



Research and Development and Promotion of Campus Mutual Aid Small Program “Garden”

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Abstract. The informatization of the international society is becoming a historical trend, and the smart campus is gradually developing. But at present, there are widespread problems in the campus, such as the lack of systematic management of idle items and lost items, poor information of learning information, scattered port of releasing information and low efficiency of dissemination. The team proposed to design the campus mutual aid small program “Garden” platform, gathering lost and found, idle goods trading, postgraduate entrance examination information, campus notification services. And the small program function development needs analysis, hoping to provide more efficient and convenient campus service platform for students. Effectively solve the practical problems existing in school life and realize the network and information of campus mutual aid.

Keywords: communication and information system · campus information · lost and found · second-hand transaction

1 Introduction

The background of today’s times is that several development trends in the information age have become irreversible historical trends and are changing the face and pattern of today’s world. [1] In 2010, in the 12th Five-Year Plan for informatization, Zhejiang University proposed to build a “smart campus”. [2] On June 7, 2018, the national standard “Overall Framework of Smart Campus” was released [3]; The National Conference on Education Work in 2022 clearly proposed the implementation of the strategic action on digitization of education. [4] Promoting intelligent campus life can provide more convenient services for teachers and students. Therefore, our team conducted research and analysis on the visible needs of life in the field of smart campus, hoping to make a smart campus small program “Garden”.

At present, the environmental and resource problems brought by economic development are increasingly serious. The 14th Five-Year Circular Economy Development Plan issued by the National Development and Reform Commission in July 2021 proposed to standardize and develop the second-hand commodity market [5]. The team conducted

relevant investigation and research on second-hand commodity trading in the university, and found that there was indeed great potential for development, and decided to add a second-hand transaction page in “Garden”. Since The State Council issued Several Opinions on Accelerating the Development of the Service Industry in March 2008, China has developed rapidly in the service industry [6]. In the development of the service industry, the lost and found system can improve the basic equipment of the service industry and improve the quality of the service industry, which is an indispensable link. However, in the campus environment with a high incidence of lost goods, there is a lack of intelligent lost and found management system construction. So our team decided to add the smart campus lost and found system in “Garden”; According to the website of the Ministry of Education, the scale of postgraduate education has seen a breakthrough in the past decade, and the demand for postgraduate entrance examination continues to grow. As far as studying for postgraduate entrance examination is concerned, it is difficult to break the poor information and find reliable information efficiently. Just like the small program “Ai scholar” can easily find journals and conferences, the information platform of “Garden” can also easily find learning information.

To sum up, the team designed the WeChat mini program “Garden” platform, which will focus on providing students with quick and practical service functions such as lost and found, idle goods transaction, campus notice and postgraduate entrance examination information. The team hopes to apply the computer knowledge on campus to respond to the national call and better meet the needs of students.

2 The Significance of Relevant Research

(1) Lost and Found

The large flow of campus people is the high incidence of relics. At present, the information of our school’s relics collection is only spread through WeChat moments and QQ Universal Wall, but it is obvious that the limitations of contacts in moments and the characteristics of chaotic information of universal wall cannot meet the needs of campus relics collection. Hu Shoujun, a sociology professor at Fudan University, believes it is necessary to keep lost-and-found sites in public places. “Setting up lost and found points is actually a public service gesture.” [7]. If the team’s scan and pick up items cabinet and reward mechanism can be successfully operated in the school, it is also expected to be promoted to the society.

(2) Idle goods trading

On campus, there is a phenomenon that graduates have nowhere to put their idle belongings and freshmen buy similar items. This is due to the lack of a convenient second-hand trading channel on campus, resulting in a waste of campus resources. There are second-hand trading apps such as “PoshmarkInc” and “Zhuanzhuan,” but in the case of apps aimed at social people, students use them to change the trading process into “campus-society-campus.” The social link in between is not convenient. Because for student sellers, in the tight time before graduation, they also need to do a good job in pre-sale and post-sale services, play with the trading rules of the platform to increase commodity exposure, and find customers is very difficult. For student buyers, the selection of campus transaction information in social

software will magnify the shortcomings of trust and freight issues and reduce the timeliness of the transaction. What our team hopes to build is a “campus-campus” second-hand trading service platform. In the early stage of the project, our team conducted a questionnaire survey among our students, among which the votes of “I hope the school can provide a trading platform for idle goods” reached 100 percent. This phenomenon does not only exist in universities, but also exists in all stages of campus, selling books as scrap upon graduation, and borrowing books to ask the neighbors. If it is effectively managed on campus, it is expected to spread to other campuses.

(3) **“research” path has you**

This page focuses on the information of postgraduate entrance examination, including the application information of postgraduate entrance examination school, public curriculum materials and past experience. At present, students looking for graduate school professional information is mostly consult teachers or search the Internet, but the same professional students each postgraduate entrance examination experience is always of great reference significance to this year, yearning for the students to consult the demand is universal. It is not limited to the experience of selecting courses for postgraduate entrance examination, but also includes information about whether certain certificates are necessary, employment and personal development. In our survey, we found that the “yes” option of “willing to share your learning experience or information” was selected 100%. This page is not limited to offline time and place, can be very good for the convenience of students and teachers.

(4) **Campus Notice**

The page for the current information release in our school scattered port, information is not centralized, not unified problems. In our school, the library, the General College, the Student Union of the General College, the student union of each branch and the society all have their own WeChat public accounts, which are numerous, but few students pay attention to all of them. This leads to the problem of information transmission. For example, the message of the public number is only displayed in the column of the subscription number without a separate reminder. Inter-school activities need to rely on a large number of people in the circle of friends to forward, which is difficult to convey to students of different departments; Another example is library opening and closing information and book update notification. At present, the notification for students in our library is in one library QQ group, and the number of students cannot be notified to all students. In addition, there is no proper platform for teaching administration examination time and holiday notice to be effectively communicated to teachers and students. The “Garden” applet is a messaging platform that can centrally publish notifications and remind selected objects, making campus notifications more convenient and smoother.

3 Develop the Advantage of Small Program of Technology Selection

The “Garden” mini program platform is mainly composed of online mini program operation, promotion, network security and offline coordination and management. The team chose small program because of the high cost and cycle cost of traditional APP development, which not only cannot generate traffic, but also needs to develop Android and IOS

systems respectively according to the system. However, WeChat mini program is based on WeChat terminal as the entry point. With the help of the promotion link of WeChat simplified program, combined with the marketing advantage of WeChat public account, users only need to click on the mini program to enter directly, without installation and without occupying the memory of the phone. [8] Compared with APP, mini program is more suitable for campus environment and has a dedicated channel for operation and promotion, which greatly reduces operation cost. It is easy to operate so that students can also undertake the small program online and offline docking tasks and management and maintenance work. The platform's promotion positioning is clear, can develop online traffic, and has a strong pertinence, choose to develop small programs can also facilitate the cooperation and promotion with various famous schools and students.

4 Technical Analysis of Program Design

In the development of the front end, the page layout of the small program is reasonable has played a crucial role. In order to bring users a concise and efficient page design, we plan to quickly define the elements through HTML, then use CSS to accurately position the displayed elements, and finally use JavaScript to show the required effects and interactions, so as to provide customers with a smoother browsing effect. [9] HTML5 and CSS3, as front-end framework applications, can adapt to various screen resolutions, provide users with perfect dynamic design, and effectively increase the sense of user experience. In the applets back-end programming api, the team plans to use the java programming language, Spring Boot framework. Spring Boot infrastructure consists of three files:src/main/java program development and the main program entry src/main/resources configuration file src/test/java test program, which inherits the original excellent features of Spring framework. The programming framework is shown in Fig. 1. It also simplifies the process of building and developing Spring applications, making it easy to create stand-alone Spring applications, or even create executable JARs and WARs through the Maven or Gradle plug-ins. [10] The team will also use the MyEclipse development tool, which combines the advantages of wide support and powerful functions to provide great convenience for our subsequent small program development. Finally, we divide the whole system into two parts: View layer and logical layer (App Service, based on JavaScript), which can easily keep the running data in sync with the interface view. When modifying data, we only need to make changes in the logical layer, and the view layer will automatically adjust according to the data we modify and keep the synchronization with it.

5 Business Model

(1). The operation of small program to attract and maintain the steady flow of people: one is the functional aspect, demand-oriented: with small program lost and found, idle goods trading and "research" way you and other convenient and practical and free functions initially for small program to bring the flow of people; Then use the targeted message reminder in the campus notice, continuously updated postgraduate entrance examination information and other functions to maintain the steady flow of people; The second is

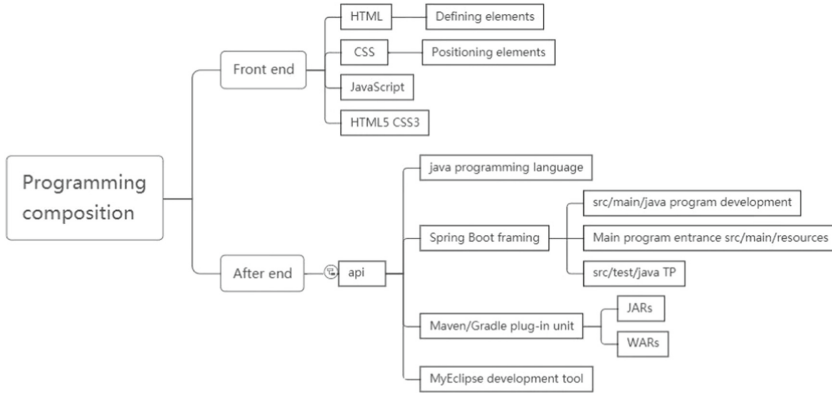


Fig. 1. Programming composition, self-drawing

the technical design: the small program itself comfortable module layout and smooth browsing effect, the user will not lose because of the sense of experience; Third, operation skills: the team set up the point reward exchange link in the small program, users can save points through the gift exchange or idle goods trading cash. This can form an effective crowd control, increase the click-through rate and usage of the platform. Fourth, the public welfare aspect of the mini program: the team will donate part of the profits of the mini program to schools in poor areas with difficult teaching conditions. It can not only respond to the call of The Times for youth responsibility, but also enhance the sense of participation and enthusiasm of users. All of these details make Garden more engaging.

(2). Ways to make profits when operating small programs: with the flow of people to have the flow of idle, we can make profits from it. First, in the trading section of idle goods, the platform uses its own exposure to sell idle goods for students, which will be divided according to the agreed proportion (the sharing fee will be no more than 3.5%). The higher the proportion, the higher the exposure will be. The recommended commodity column will be put into the merchant promotion, and the corresponding promotion fee will be charged. Second, in the “postgraduate” process with your entrance examination data section, we will gradually improve the fee teaching courses, but the team plans to charge less than 30% of the profit, with a “small profit” business model to obtain more long-term earnings. In the later period of the three mini programs, the advertising rights may be opened. When users have the demand for points, they can obtain them by watching advertisements, and the platform will charge merchants promotion fees. The business process is shown in Fig. 2.

6 Specific Function Analysis and Design

(1) Lost and found

Release function: The finder clicks “I picked it up”, uploads the appearance photo of the item, enters the location and time information of the item, and sets verification questions. You can choose “scan code storage” to store in the transparent cabinet of campus relics and inform the password to return, or make an appointment to meet

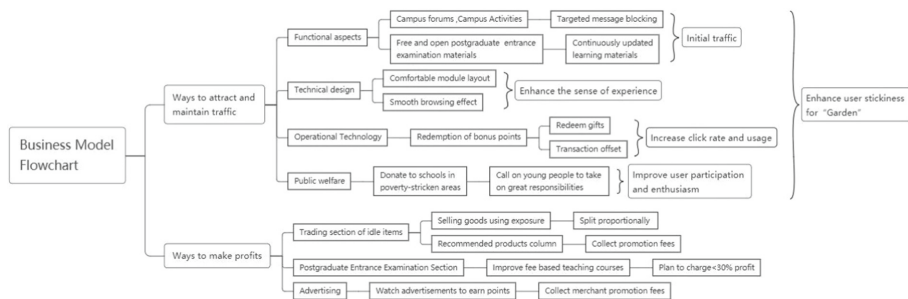


Fig. 2. Business Model Flowchart, self-drawing

the place offline return. When a user claims and answers the verification questions can be confirmed as the owner, you can claim the items in the agreed way. After getting the item, the owner can click “I have found” to cancel the post (but it can be found in the collection record), and can also evaluate the finder or report the extra charge for offline transactions. After successful return, the finder will be rewarded with points; (2) The lost click “I lost”, the release of lost items, can click on such items to pick up the post message reminder. The finder can click “I found” to verify the question. The lost can also browse for the lost items in the homepage post bar. In the process of user operation, the platform will prompt the pickers not to divulge detailed information, and provide automatic matching function of pickups according to the pictures.

(2) **Idle goods trading**

The main page will have a search bar and a category view function, and the lower part will show the highly publicized recommended products and promoted products connected to the platform. When users have idle demand, click “publish”, select categories, upload photos, fill in the item description and set the price. Sellers can also spend platform credits to increase product exposure; Buyers can find what they want through direct search or classified search. When purchasing, you can use the platform points to offset cash. After placing the order, you can choose to meet and trade or transfer the goods in the idle trading cabinet beside the lost and found cabinet. After the transaction is completed, the buyer can evaluate the seller’s products, and the seller’s platform with high evaluation scores will waive the exposure fee.

(3) **“research” the way you**

Postgraduate entrance exam information bar: The platform will organize and update learning information classified by university, major and grade level for students. Users can obtain it by searching on demand; Study information bar: Provide students with the free download of PDF books required by the university’s popular postgraduate entrance exam major. Playback links of open courses on CET-4, CET-6 and postgraduate entrance examination by teachers are collected for students to watch for free. Put into < 30% of the platforms approved as excellent online course promotion commodities; Experience question and answer area: students can post questions, and choose to ask the crowd when Posting. After the platform reviews the questions as meaningful, they can be pushed to such people. Users receive platform

points for answering questions. Posters can set a comment to “helpful answers” and earn extra points for that reply.

(4) **Campus notice**

After subscribing to the message notification function, ordinary users can receive notification reminders released by the platform. Click on the alert or click on the activity center to display a list of activities associated with that user. Click on the activity to view the specific content of the activity, the time, the number of participants and other information. Users can sign up for the event by clicking “participate”, and they can get platform credits by punching in after the event.

The campus notice will invite the university library, the Dean’s Office, the Students’ Union, the committee, the students’ Union and the student association. The publisher can edit the founding activity by clicking the option of “Release Notice”, select the department, major and grade to be notified, and then click Release. The platform will alert the relevant user to view it, and the created activity will appear in the activity center. The publisher can check the ratio between the number of visitors and the number of readers or set the reply function on the visitor interface.

(5) **Personal Center**

Personal centers are divided into campus certification, my Pickups, my deals, my notifications, my downloads, my Questions and Answers. Users can only use the small program function after campus authentication, and relevant information can be seen in the “My”.

7 Key Problem Solving

The key is to build a campus information smooth platform. Through the lost and found interface, it can effectively unify the campus information of scavenged items, build an efficient campus information release and return network of scavenged items, and infiltrate the campus with positive information through the reward mechanism. Through the idle commodity trading page, more campus resources that will be wasted can be fully utilized. It helps students gradually form the environmental awareness of rational consumption, green consumption and circular consumption, and provides them with a starting point to respond to the national call for carbon emission reduction. Through the “postgraduate” page, gather high-quality postgraduate entrance exam information, so that students can quickly understand the accurate postgraduate entrance exam information for school selection and follow-up study, to create a more focused campus learning atmosphere. The campus notice page provides a more convenient platform for students to release information, and solves the problem of low participation rate of current activities by giving rewards after punching in. Finally, through the donation platform profit, so that college students can also in the way of giving back to the society. The main solution process is shown in Fig. 3. In short, this project attempts to analyze campus needs, so that campus life can keep up with the pace of information technology, in order to create a more convenient campus life style.

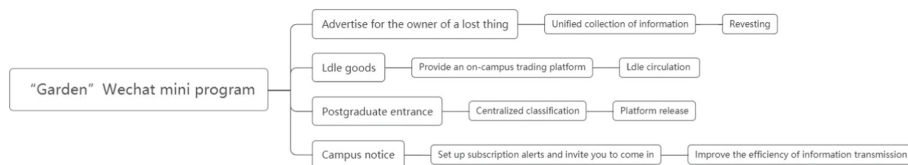


Fig. 3. Main process, self-drawing

8 Conclusions

To sum up, “Garden” WeChat mini program platform can cover the campus in an all-round way for all college students. The campus idle items, lost and found, postgraduate entrance examination information, campus notice and other services integrated into one, not only meet the needs of users but also facilitate the daily operation and publicity of small programs. This small program is characterized by convenient, fast and effective service, providing students with a comprehensive platform to effectively solve the actual problems of students in school. “Garden” platform is based on WeChat mini program to make more effective use of resources. The future development will be more inclined to network and information, registration and authentication channels are fast, and WeChat mini program will become more popular. There are infinite possibilities for the development of campus mutual aid mini program “Garden”, and the future is very bright. It is worth to further improve and expand, and create an influential public mini program platform.

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