

# Research and practice on the construction of one-stop service platform in university based on "WeCom" in the post epidemic period-Taking Guangdong Ocean University as an example

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**Abstract.** With the continuous development of information construction in university, it has become an urgent need for teachers and students to obtain all kinds of data resources through mobile terminals. During the post-pandemic era, digital process of higher education has obviously been accelerated. In the post-pandemic era, the construction of one-stop service platform of Guangdong Ocean University has been further improved with WeChat enterprise as the carrier. It aims to implement new vision for educational development of the Communist Party of China, take teachers and students as the center, reorganize and present all kinds of services and applications on Wechat Enterprise, provide one-stop service for teachers and students in the whole process of office, teaching and life on campus, and constantly improve the service quality and management efficiency of the university.

## 1 Introduction

"China's educational modernization 2035" puts forward ten strategic tasks for the modernization of education[1], the eighth of which calls for the overall construction of an integrated intelligent teaching, management and service platform. Multi-dimensional coverage of the whole process of teachers and students in university, providing a variety of service scenarios including office, educational administration, student work, scientific research, finance, network, logistics, life and so on [2], to achieve seamless communication between staff, teachers and students, is the goal of Guangdong Ocean University to implement the new version educational concept of the Communist Party of China and build a smart campus.

In the spring of 2020, the sudden outbreak of the epidemic posed a difficult problem for traditional teaching, but also brought an opportunity for the accelerated development of smart campus. During the epidemic period, in order to implement the deployment requirements of "suspension of classes, non-suspension of teaching and non-suspension of learning", the education information center, with Wechat enterprise as the carrier, quickly established a highly integrated mobile office platform to provide precise services for online

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education and home office, and the process of digitalization of education has obviously been accelerated. Teachers and students have also developed some new online office and teaching habits (such as Tencent conference, group live broadcasting, health reporting, etc.). At the same time, in the context of the explosive development of mobile Internet services, the information platform based on PC Internet services also shows some problems to be solved.

## **2 Problems in the construction of smart campus**

After years of information construction, education informatization has been well developed in in Guangdong Ocean University. However, with the continuous expansion of enrollment scale, the continuous improvement of teachers and students' information service requirements, the level of smart campus is more and more dependent on information infrastructure and application system. In the post epidemic era, compared with the requirements of our university's reform and development, there is still a big gap between information infrastructure and application system and the expectations of teachers and students. It mainly includes the following aspects:

### **2.1 A wide range of business systems in the university**

Each functional department of the university has its own business system and database, each business system is independent of each other, the data is not connected with each other too, and there is no unified management platform. In order to obtain a certain service, the user first needs to log in to the unified portal, and then select to enter the corresponding system and use the relevant functions of the sub-column according to the type of business he wants to handle. If the university has N business systems, the user needs to remember N accounts and passwords, which is easy to confuse for users.

### **2.2 The complicated approval process**

The resources of each functional department are independent, there are some obstacles to coordination, and the approval process is more complicated, which affects the efficiency of administrative services.

### **2.3 Difficult Attendance Management of Teachers and Students**

Attendance management work is fragmented, through the ordinary attendance machine or special inspection, the collected attendance data is messy and the accuracy is limited, which brings some difficulties to data statistics, and at the end of each month, it will consume a lot of manpower and time, and the work efficiency is low and easy to make mistakes.

### **2.4 Information security needs to be improved**

The evaluation of network security level protection shows that there are still many security problems in the key information infrastructure, and corresponding rectification measures need to be implemented. According to the network security level protection 2.0 standard, actively carry out the filing work of information system security level protection. According to the standard, the system, computer room and network structure are transformed, and the network security level protection of important systems is put on record.

### **3 One-stop service platform construction planning of Guangdong Ocean University based on WeCom**

With the progress of mobile communication technology and the wide popularization of mobile devices, it is the goal of the construction of one-stop service platform of Guangdong Ocean University to build a mobile campus ecological chain centered on mobile terminals. In January 2020, the university chose enterprise WeCom as the carrier to quickly build the main service platform, built a "bridge" between teachers and students, which meets the needs of the special period. In the post-epidemic era, the majority of teachers and students will have higher requirements for information access, so it is particularly important to re-examine the new situation and challenges faced by information construction. Taking "wisdom leading, service innovation" as the orientation, following the user-centered idea, proceeding from the actual situation of our university, further improving the smart campus platform is the demand of the times, and will also be a true portrayal of the spirit of development and innovation.

#### **3.1 Unify data standards and build a shared database**

Information standard is the basis of the whole campus information construction, and is the necessary condition to realize the exchange and sharing of educational information resources within the whole campus. To build a one-stop service platform for our university based on WeCom, we must first have a unified data standard. After extracting, integrating and filtering the data generated by the business systems of all functional departments, the education information center forms various independent subject databases, and provides them with convenient and inclusive API interfaces [3], and finally integrates them into the school shared database. The multi-dimensional data collected include the production data of business systems such as educational administration system, scientific research system, financial system, personnel system and student work system, as well as consumption data such as campus card consumption and network traffic. After data management, they are analyzed and excavated from the overall perspective to provide convenient, accurate and real-time services for teachers and students. Using standardized and consistent application and interface standards to break the data island can avoid the boredom caused by repeated filling in forms by teachers and students, reduce the investment in data exchange, clarify the data assets, and provide strong data support for the development and decision-making of our university.

#### **3.2 "One-stop service platform" based on enterprise WeCom to enhance user experience**

In some stages of university information construction, in order to meet the management needs, the user experience has been sacrificed. Nowadays, with the popularity of mobile Internet, the majority of teachers and students have higher requirements for information acquisition, and it is urgent for the construction of smart campus to turn "management" into "service". Based on the one-stop service platform of WeCom, it extracts various information services with user needs as clues, realizes the convergence of services on the mobile end [4], and creates a comprehensive mobile service portal directly for staff and students. That is to say, the user's experience is put in the first place, "On-demand reach", without considering and distinguishing a service comes from which system, through human-computer interaction, users can directly face the "customized" functions. Moreover, WeCom can be connected with personal Wechat, and its usage habits are consistent with

personal Wechat. The interaction between teachers and students and applications is frequent, which can save the link of re-adaptation.

## **4 Application practice of one-stop service platform based on WeCom in Guangdong Ocean University**

According to the construction goal of smart campus, combined with the actual situation of our university, the education information center adopts the service-oriented architecture to carry One-stop Service Platform construction.

In the era of mobile Internet, more emphasis is placed on the fragmentation of functions [6], and the platform adheres to the construction concept of "application fragmentation, service convenience". WeCom has transplanted Tencent's IM "tag" function, which has the characteristics of fast development and high efficiency. According to the actual situation, our university customizes the application, builds a fully functional mobile campus infrastructure platform, and realizes a unified entrance and service. Through scientific separation of business systems, 56 workbenches with different roles and more than 2400 labels have been created, and multiple labels have been set for each user to correspond to different identities. It is convenient for the university to quickly locate users of different dimensions, to achieve accurate classification and message access for different characteristic groups, and to meet the differentiated needs of users. Moreover, the WeCom service has the characteristics of instant initiation, instant response, instant processing and instant feedback, which can meet the real-time requirements of the "Internet aborigines" group.

### **4.1 Design of interactive platform**

**Synchronizing data processing and data.** In order to break through the data island, it is convenient for each business system to display data centrally in real time from the user's point of view. The shared database is used to open the readable organizational structure interface and unify the identity authentication, so as to realize the data synchronization between the WeCom and the application systems of all functional departments. Staff and students can pay attention to it by scanning the code and use it after authentication, which is convenient and fast. At present, among the 36,000 students and staff of Guangdong Ocean University, the utilization rate of WeCom has reached 95%, the organizational structure is 2013, and the roles are refined to our university leaders, staff, non-editorial staff, students, alumni, examinees, visitors and so on, so as to flexibly realize the management of personnel rights. In addition, combined with the actual application scenario, some rules are preset for message reminder and message push, such as punch card reminder, commuting reminder, etc., to do a good job of personalized service of information, so that staff and students can get the experience of "private customization".

**Reliable data security mechanism.** The implementation of information security system construction can ensure the coordinated development of information security and smart campus, and strengthen information security management. First, all staff and students who use enterprise Wechat need to go through unified identity authentication and authorization, and users with different identities receive different information according to their identities. Secondly, it also records the user's operation log, which is convenient for management. In order to ensure the security of data storage, the sensitive data is encrypted and then stored, and the database is required to be separated from the master and slave, and dual hot standby is carried out, even if there is a failure, it can be restored in time. Thirdly, in order to ensure the information security of staff and students, the Education Information

Center has carefully and comprehensively considered the universality and security of WeCom, and the university controls its own data reflux, which can meet the requirements of high data security.

## **4.2 The construction of the platform centered on the user's demand**

To build a mobile campus infrastructure platform with "Guangdong Ocean University WeCom" as the carrier, adhere to the concept of "application-driven, open and win-win" [7], take user needs as the center, provide all-round one-stop services for staff and students in office, teaching, scientific research and life, and in the post-epidemic era, modern information technology should be integrated into all aspects of our university life. Let the implementation of the new version educational development concept of the Communist Party of China and the convenience of modern informatization come true.

The one-stop smart campus platform of Guangdong Ocean University based on WeCom, It integrates health report, university homepage, university documents, university mail, meeting notice, OA system, punch card, epidemic prevention and control test, micro-classroom, voice and video conference, live broadcast, department group, class group, whole university address book, knowledge base, activity display, vote collection, online question and answer, psychological consultation service, student business module, VPN opening, mailbox application, etc. Teaching platform account application, mailbox password modification, student ask for leave and other 46 functional modules, as follows:

**Campus overview.** Provide Guangdong Ocean University profile, historical evolution, University charter, campus logo, campus scenery, campus map, notice announcement, university news and other columns. As much as possible for staff and students and visitors to show the full range of University information, anytime, anywhere to master the latest information on the campus.

**Office services.** Including meeting notice, documents, docking OA system, mail system, campus access face information system, my university circle and so on. Office services are divided into three parts, including workbench, address book and message. The most commonly used office services are aggregated to the "workbench" entrance, with a simple interface and easy operation, which can be accessed quickly with one login. When there is an administrative office business to be handled, the corresponding department, position, telephone and other information can be found online, and the corresponding work docking personnel can also be found through the WeCom address book to facilitate the work. It also integrates the approval process into WeCom, so that when dealing with the approval procedures, there is no need to go to the administrative building to find people everywhere, and there is no need to worry about finding someone to sign because of the staff's business trip, while reducing paper consumption, helping the administrative office to operate at a high speed and efficiently.

**Academic Services.** Docking with the comprehensive information service platform of educational administration, integrating teaching calendar query, course query, schedule query, examination query, score query, teaching quality evaluation query, idle classroom query, suspension application, teacher's new class application, basic information application of teaching materials, etc., to provide the most convenient and efficient teaching information service for teachers and students.

**Student Work Service.** Docking with the student work system, the Education Information Center can manage students in time in an all-round and multi-level way. First of all, do a good job of uploading and delivering information, create department groups according to college classes in the WeCom address book, and manage them by counselors in a unified way, so as to facilitate seamless communication between staff and students. Through the face information system, the check-in function and the health reporting

function, the administrative department can know whether the students are absent from university, stay out at night, sick and so on. At the same time, we can make the information resources cover the students in an all-round way, so that the students can keep abreast of the university's dynamics through WeCom. Secondly, students can also choose to participate in university related activities and competitions according to their hobbies, and actively participate in campus life. Third, realize the intellectualization of the students ask for leave process. Students can set the reasons for asking for leave in WeCom, and report to counselors, teachers and relevant leaders in time according to the length of leave, so as to achieve the purpose of safe management of students. With more than 2000 departments and class groups, it is greatly convenient for teachers to quickly obtain school information, quickly create online teaching class groups, and communicate with students and business departments in real time.

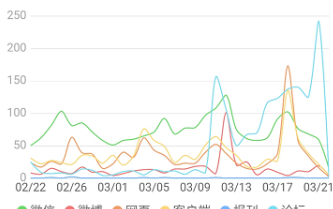
一、热点概况

2020年02月22日 11:23:37 至 2020年03月22日 11:23:37

共有相关信息6353条,微信的比重最大,共有2210篇,达到信息总量的34.79%。目前主要的报道集中在百度贴吧、搜狐新闻、广东海洋大学团委、知乎、新云天气象、广东海洋大学等几大站点

二、热点分析

热度走势



论坛相关资讯信息热度波动最大,在03月22日达到低谷,在03月21日达到波峰,在03月11日达到次波峰。

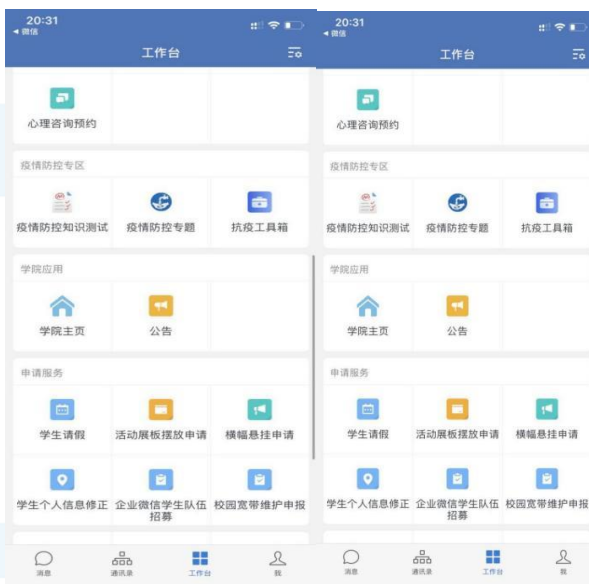


Fig. 1. Functions of office services. Fig. 2. Workbench of Student Mobile Service Section.

**Scientific Research Service.** Docking scientific research system, providing scientific research papers, works, projects, funds, intellectual property rights, achievements awards, academic activities, scientific research assessment and other inquiries, can quickly complete the inquiry and search of scientific research information on the mobile end.

**Personnel Services.** The attendance mode of WeCom is diversified and intelligent. It can also set the attendance mode according to different positions, set the punch card and punch card time according to different geographical locations, and automatically generate the attendance data. The personnel department can directly export the classified attendance data according to the work type. It can also realize the attendance of construction workers in university under construction, build a "smart site" and ensure the progress and quality of construction. The efficiency of data statistics has been greatly improved, and the accuracy is also incomparable in the past.

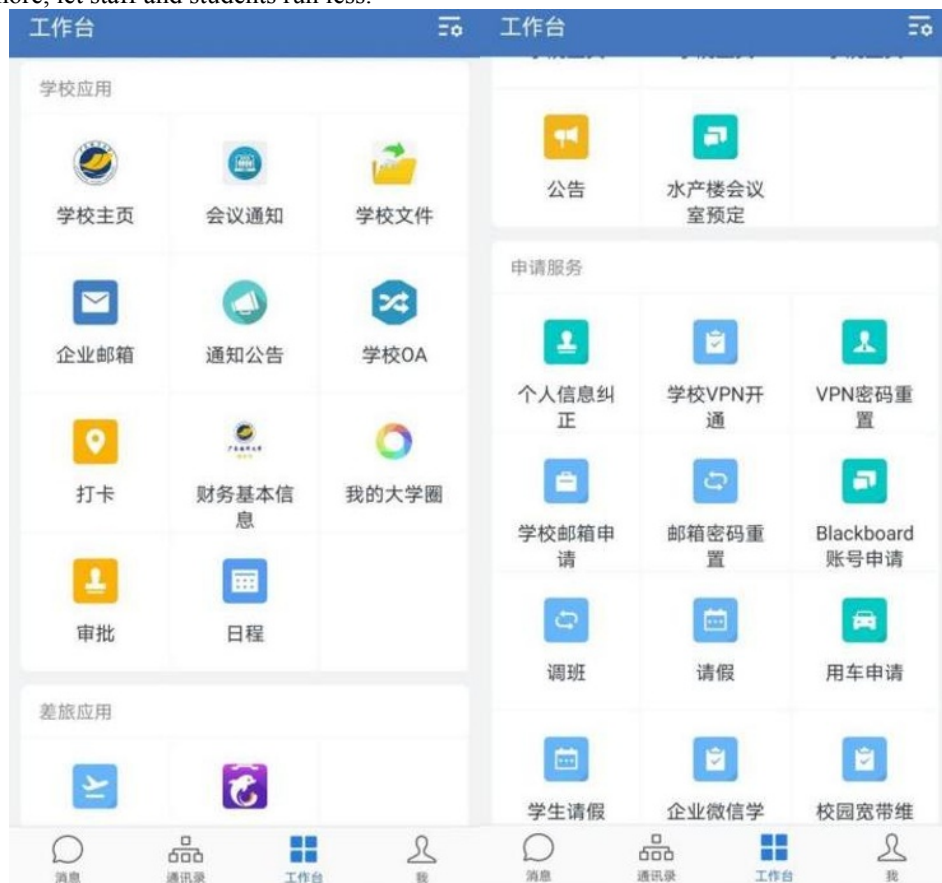
**Financial Services.** Combined with user habits and usage scenarios, it provides salary and scientific research funds inquiry, online self-service reimbursement, budget declaration, advance bills and other services, develops Wechat payment function, quickly builds projects requiring payment, staff and students can realize financial inquiry and fee payment through mobile phones, and reduces the phenomenon of long queues in the financial department.

**Library services.** Docking book system, one-click inquiry of library resources, borrowing records, providing new book bulletin, science and technology novelty search, subject retrieval and other services.

**Network services.** As long as you pay attention to the WeCom, you can inquire about the balance of network fees, online time, the number of terminals, etc., and you can declare the maintenance of campus broadband online, check the progress of repair, etc.

**Life Service.** Provide school calendar, bus information, lost and found, flea market, weather inquiries, hot issues, convenience services at any time.

**Online Service Hall.** Corresponding to the PC side, various kinds of process affairs are launched, such as website construction application, VPN opening and password reset, university mailbox application, campus card application, etc. Really let the information run more, let staff and students run less.



**Fig. 3.** Workbench of Faculty Mobile Service Section.

**Message Center.** Integrate the message reminder functions of various business systems such as card, OA, mail, online service hall, etc., to form a unified message mechanism, automatically trigger, so that the message can be shared and presented to staffs and students through WeCom at the first time. In case of emergencies such as epidemic prevention and control, when information needs to be notified to multiple departments in a short time, after the WeCom group sends information, the relevant personnel can receive the information in a very short time, and can log the user's operation to know the information of staff and students, thus improving the ability of the whole university to deal with emergencies. .

## 5 Conclusion

“High school teacher, who is the norm” ,the exemplary characteristics of the education industry determine that educators should take the lead in setting an example. The era of mobile Internet has provided new imagination space for the education industry. During the epidemic period, Guangdong Ocean University built a one-stop service platform with the WeCom as the carrier, which has the advantages of agile development, saving investment and rapid promotion, and has brought new ways for innovative teaching mode and education management. In order to make the management of our university more intelligent in the post-epidemic era and provide more ways for faculty and students to learn and communicate, Guangdong Ocean University will focus on top-level design, multi-participation and data security in the construction of mobile smart campus, and do a good job in construction planning, development and security. This is a vivid manifestation of educators' implementation of the Communist Party of China's educational development concept, adaptation to the new normal economic development and keeping pace with the times.

This study was funded by the 2021 smart campus special project of China Educational Technology Association (agricultural universities branch) with No.C21YB07, and by education and teaching reform project of Guangdong Ocean University with No.010201312101.

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