



# Research on Human-Centered Design with User Interface for College Social App

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**Abstract.** Recently the construction of campus culture in college is gradually transforming to digital information technology. This work conducts a literature study on the current situation of college social media and analyzes the application and value of human-centered principles in college social apps. Through the research and analysis of the social needs of college students, illustrating the product prototype and functional framework of the college campus social integration app to conduct in-depth design of the interactive functions and interface vision of the app. According to the usability test principle of “SE”, the college campus integrated a social app incorporating the needs of college students into interaction prototypes, and evaluate user experience in usability and value. In sum, aiming to provide new ideas and reference direction for digital products in college.

**Keywords:** Human-Centered Design · College Social Media · User Interface Design · Interaction Prototype

## 1 Introduction

With the development of mobile Internet technology and the popularity of smartphones, social media are widely used in the daily life and study of college students, including social contact, education, entertainment, information acquisition, and other aspects. In China, the number of Internet users has reached 10 billion, among which more than 60% are young people [8]. College students were some of the earliest adopters of social media and remain one of its most active user groups [5]. In 2014, the Ministry of Education also issued several guidelines for the construction of educational information in colleges and universities. Currently, there are numerous studies targeting college students. This paper is based on the design principle of “Human-centered design” (HCD), and college students’ Internet social psychology, through the new concept of Internet college social contact illustrate the college social app interface prototypes and information architecture. Furthermore, to better provide social experience and campus life.

## 2 The State of College Social Apps

The campus as a semi-closed environment, spawned some specific user requirements, although the user requirements of different levels of school may be different. Between

user groups in colleges still has many common, such as their main concerns surrounding social contact, learning, and employment services, regardless of the segment to which field. Numerous resources of college students can form a wide range of user groups, which can spread quickly. Compared with the general commercial APP products with profitability as the primary purpose, the campus APP for teachers and students of universities and colleges has its characteristics, as it emerges at the right moment in response to the development of digital campus construction. Just because of this situation, the campus is the integration of social change of the pattern, through the establishment of the league of the campus ecological system integration, building college students' own social life, to meet user Internet social needs at the same time, in-depth excavation of the life and academic rigid demand, derive sustainable social relations, to enhance the user viscosity, Improve user quality. Xiaoye Du [9] researched apps for campus life to improve users' experience by exploring multiple different usage scenarios. Xiaofang Yuan [10] improve the traditional service content and management model of the college library to enhance the user experience. Most of these studies concentrate on one aspect of campus life. This paper integrates the basic needs of college students on campus, further discusses the new situation of campus social interaction based on these studies, and provides good services for students.

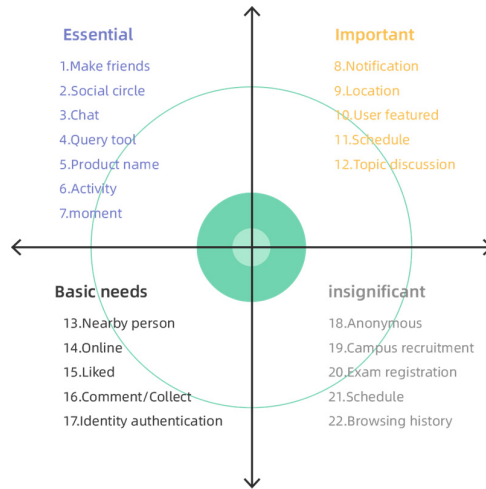
### 3 Human-Centered Design and Value

The term was coined by designer Donald Norman, who believed that a user's experience was subjective and should be human-centered (HCD) rather than product-centered design [4]. HCD is an extension based on philosophical perspective and using appropriate means to meet the psychological needs of users. When this theoretical method is applied to disabled groups, it can fully reflect the humanistic concern feature [7]. This fundamental focus on engaging with and understanding the needs of all users of systems is common to all design disciplines (e.g., service design, interaction design) and specific models or approaches used by multidisciplinary teams. HCD leads to products, systems, and services that are physically, perceptually, cognitively, and emotionally intuitive. The word 'intuitive' is used here to refer to the compatibility of the physical and information attributes of the product, system, or service with the full range of human characteristics including the basic and higher cognitive emotions [3]. According to this view, Lu Geng [2] analyzed the teaching service requirement to design the interface prototype of APP "i Sino-Korea" launched by the Sino-Korean School of Multimedia Design of Shanghai University of Engineering Science. Based on this approach, this paper further illustrates how this college social app provides an integrated function to a college student.

## 4 Design Exploration

### 4.1 User Research

This user research is mainly carried out in the form of a questionnaire. There are 15 questions in the questionnaire, which mainly include subjective questions about users' social behavior on the Internet and their demand preference for social apps in college.



**Fig. 1.** Demand Scale.

The priority of product functions, their expectations for social apps, and the situations in which they will use apps. Through the data analysis of 205 valid questionnaires collected, the demand scale is made from the aspects of demand hierarchy, social preference, and so on (Fig. 1).

Based on the questionnaire survey, through the form of interviews to conduct an in-depth analysis of user behavior. The interview involves 6 participants, and the interview results are summarized as follows:

1. Most interviewees are willing to take the initiative to download the college social APP and have high expectations for the product.
2. The usability and practicability of the main functions planned in the APP are relatively strong.
3. They emphasize college apps should strengthen the security of the Internet environment, and users are expected to verify their student identity.
4. Most interviewees more focus on social contact than functional tools, so they hope to develop some interesting social ways.

## 4.2 Personas

Before the illustration of the interaction prototype, it is necessary to quantify the user's behavior, expectations, and characteristics according to the identified main functions and content, and create a descriptive model about the user, which is called "Persona". How do users behave? What are their expected goals? Why this goal? To these questions, Persona provides a way to think and communicate precisely, to study the behavior and motivations of real users, and to prioritize product features more clearly [2]. According to the behavioral patterns observed in the preliminary qualitative research, analyzing important personas to further describe the characteristics, needs, and behaviors (Fig. 2).



Fig. 2. Personas.

## 5 Design Results

### 5.1 Information Architecture

Due to holidays, college students will temporarily leave the campus for at least a month. When they leave campus for a long time, users will easily forget to use social products after the holiday. To effectively enhance the user viscosity, eliminate the disadvantage of campus scene switching problem, the campus social products catch user pain points, based on the app design practice, the activities of the group outside the campus, improve the online mode of the library service. Expanding the social circle of students, while providing students with basic life, learning, and other services.

Function framework on main consideration target user choose what want to get the product, so the social APP is located in the campus social life service functional products, and various universities' educational administration system as well as the library borrowing system binding, for college students to provide social, life and studies related to a series of services, It is committed to building an integrated ecological system of campus social contact and develop sustainable social relationships. The user needs to be collected in the survey were converted into main functions, and the content requirements and functional framework of the app were sorted out based on the user requirements. Moreover, conducting the information architecture of the product, incorporating the HCD principle into further convert the user needs to be collected from the survey into the main functions of the app (Fig. 3).

### 5.2 Prototypes

Through the information architecture, carrying out the functions and information of each interface, and each area involved in the interaction is reasonably arranged. The basic functions are interest and social contact, topic square, user recommendation, record schedule, and the core functions are campus activities, clubs, and groups, and find books. By summarizing the framework and functions, the navigation tag is divided into five parts: square, discover, publish, messages, and me. Then illustrate the interaction prototype design of the user interface (Fig. 4).

### 5.3 User Interface

The visual design of the user interface is a design process based on the information architecture and interaction prototype, combined with the user's psychological needs and aesthetic perception, mainly including color, font, interface design, etc. Based on

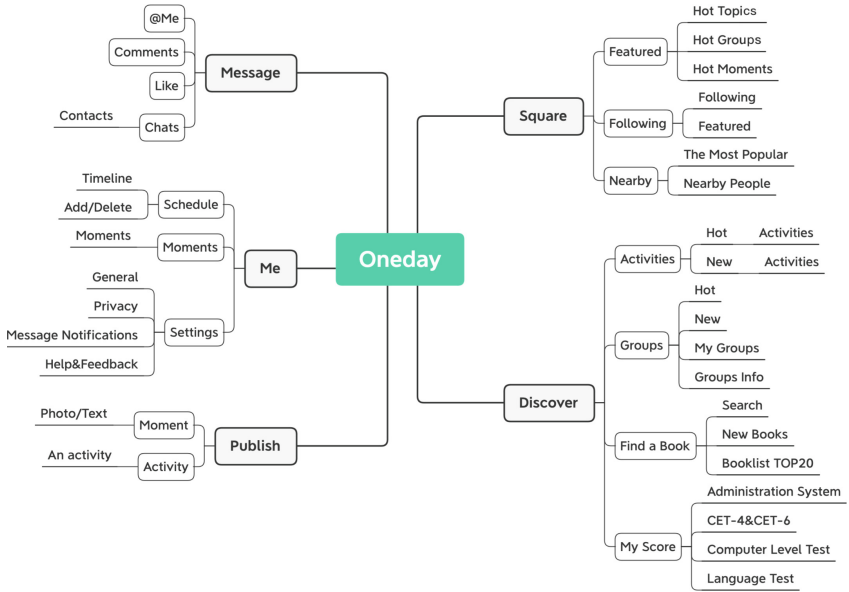


Fig. 3. Information architecture.

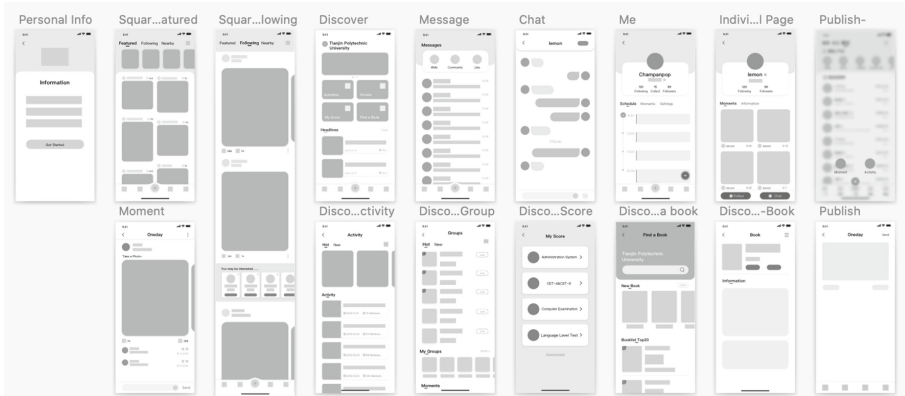


Fig. 4. Interaction prototype.

prototype design and later optimization, the interface design was carried out combining color and font. The key factor is visual to optimize the content, determine the design style of the whole, and output high-fi prototypes. The purpose is to enhance product recognition and improve the user experience.

### 5.3.1 Design Specification

Based on college features, green and yellow are selected as the standard colors, while pink and purple are selected as the auxiliary colors to highlight the theme and increase

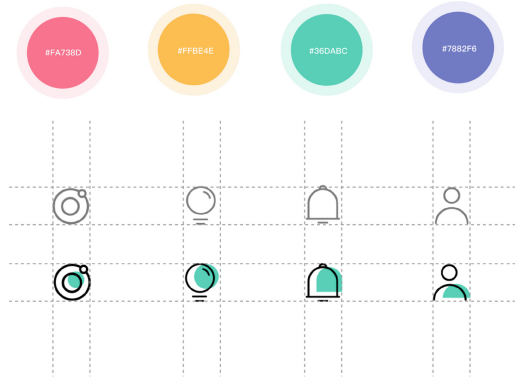


Fig. 5. Design specification.

the contrast and richness of colors, which are applied in Logo, icon, card, and illustration design. Icons in the interface are designed with a 2px line. Uniform stroke thickness, arc Angle, and visual weight make icons more recognizable. These are displayed in the top and bottom tab bars, and the functional icons in the bottom tab bar have simple and clear lines (Fig. 5).

### 5.3.2 Visual Concept

The whole design is based on the flat style. By increasing the distance between the contents to distinguish the level of information, eliminating redundant lines as much as possible, and appropriate white space. In terms of emotional design, illustration elements in the default page and guide page add interest and emotional significance to the visual system of the entire interface. Unified color matching, flat style, and a combination of strokes make the whole interface more dynamic. College social app improves user experience through visual optimization of interface and detailed interaction design, thus completing the development of app design (Fig. 6).

The page of square displays bottom navigation tags according to the user's preference and attention, information flow allows user to obtain the required information as soon as possible, recommend tags will push the everyday hot topic, more information exposure and nearby tags will show the growing popularity of high heat users in the app. It can also find nearby classmates through the positioning function to meet the needs of users to make friends. The discover page mainly displays the main functions of the product: campus activities, associations and groups, grade query, and find books, which are also the key design part of the app. There are popular activities inside or outside the school, users can select and then sign up online to join and groups will also have popular recommendations and group dynamic content display. The result query function includes the academic affairs office result query, CET-4 and CET-6 result query, the national computer rank examination, and so on. The user can enter the test number directly online query; The function of find books can help users to make an online reservation, and there is also a monthly borrowing list recommendation (Fig. 7).

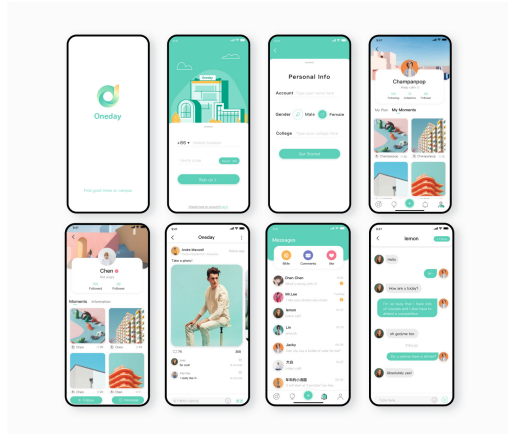


Fig. 6. User interface.

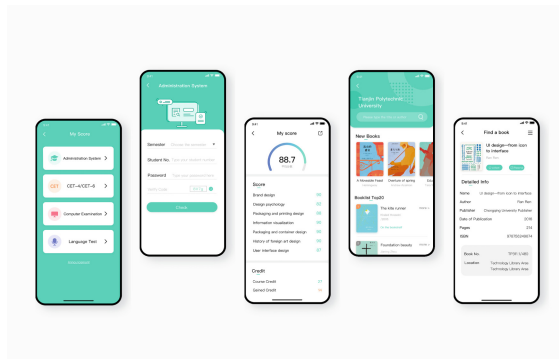


Fig. 7. Book reservation and my score.

Among them, the function of finding books is mainly connected with the library lending system of colleges and universities, which can directly query the library collection of our school and make an online reservation. The query interface has added graphic elements on the first-level page, highlighting the product positioning of smart college.

#### 5.4 Usability Test

In the process of product design, a usability test should be conducted on the product prototype before visual design to verify the feasibility of the design scheme. As a working definition, usability is the ease with which people in a defined group can learn and use a product. The characteristics of and relationships among the tasks, the users, and the product determine the product's usability. User interface designer Whitney Quesenbery outlined the "5E" usability testing principles: Namely, Effective, Efficient, Engaging, Error tolerant, and Easy to learn [1]. The usability of college social apps is evaluated mainly from the five dimensions. The test invited six representative users, gave each

**Table 1.** Usability test.

Dimension	Tasks	Results	Feelings
Effective	Make online reservation	Completed 80% Need help 20% Failed 0%	Simple 80% Normal 20% Difficult 0%
Efficient	Find 3 target users to chat	Completed 90% Need help 10% Failed 0%	Simple 100% Normal 0% Difficult 0%
Engaging	Test the visual preferences	Completed 90% Need help 10% Failed 0%	Simple 100% Normal 0% Difficult 0%
Error tolerant	Comment and chat without sign up	Completed 70% Need help 30% Failed 0%	Simple 70% Normal 30% Difficult 0%
Easy to learn	Join campus activities	Completed 90% Need help 10% Failed 0%	Simple 90% Normal 10% Difficult 0%

participant respectively set up different tasks to experience, to let them by the instructions on the prototype of an app, and watching from the sidelines records the response to user actions and performance. At the end of the experience, after summarizing and analyzing user experience and test results, the conclusions are drawn as shown in the figure below (Table 1).

The usability test found that the app could meet the needs of users, most of them could independently complete the corresponding tasks, and had a high degree of satisfaction with the app prototypes. However, some problems were found according to the test results. On this basis, the information architecture and interaction prototype of the APP was optimized and improved:

1. To save time for users to register, they could not upload the photo of their student ID card at the time of registration. However, when posting dynamic information or making comments, they need to verify the information of their student ID card before they can continue to operate.
2. The recommendation tag of “Square” increases the recommendation of hot topics.
3. The “Reservation” icon is adjusted to the right below the book name, convenient for users to make an online reservation.

An expert usability evaluation can help identify potential problems and focus on areas that can explore successfully within the organization’s budget and time constraints. As a result, the usability testing or other information-gathering elect to perform is much more likely to achieve its primary goal: improving the usability of the product [6].



## 6 Conclusions

The design of this product is based on the principle of HCD, this paper summarized various students' basic needs and analyzed the problems of college apps. Combined with the current situation of the college campus social market, as well as the needs of college students for Internet social networking, forward-looking thinking on the new college Internet social networking way, showing the innovation. Combined with Personas, constructing the prototypes of low-fi and high-fi social integration app of college, and the app is verified to have high feasibility and user experience satisfaction through the "5E" usability test principle, with optimizing the app interface visually can bring users better operation experience and provides a new design idea for digital products on college.

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