is recorded. This closed-loop management model enables academic staff to accurately grasp the notification status of each student, avoiding situations where information is missed or not read by students.

2. **Intelligent reminder:** This applet can automatically send a second reminder based on the student's reading status. Notifications that students have not confirmed will be pushed again as reminders within the specified time, reducing the repetitive operations of teaching staff and improving work efficiency. This intelligent design greatly reduces the burden on managers.

3. **Data-driven optimization:** The system provides valuable data support for academic management by analyzing students' notification reading behavior. Academic affairs staff can optimize notification content and delivery methods based on statistical data. For example, they can adjust the strategy and content of notification push based on students' feedback frequency and reading time to make information delivery more accurate and

efficient.

Through this series of innovative functions and designs, the application of this WeChat applet in teaching management not only improves the efficiency and accuracy of notification management, but also provides valuable practical experience for the digital management of colleges and universities.

#### 5. Real application effect

In a test conducted in a certain university, the application effect of this solution in teaching management was significant. The main manifestations are: ①Improved notification reading rate: The notification confirmation rate reached 98%, significantly higher than the traditional method. ②Improved work efficiency: The academic secretary reduced the time spent on notifying students from 2 hours per week to 30 minutes. ③Increased student satisfaction: Students generally reported that the notification method was more efficient and humane.

The specific tests include the following aspects:

1. **Timeliness of reading feedback:** On average, each notification receives more than 90% confirmation feedback within 30 minutes after being sent.

2. **System stability:** The mini program runs stably under high concurrent access conditions, without obvious lag or crash.

3. **Promotion acceptance:** Through the questionnaire survey, it was found that 90% of the students approved of this notification method and hoped that it would be promoted to other management links.

During the actual testing process, it was also found that this scheme had a positive impact on the efficiency of information transmission. For example, the academic secretary can check the reading status of the notification in real time through the background, and promptly remind students who have not read the notification again, so as to ensure that every notification is delivered to the right place. This real-time and precision has injected new vitality into teaching management.

#### 6. Conclusion

The teaching management communication method based on WeChat applet proposed in this paper significantly optimizes the teaching management process of colleges and

universities, and improves work efficiency and the accuracy of information transmission. Through practical application verification, this method has good effects in notification sending and closed-loop management, and provides a reference solution for the construction of teaching management information in colleges and universities. Meanwhile, promoting this program to other universities or teaching scenarios will also provide more practical experience for the modernization of education management.

Future development directions also include:

1. Cross-platform integration: achieve seamless connection with more education management platforms and improve system compatibility.
2. AI intelligent analysis: By introducing artificial intelligence technology, we can analyze students' behavioral data and provide more personalized teaching support.
3. Mobile terminal optimization: further improve the mobile terminal user experience and ensure the smooth operation of the system on different devices.

Through these improvement measures, the application potential of WeChat mini-programs in university teaching management will be further released, injecting new impetus into the information construction of universities.

### Acknowledgements

This research was funded by the Hunan Province Teaching Reform Project (NO.HNJG-202401001443), the Hunan Province Basic Education Teaching Reform Project (NO.Z2024199), and the Hunan University of Humanities, Science and Technology Teaching Reform Project

(NO.RKJGY2352, RKJGY2359).

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