The Influence of Online Media on College Students' Self-identity in Mobile Learning Environment

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Abstract. With the maturity of information technology, the popularity of the network and the reduction of the cost of wireless equipment, mobile learning has attracted great attention in recent years and started to be popularized rapidly. Mobile learning based on recommendation algorithm has become the most convenient and most common way of learning for college students and even the whole society. College students are in the stage of mental growth, which is also the most important period of self-identity. The transition from high school to college and the network information explosion intervention, under the influence of network media gradually formed a new self-cognition.

Keywords: Mobile learning · Recommendation algorithm · Network media · self-identity

1 Introduction

With the rapid growth of mobile Internet technology and the wide application of smart mobile devices today, the concept of learners is constantly changing and updating, and the mobile learning model emerges at the historic moment. The 49th Statistical report on the development of Internet in China released by CNNIC in 2021 shows that by December 2021, the number of netizens in China is 1.032 billion, with 42.96 million more netizens than that in December 2020, and the Internet penetration rate reaches 73.0%. An increase of 2.6 percentage points compared with December 2020. Among them, the proportion of Internet users aged 20–29, 30–39 and 40–49 was 17.3%, 19.9% and 18.4%, which were higher than other age groups. College Internet users are generally between 18 and 25 years old, accounting for about 15.4%.

With the maturity of information technology and the reduction of the cost of wireless equipment, mobile learning has attracted great attention in recent years and began to be popularized rapidly. Since 2011, mobile learning has become a hotspot and frontier of mobile learning related research. The US report stresses that mobile apps and tablets will dominate the future of education.
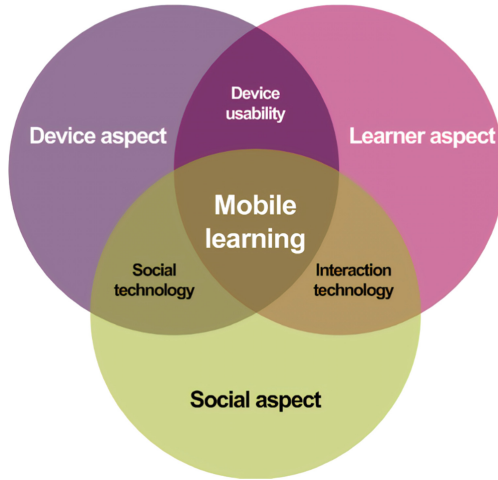
Fig. 1. Mobile learning covers fields.

2 Mobile Learning

2.1 Concepts and Features

Mobile learning refers to a new form of autonomous learning in which students independently determine learning objectives at anytime and anywhere according to their own needs, and use wireless mobile communication network technology and wireless mobile communication equipment to obtain and select educational information, resources and services (Fig. 1).

Compared with traditional learning, mobile learning has the following advantages:

- Mobility.
- Anytime, anywhere, on demand.
- The subject status of learners is further highlighted.[1]

2.2 Mobile Learning Environment Based on Recommendation Algorithm

1) Mobile Learning Environment

At present, the research on the construction of mobile learning environment at home and abroad generally has three directions. According to the different development platforms, the mobile learning environment can be divided into application based, wechat public account based and wechat mini program based [2].

App-based mobile learning environment is the most traditional and widely studied one at present. This kind of mode does not rely on other platforms. Professional developers are used to develop and operate relevant applications, and the overall process is relatively complicated. At present, there are abundant mobile learning applications both at home and abroad. For example, the MOOCs brand "Udemy" is one of the largest online
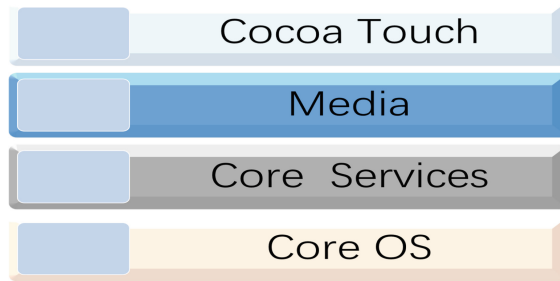
Fig. 2. The four-tier architecture of iOS.

education platforms in the world, especially in overseas regions, with well-maintained Android and Apple (ios) applications [3].

a) iOS System Architecture

In the ios system, the established framework is used to access the code in the resource library and other resources. In the development of the iOS system, applications are also considered, so a variety of frameworks applicable to applications are provided and the architecture is formed, which is divided into four layers (Fig. 2).

The four frameworks are touchable layer, Media layer, core service layer and core operating system layer respectively. The frameworks provided by Cocoa Touch layer are mainly used for the interaction between customers and pages, all of which are Objective-C based interfaces. The media layer is mainly used for media files, such as video, audio, pictures and animation. The Core Services layer is a service to access. Core OS is at the bottom layer and also the most core layer. It takes care of some tasks such as memory, files, power supply and so on. At the same time, it can directly interact with hardware. The Core Services layer and the Core OS layer are both based on the C language interface.

2) Recommendation Algorithm System

The mobile learning environment of the recommendation algorithm system can effectively improve the complex problem of learning resources caused by data overload in the current era, so that learners can effectively obtain learning resources suitable for their own ability level, thus further promoting the development of mobile learning in the era of education information 2.0.

a) Content-Based Recommendation Algorithm

Content based recommendation is simply to recommend new items with similar features to the items users are interested in according to the items they are interested in before. The key point of the algorithm is how to judge the relevance of the items. Debnath et al. calculated the relevance of the project by setting different weight values, and analyzed the recommendation effect (Fig. 3).
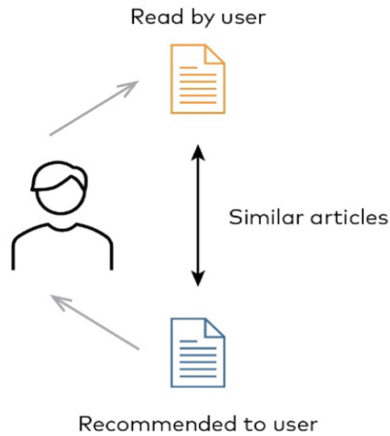
CONTENT-BASED FILTERING

Fig. 3. Content filtering process.

b) Recommendation Algorithm Based on Collaborative Filtering

Collaborative filtering is a recommendation algorithm with the highest usage rate in the current industrial practice. Different from content-based recommendation, collaborative filtering is to recommend target users by analyzing the previous interest behaviors of other users in the system. By analyzing users' ratings of news content, GroupLens first applied the collaborative filtering algorithm to news recommendations, which served as a guide to the future development of the recommendation system (Fig. 4).

c) Hybrid Recommendation Algorithm

The idea of hybrid recommendation algorithm is to combine the advantages of content-based and collaborative filtering recommendation algorithms to overcome the problems such as data sparse and cold start. Do et al. create online learning resource recommendation system by combining knowledge-based reasoning algorithm and collaborative filtering (Fig. 5).

d) Intelligent Recommendation Algorithm

Since deep learning technology and reinforcement learning technology have achieved great success in many fields, researchers gradually begin to combine artificial intelligence technology with recommendation algorithm to solve various problems of recommendation system. Current research on artificial intelligence technology in the application of recommender system is less, Zhang Yongfu both long-term and short-term memory network (LSTM) combined with recommendation system, through the LSTM forecast user's tastes, so as to realize in view of user preference to recommend possible content.
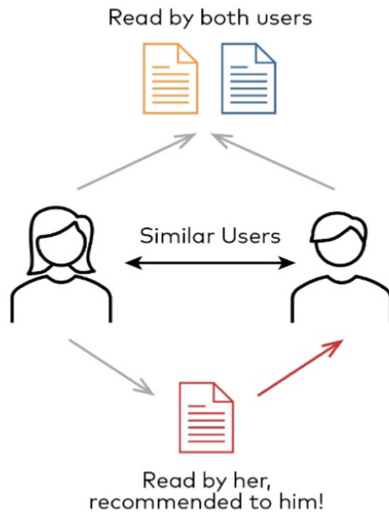
Fig. 4. Collaborative filtering process.
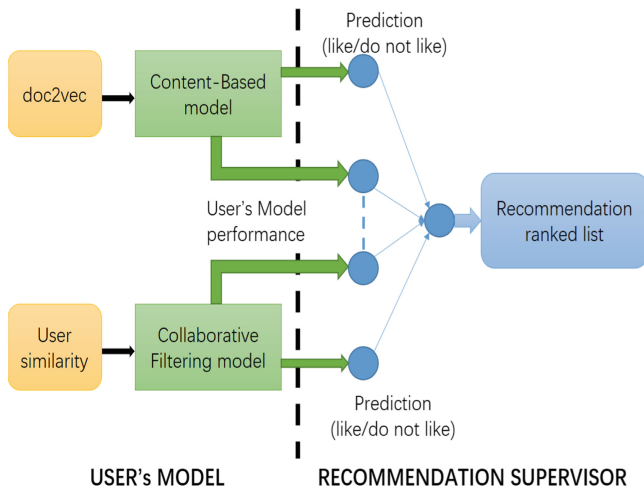

Fig. 5. Hybrid recommendation algorithm.

3   The Influence of Online Media on College Students' Self-identity Under Mobile Learning

3.1   College Students' Self-identity

Self-identity (also known as self-identity) was first put forward by Erikson, a representative of the new Psychoanalysis school, in the theory of individual psychological development stage [4]. Identity refers to an individual's past, present and future experience of his own internal consistency, continuity, and integration of a particular environment.

College students' self-identification refers to the process of self-exploration and self-affirmation formed by college students in their environment and interaction with others according to their own internal demands, which is highly reflective [5]. Lu Mengxing believes that college students' self-identity is their identification of self-identity and self-belonging. In the specific environment of university, college students' subjective and objective self-cognition and clear goal pursuit formed through their own social and psychological activities have a certain continuity and plasticity.

3.2   The Influence of Internet Media on College Students' Self-identity

The rapid development of mobile Internet and the arrival of the "Internet Plus" era have brought great changes in the way people receive and use information, and also promoted the prosperity of online education model. Mobile learning has become an important part of our daily life. [6] In About the Internet Self-identity Crisis (2015), Liu Yingjie and Zhao Xuewei mentioned that the emergence of the Internet self-identity crisis is based on the unique Internet behaviors, and the essence of the identity crisis is that in the network social situation, the contradiction between people's self-stability and changability is increasingly acute. Wu Yujun mentioned in his book Modern Self-View and Identity Problems (2016) published in Yunnan Social Sciences that, on virtual Internet platforms, anonymization of information and virtualization of personal image make it easy for college students to cause conflicts between ideal self and real self, which makes it difficult to deal with the relationship between self and society, thus affecting the formation of college students' self-identity.

From the perspective of sociology, Post Rice (2012) believes that a person's self-recognition is carried out from two aspects: personal identity and social identity. Anonymity in the network community cannot make people lose their sense of identity, let alone transform their self-knowledge into others' individual identity. The anonymity of the Internet makes people more compliant with social identity, but often ignore personal identity [7]. The effect of this emphasis on deindividuation is the social identity model.

4   Countermeasures

According to the characteristics of college students' immature mental, thinking and cognitive abilities, colleges and universities should actively show the appropriate attitude, integrate ideological and political education into mental health education, help college

students to construct correct self-identity, avoid self-identity crisis, and put forward guidance and suggestions for the adjustment of college students' self-identity crisis in the new era of network media.

4.1 Adhere to the Guidance of Marxism

Adhere to Marxism as the guidance, adhere to Marxism on the nature of the theory of human elaboration, combined with the education of socialist core values. As an important communication medium, the network should actively advocate the cognitive method of ID and provide correct and rigorous theoretical support. Teach students to have a clear understanding of the nature of objective phenomena, themselves and their external environment, and learn and practice socialist core values.

4.2 Student-Oriented to Promote College Students' Self-identity

Avoid the negative impact of the network to shape the role of self. As the main field of network publicity for college students, colleges and universities should attach importance to the network construction, assume the responsibility of guiding and educating college students, set up relevant courses and publish reasonable network management system, guide college students to avoid the crisis of self-identity and maximize the advantages of the network [8].

4.3 To Improve the Quality and Ability of Educators on College Students' Self-identity Education

College educators should start from the needs of college students' self-identification, find problems in time and solve them in a targeted way, and use network means to obtain students' identification so as to penetrate into the inner world of students. Attach importance to the combination of family education and school education, and strengthen the construction of school spirit and academic spirit in colleges and universities.

4.4 Create a Personalized Recommendation Learning System

As mentioned above, the technology of personalized recommendation is added to the mobile learning system. In the process of mobile learning, the function of personalized recommendation is used to make personalized recommendation to the resources required by users according to their characteristics. Personalized recommendation technology is to find learning resources suitable for users through personalized recommendation of users' historical information, and provide users with personalized services. In order to realize personalized recommendation and meet users' needs, we need to use algorithms to calculate and analyze users' behaviors. When we obtain user information, we find that each user has different information records. Therefore, we need to adopt different algorithm analysis for different users, so we will also adjust the algorithm and try our best to implement personalized recommendation for different users.

4.5   Give Full Play to the Advantages of Network Resources

1) **Open online psychological counseling network question answering system**

Make full use of network resources to establish an online consultation platform to help college students solve the confusion in their self-identity.

2) **Give play to the role of opinion leaders among college students**

College students generally have their own personality and preferences, desire freedom, and have their own independent ideological system. This has determined that the education of college students should be guided by public opinion rather than forceful indoctrination. The educational countermeasures of the network platform can make use of the power of these idols. Celebrities should cherish their online appeal and sense of mission, cultivate morality and morality, and play a positive demonstration role for college students. Colleges and universities can take advantage of the celebrity effect on campus to cultivate their young student idols. They are good at using the Internet to publicize and appeal, so as to form a harmonious, friendly, energetic campus atmosphere with good values.

3) **Encourage college students to establish and participate in their own online communities**

College students should make full use of the convenient means of communication provided by the Internet, give play to their own characteristics, and create or join the local network community. Through the communication between the members of the community, gradually expand the scope of their own friends, exercise their social ability, but also through the spread of the community, through continuous attempts, so that their personal advantages are fully played.

5   Conclusions

With the rapid development of mobile Internet and the arrival of the "Internet +" era of network media, people's way of receiving and using information has undergone great changes, and mobile learning has become an important part of life. Although mobile learning based on recommendation algorithm is more targeted and convenient, it also makes the information that college students are exposed to more homogeneous, making it more difficult for them to obtain more extensive information that they do not know. Therefore, although network media can promote the formation of college students' self-identity in some aspects, it will cause college students to have identity crisis and hinder the improvement of self-identity. As college educators, ideological and political education should be integrated into mental health education, student-oriented, educator-led, build a practice platform, and give full play to the advantages of network resources to help college students construct correct self-identity.

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