A Model of Micro-course Evaluation Based on User Experience

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Abstract. At present, researches on micro-course mainly focus on design, development or application, and rarely involve evaluation of micro-course, especially from the perspective of user experience. To this end, from the perspective of user experience, we developed a theoretical model of user experience evaluation of micro-course. Firstly, we introduced the concepts of user experience and micro-course. Secondly, we discussed various research methods, including literature research, expert consultation, questionnaire survey, analytic hierarchy process and other research methods. Finally, based on the above discussion, we developed the theoretical model of micro-course evaluation based on user experience, and then discussed the model in detail.

1. Introduction
Mr. Tieshen Hu first proposed micro-course in China in 2010. Since then, because of its "micro" characteristic, it has attracted the attention of a large number of education experts and scholars. In recent years, in order to catch up with the development of global education informatization, China has issued a variety of policy documents on digital education resources, which has effectively promoted the construction and development of micro-course resources. But now the micro-course resources on the Internet are all the same, with quantity but no quality, and there are many problems of separation between content and form, usually the learners' experience process is neglected and the learners' personalized needs are not combined. Therefore, we need to establish a micro-course resource evaluation standard from the perspective of learner experience.

The current research on micro-course evaluation is slightly insufficient. The evaluation from the perspective of user experience lacks of systematic, scientific and operational tools. The perspective based on user experience is a new starting point for micro-course evaluation research, which can provide a new idea for the theoretical research of micro-course evaluation. And the evaluation model of micro-course based on user experience can provide certain reference suggestions for front-line educators, micro-course designers and developers, so as to design and develop educational and teaching products that meet the needs of learners, so that learners are willing to learn and enjoy learning. Therefore, it is of great theoretical and practical significance to construct the evaluation model of micro-course based on user experience.

The evaluation model of micro-course based on user experience refers to those major factors that are important in measuring and evaluating the quality of micro-course. In general, it is presented in the form of systematic evaluation scale. Based on this, we utilized the relevant classification theory of user experience and combined the characteristics of micro-course to explore the element composition of this evaluation model, and to build micro-course evaluation theoretical model in the view of user experience.
The paper is organized as follows: in section 3, we introduced the concepts of user experience and micro-course, and the relative research status; in section 4, we gave the evaluation model of micro-course and then discuss the key elements in the model in detail. The last section concluded the paper and proposed future research areas.

2. Relative Works

In this section, we introduced the concepts of user experience and micro-course, and then discuss the relative research status.

2.1. Concept of User Experience

In general, there is no uniform definition about the concept of user experience. It was first proposed by Norman in the 1990s. He believed that the user experience of products should meet the needs of customers, make users happy, bring extra surprises to users, and design products should be simple and generous, and so on. The ISO presented the definition of user experience: refers to people's cognitive impressions and responses to the products, systems or services that they have used or expect to use [1]. "Experience", the core word of "user experience" in Ci Hai, is defined as "personal experience and feeling". This study thinks that user experience is an internal subjective psychological state process generated in the process of "contact" and "use" interaction with the product, driven by certain user needs and motivations, among them, "touch" and "use" can be in the real environment or virtual environment on the network. User experience specifically includes the user's perception of the function, appearance, emotion and other aspects of the product.

2.2. Concept of Micro-Course

The concept of micro-course was first proposed in 2008 by David Penrose. David was a senior mathematical designer at San Juan College in the United States who advocated using 1-3 minutes to guide students to actively construct the knowledge they need. Its core value requires teachers to closely link the teaching content with the teaching objective, so as to produce a focused learning experience [2]. In China, due to the different research perspectives of experts and scholars, there is no common understanding of the concept of micro-course.

Some of them are representative, such as Tiesheng Hu thinks that micro-course is a visual online video network course that supports a variety of learning methods and it is carefully designed and developed by teachers for certain subject knowledge points (such as key points, difficulties, doubts, examination points, etc.) or teaching links (such as learning activities, themes, experiments, tasks, etc.) with micro-teaching video as the main carrier [3]. Professor Yuping Li believes that micro-course is a new way of reading between text and film. It is an online teaching video about 5 minutes in length, consisting of three parts: text, music and pictures [4].

Therefore, by sorting out the existing scholars' views on the concept of micro-course and combining the research purpose of this paper, the author defines the micro-course as follows: Micro-course is a short course with complete teaching links, with important knowledge points as the core and teaching objectives as the basis, which is made into micro-video as the main form of presentation.

2.3. Analysis of Relative Research Status

Through literature research, it is found that the existing micro-course evaluation is generally carried out by referring to the existing online course evaluation standards and combining with the characteristics of micro-course itself, and there are few researches on the evaluation from the perspective of "user experience". Among them, Ze Tang took the evaluation of teachers' micro-course works as examples and combined with the method of teacher interview survey, and finally divided the evaluation index into three aspects: course content, technology and art [5].

From the perspective of educational resources and online course evaluation, Dongdai Zhou et al. respectively discussed the influence and difference of teaching resources evaluation and online course evaluation on micro-course evaluation, so as to provide reference and inspiration for future generations [6]. Hedong Yin applied the teaching design theory and combined with the evaluation experience of micro-course competition, and got eight evaluation dimensions: topic selection, teaching
design, interactive design, auxiliary resources, micro-course technology, courseware art, courseware use and teaching effect [7]. According to the characteristics of micro-course, Pengge Li et al. constructed the micro-course evaluation system from five dimensions, including topic selection, teaching process, work specification, auxiliary resources and effect and benefit, and finally proposed the implementation strategy of micro-course evaluation [8,9].

However, no matter from the perspective of online course resources or micro-course competition, there is the problem of paying too much attention to the teaching function and ignoring the students' own feeling. Therefore, it is particularly important to construct evaluation indexes of micro-course from the perspective of users, namely learners. At present, there are few literatures on micro-course evaluation from the perspective of user experience, and there are few domestic researches from the perspective of micro-course user experience evaluation. In the article "Design of Evaluation Index System of Micro-course Based on User Experience" written by Professor ping Sun from Northeast Normal University is of reference significance. From the perspective of user experience and according to the acceptable model of computer, this paper proposed a micro-course evaluation model based on user experience [10,11,12].

3. The Model of Micro-Course Evaluation Based on User Experience

In this section, we first proposed the evaluation model of micro-course and then discuss the key elements in the model in detail.

3.1. Theoretical Model

By referring to the evaluation standards of online courses and relevant research on the evaluation of micro-courses, the famous scholar Leming Liang believes that micro-courses should have the following characteristics: teaching, technology and interaction [10]. In addition, considering that the visual effect of micro-course also has a certain influence on learners' learning, the author takes artistry as the fourth characteristic.

The common classification methods of user experience mainly include the five-factor model of user experience, Pine experience classification and Bernt-Schmidt experience classification, etc. Among them, it is found that there is a one-to-one correspondence between the four aspects of Pine's experience classification, namely education, escapism, aesthetics and entertainment, and the four basic features of micro-course. Therefore, basing on Pine's experience classification model and combining with the analysis of the four basic characteristics of micro-course, the author constructed the theoretical model of micro-course evaluation based on user experience as shown in Figure 1, and according to the corresponding relationship of each pair, four dimensions of micro-course experience evaluation are summarized: content experience, interactive experience, efficiency experience and aesthetic experience.

Among them, the educational experience in Pine experience classification is combined with the educational characteristics of micro-curriculum to form content experience. The content experience dimension should reflect learners' active absorption of micro-course knowledge, which is the most basic evaluation dimension of micro-course user experience and reflects the essential teaching function of micro-course. It determines what micro-course learners learn and how they learn and what they finally get.

The escapist experience in Pine's experience classification is combined with the interactive characteristics of micro-course to form interactive experience.

Interactive experience is the active and interactive experience of learners in the learning process of micro-course, emphasizing the participation and immersion of micro-course learning. Therefore, it is necessary to create scenes close to learners' life experience, which is conducive to improving learners' acceptance of knowledge learning.

Aesthetic experience in Pine's classification of experience is combined with the artistic features of micro-course to form aesthetic experience. Aesthetic experience is learners' external sensory experience of micro-course and also it is the beginning of experience process. Good aesthetic experience has a crucial effect on other experience dimensions. The experience of entertainment in
Pine’s experience classification is combined with the technical features of micro-course to form the experience of efficiency.

Figure 1. The model of micro-course evaluation based on user experience.

Efficacy experience is the level of performance and function of micro-course experienced by learners during learning. It is also the technical key to the presentation of other experiences, and it is related to the smooth development of the whole micro-course learning. In short, a better performance experience can add color to the overall experience.

3.2. Key Elements of the Model
Micro-course is an educational course product, so its teaching must be reflected, and content experience is the test of micro-course teaching. Content experience is a broad concept, it is not only targeted at the specific course knowledge content in the narrow sense, but refers to all the teaching process related to the knowledge content of micro-course. Its purpose is to judge whether the micro-course products have the guidance and help for learners in knowledge learning and whether it plays a positive role in emotional guidance for learners in their learning process. Thus, when we evaluate the content experience effect of micro-course, we may judge from the two aspects of learning objective and learning content. Among them, learning objective is mainly divided into cognitive domain, motor skill domain and emotional domain according to Bloom's target classification theory, and the learning content is mainly based on the main relevant links of the teaching design to judge whether its content conforms to the teaching objective, whether the content is scientific and systematic, and whether the organizational structure is reasonable and so on.

Interaction experience is a central part of the user experience of micro-course, however, because of the particularity of micro-course, it cannot achieve face-to-face interaction between teachers and students or between students and students. Therefore, how to design and carry out online interaction process to achieve satisfactory interaction effect of learners is the research focus of micro-course interactive experience evaluation. How to design the online interaction process and how to implement
it to achieve satisfactory interaction effect are the research emphases of interactive experience evaluation of micro-course. Good interactive experience is conducive to the active participation of learners, immersing them in the learning situation, and stimulating their enthusiasm for learning. In this study, interactive experience is divided into immersion and interaction. Immersion focuses on the experience of interactive environment, and it is reflected in the sense of situation, sense of hierarchy, sense of control and sense of satisfaction in the interaction process. And interactivity has different interaction types according to different interaction objects, including man-man interaction, man-machine interaction and content interaction. Immersion and interaction work together and promote each other.

Efficacy experience evaluation refers to the efficiency of micro-course operation, which is mainly reflected in the function and performance of micro-course system. Better efficacy experience is the technical guarantee for the course. Some indicators of this dimension refer to the computer system acceptability model of Nielsen, and the evaluation indicators are mainly constructed from the two aspects of usability and learnability. Among them, usability means that the micro-course is qualified in technical operation and can be used by learners, and it is the most basic requirement of micro-course production. In this study, there are four three-level indicators under the second-level indicators of usability: stability, accuracy, compatibility and fault tolerance. And learnability refers to the higher learning efficiency of learners, easy for learners to grasp the knowledge points of the course, low cost. The three indexes under the second index of learnability include navigability, recommendation, language expression and operability.

Aesthetic experience refers to the subjective psychological feeling brought to learners by the visual presentation of the interface design of micro-course, which is the interface between the outside world and the content of micro-course, and it can have an important impact on the experience effect of other dimensions. This study divides aesthetic experience into two secondary indexes: layout structure and media elements. The layout structure mainly judges whether the location, format and style of all elements in the micro-course are harmonious, consistent, concise and beautiful. And the media element is reflected in the use of media elements to achieve the right amount and clarity.

4. Conclusion and Future Works
In this paper, from the perspective of user experience, we developed a theoretical model of user experience evaluation of micro-course. After introducing the main concepts and research status of user experience and micro-course, we developed the theoretical model of micro-course evaluation based on user experience, and then discussed the model in detail.

For future works, based on the theoretical model of micro-course evaluation given in section 3, we will construct the evaluation index system of micro-course and calculating the weight of the evaluation index.

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