

Construction of Mobile Teaching Model Based on Connectivism Learning Theory in Cloud Environment



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Abstract. On the basis of introducing the characteristics and development of mobile learning, this paper summarizes the learning theory, design theory and teaching theory of mobile learning, analyzes the mobile computing platform, mobile communication technology, software technology, cloud computing technology and virtual technology. It focuses on the construction process of mobile teaching model in cloud environment based on connectivism learning theory, including mobile resource construction process and the analysis and design process of mobile learning platform which provides an important theoretical support and practice verification for the establishment of learning model based on connectivism.

Keywords: connectivism learning theory, cloud environment, mobile learning, mobile teaching model, resource construction

1 Introduction

Mobile learning is a new type of learning method for learners to acquire services and knowledge anytime and anywhere according to their own needs under the condition that the wireless communication network is unimpeded by mobile terminal equipment. Compared with other traditional learning methods, mobile learning has unique advantages, which can better meet the learners' interests and needs in the new age information environment, that is, mobile learning represents the future of learning.

Mobile learning is a process in which learners learn digitally anytime, anywhere. The main form of mobile learning is the use of wireless mobile communication network technology and wireless communication equipment for immediate access to educational information, learning resources and learning services so to achieve teaching and learning rich interactive process [1]. Mobile learning as a supplement and development of online learning, although there are similarities with the network learning, there are still significant differences.

The position of mobile learning in the learning system is shown in Fig. 1.

Compared with the traditional teaching mode, which is described by the teacher-student class, and the multimedia learning model, the mobile learning has its own unique characteristics, which are mainly summarized as follows:

1.1 Mobility

As the name suggests, the most important feature of mobile learning (M-Learning) is the mobility. In the mobile learning process, learners use mobile devices (such as mobile phones, pad, etc.) and wireless communication network as the information transmission medium. Learning activities are no longer limited to a fixed scene and the learning activities can occur at any time, any place.

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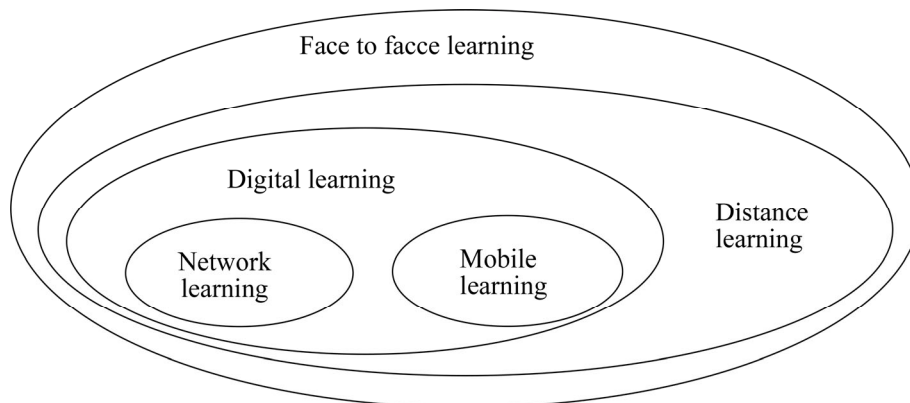


Fig. 1. The structure of learning system

1.2 Personalization

The basis of learners, learning motivation and learning style is different, individual education is the pursuit of ancient education scholars and traditional education in this area has its inherent deficiencies. The difference between the private of the mobile terminal and the individuality between the learners is destined to have the characteristics of mobile learning. Mobile learning can not only enable learners to learn anytime and anywhere, but also help learners to study based on their own interests, characteristics and needs.

1.3 Situationality

Learning is not only a passive acceptance of knowledge, but also a kind of knowledge of the internalization, that is, based on the original knowledge of the construction of new knowledge. Situational cognition study theory holds that learning is the only real learning in meaningful real situations, so that the construction of knowledge can be really promoted and the learners can really master the knowledge. In the process of mobile learning, learners may be in any real situation, can learn about the problems encountered in real life, and understand the essence of knowledge.

1.4 Collaborative

In the process of distance learning, the process of emotional education has been a concern question. In the mobile learning learners can be based on mobile networks and other channels to achieve the sharing of resources, efficient exchange and face to face real-time interaction. The feedback and evaluation between learners and teachers is also flexible and diverse. Learners for knowledge content learning effect, as well as the learning process of emotional factors can be resolved in a timely manner.

2 Theoretical Basis of Mobile Learning

2.1 Learning Theory

Constructivist learning theory. Constructivist learning theory is one of the important learning theories in the field of pedagogy. It focuses on how learners construct new cognition and emphasize the initiative, sociality and context of learning. The theory also points out that there is no unique and definite standard for the understanding of knowledge. Learners are actively building their understanding of knowledge and forming new cognition through their own way. Learning is not a direct copy of the outside world. Learning is based on the learner's existing cognitive experience and structure to build the external things and the process of characterization, new knowledge is built through the meaning of the construction [2].

Constructivism also emphasizes situational teaching and social interaction learning. Through the creation of learning situation, learners can be guided to explore the relevant knowledge and construct new knowledge so to achieve teaching optimization. Constructivist learning theory also attaches importance to the social interaction between teachers and students, students and students. Cooperative

learning and interactive teaching are widely used in teaching practice. Through social interaction learning, learners can carry out two-way interaction with teachers and students, constantly reflect on their own cognitive process, promote the construction and reorganization of knowledge, and finally master the relevant knowledge. The theory of constructivist learning breaks the role of teachers as knowledge transmitters in traditional knowledge transfer. It transforms the role of teachers into the helpers of students' learning. The guide students and students become the subject of learning, so that learners can combined with their own experience and psychological construction of the full meaning of knowledge, and then promote the learners take the initiative to learn to acquire knowledge.

The constructivist learning theory provides a more solid theoretical basis and theoretical guidance for the development and innovation of mobile learning.

Informal learning. There is no strict distinction between formal learning and informal learning. It is generally believed that organized learning is a formal learning in a learning environment created by educators, such as school-based learning in the classroom in the classroom. On the contrary, informal learning is not in the design of the arrangements by the educators and the learning activities are needed to assess. Mobile learning is an informal way of learning.

Informal learning theory holds that learners acquire the main source of knowledge in the process of informal learning is not teaching materials, but rather the rich information obtained from other learners or teachers through interactive learning in the discussion or learning activities. This information is not clearly stated in the textbook, but supplementary information other than the textbook. Informal learning mainly refers to the process in which learners have the purpose or the chance to acquire knowledge in the game and in the communication. Mobile learning is a form of learner who walks out of the classroom, abandons the autonomy of teaching materials, so it is a form of informal learning. Informal learning theory provides theoretical support for the development and progress of mobile learning. At the same time, mobile learning also broadens the scope of informal learning and provides more and more knowledge acquisition for learners.

2.2 Design Theory

The theory of instructional design is a systematic approach to how to analyze and solve teaching problems. It includes a set of relevant principles of teaching and learning, guiding principles and innovative approaches [3]. Teaching design is a technical category, which has three basic characteristics:

(1) The purpose and positioning are clear, that is, how to improve the quality of teaching and promote learners learning in a particular educational and educational context. The effective solution to the teaching problem is the main basis for judging the value of teaching design.

(2) It has a successful experience in solving the quality of teaching with self-contained scientific knowledge and self-accumulation.

(3) It has its own system, scientific, systematic way to analyze the problem and solve the problem which can link the theory and practice closely.

The purpose of instructional design is to solve the reality problem in the actual existence of education and teaching which is the differences between learner performance and teaching objectives. Learner performance includes the knowledge, skills and attitudes that learners already acquire. The goal of teaching is the goal that the learner can achieve after learning. Instructional design is to start a series of specific work, and ultimately narrow the gap between reality and expectations, and promote the realization of learning objectives.

There is a general model of problem solving in instructional design theory which is called ADDIE model. It refers to analysis, design, development, implementation and evaluation. The end result of instructional design is the resources and processes that can be used directly in teaching process. The purpose of mobile learning design and development can also be run directly on mobile devices for learners to learn. Therefore, the theory of instructional design provides a clear theoretical guidance and support for this study.

2.3 Teaching Theory

The explicit expression of learning objectives not only contributes to the development of learning, but also provides the conditions for subsequent teaching evaluation. The purpose of the learning objectives should be to clarify the ability of the subject and the learner to obtain after the end of the study. The

educational goals mentioned in Bloom’s teaching objectives classification refer to the expected learning outcomes that learners can achieve or achieve after a certain period of study, and the results are clearly expressed and visible. Bloom passed the relevant research and based on the integrity of educational goals, the cognitive field of education objectives in accordance with the low to high, from simple to complex norms are divided into six levels: memorization, understanding, use, analysis, synthesis and evaluation. The connotation and characteristics of them are shown as Table 1.

Table 1. Connotation and characteristics of cognitive goals

Goals	Connotation and characteristics	Teaching objectives
memorization	The memory of knowledge materials, including the facts, methods, processes, theory and other information memory.	Describe a knowledge point of the definition, theoretical basis, the development of historical and other basic information.
understanding	The ability to master the meaning of knowledge materials, can use their own words to explain the information.	Explain the connotation and research object of a knowledge point, expound its practical application.
use	Apply the knowledge to the real new situation and solve practical problems according to their own understanding.	Use a knowledge point theory and methods to solve the problem.
analysis	Disintegrate complex knowledge as a whole into the various components, and analyze and understand the relationship between the various parts.	Can analyze the practical problems in education and teaching, and put forward the solution to the problem.
synthesis	Reorganize the various parts of the learned knowledge to form a new knowledge as a whole.	Form a new understanding for the existed knowledge point.
evaluation	The ability to judge the value of learning materials (such as papers, books, research reports, etc.).	Can be used to evaluate the proper use of theory and method from the perspective of values.

3 Technical Support of Mobile Learning

Mobile learning is in the mobile communication technology, mobile computing technology and other related technologies based on the generation and development, so its own has obvious technical characteristics. Therefore, the further implementation of mobile learning and the need for more advanced technology to support, in particular, will provide a powerful impetus for the advancement of mobile learning [4].

3.1 Mobile Computing Technology

Mobile computing technology is emerging with the development of mobile communications technology and Internet technology in modern social environment. It is one of the important areas of distributed computing.

Under the support of mobile computing technology, personal PC or mobile intelligent terminal equipment can realize the transmission and sharing of data information under the condition of wireless communication. The main function is to be able to transmit the information needed by the user accurately and timely to the user, without being limited by time and place. The components of a distributed computing system in a mobile computing environment include fixed service nodes and mobile service nodes where users are no longer restricted by location and can carry mobile devices to keep in touch with fixed service nodes at any location. The user request passes the request and response information between the fixed service node and the mobile service node through the mobile communication network. The architecture diagram of mobile computing is shown as Fig. 2.

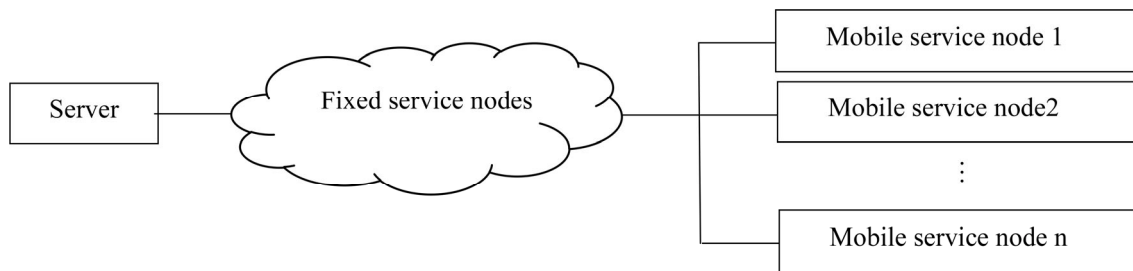


Fig. 2. The architecture diagram of mobile computing

Compared with the distributed computing on the fixed network, the mobile computing mainly has the following main features :

Mobility. Mobile computing is an online calculation which can complete the algorithm operation by the wireless network and fixed network communication.

Connectivity. The information and resource documents can be moved between nodes and fixed network to complete interactive and circulation by a variety of mobile terminal equipment so to meet the different needs of learning.

Diversity. The network mobile devices used in the process of moving is often changing which include high-bandwidth fixed network and a low-bandwidth wireless WAN.

Discontinuity. As the limited of power, network conditions and communication costs and other conditions, mobile computing generally does not work the web. It often works intermittent connectedly or unconnectedly.

3.2 Mobile Communication Technology

Mobile communication technology is the key technology which can solve the network communication in mobile learning process. So far, the development of mobile communication technology has gone through four stages, from the earliest analog mobile communication technology to the widely used 3G technology, and then to the broad prospects of 4G technology. In this process, the data transmission rate of mobile communication technology is increasing, which can provide good technical support and communication environment for mobile learners.

3.3 Software Technology

Wireless Application Protocol (WAP) is a globally unified open protocol standard that provides Internet content and value-added services to mobile device terminals. WAP appeared mainly for the mobile network signal broadband small, low data transmission rate, the signal is sensitive to the environment (subway, tunnel) and other issues. Especially in recent years, WAP technology connects the Internet and mobile communications technology better, so that accessing to a wealth of Internet resources anytime and anywhere becomes a reality. Smart phones, learning machines, Ipad and other mobile devices can access the Internet through the WAP function by installing micro-browser. WAP protocol includes wireless datagram protocol (WDP), wireless transport layer security (WTLS), wireless transaction protocol (WTP), wireless session protocol (WSP), wireless application environment (WAE) and other multi-layer protocol.

3.4 Cloud Computing Technology

Cloud computing is the product of the integration of traditional computer technology and network technology, such as grid computing, distributed computing, parallel computing, utility computing, network storage, virtualization, load balancing [5]. Cloud computing will decompose the computational tasks according to a specific rule, in order to meet the needs of different users. It can complete the calculation, storage and a variety of software services according to the specific needs and application system needs.

Cloud computing is also an Internet-based supercomputing model. In the remote data center, thousands of computers, servers and memory are integrated into a computer cloud. In the cloud computing, “cloud” is the virtual computing resources. It can be large and small, like the cloud in the sky, can be unlimited

expansion and contraction, can dynamically provide users with resources, and can be accessed at any time. For the users, the number of cpu, memory and hard drives are not limited, users can dynamically expand these resources according to their needs.

The architecture of cloud computing. By building a large cloud service network, providing strong technical support, connecting a large number of concurrent network computing and services, and the use of virtualization technology to expand the network capacity of each server, combining their respective resources through virtualization, this is a cloud computing platform. All data processing and data storage in the platform is done through the “cloud” server cluster, which is managed by a unified data processing center and provides supercomputing storage capabilities. The structural model is shown as Fig. 3.

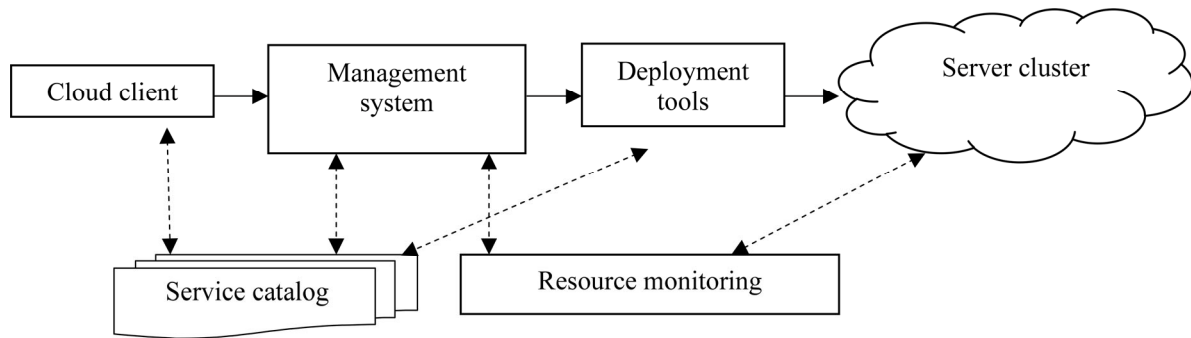


Fig. 3. The architecture model of cloud platform

Users can access the entire cloud platform through the browser, through a simple registration and login, the user can customize a variety of cloud services, can configure and manage their own services. After the user has the appropriate permissions, he can start a list of custom services. If the service is no longer used, he can also unsubscribe custom services. The cloud platform sends the request to the management system server according to the user's choice service. The user requests and passes the authentication in the management system. The system will start scheduling resources to complete the deployment and application of the resource. Cloud platform resource monitoring system module can monitor the use of resources in real time to complete the synchronization between the nodes and quickly make a change response, if the load is too large, it can also load balanced configuration in the shortest time to complete the system load migrate. This will ensure that the resources are distributed efficiently and efficiently to the most in need.

The service model of cloud computing. Cloud computing service is a new business model which provides a wealth of personalized products to meet the individual needs of different users on the market. Cloud services can provide different types of services for different users, including government users, business users, individual users.

Cloud computing service model can now be divided into private cloud, community cloud, public cloud and mixed cloud.

(1) Private cloud

Private clouds are established for the use of an institution alone.

(2) Community cloud

Community clouds are built for use by multiple agencies in a small area.

(3) Public cloud

The public cloud is created by the cloud service provider, and the user uses the resources in the cloud by leasing.

(4) Mixed cloud

Mixed cloud is made up of two or more clouds.

These clouds are bound together by standardization, but remain relatively independent of each other. No matter what kind of deployment model, can provide a more convenient service for specific users.

At the same time, according to the type of service, cloud computing service can also be divided into three categories: Infrastructure as a Service (IaaS), DataCenter as a Service (Daas), Platform as a Service (PaaS) and Software as a Service (SaaS).

(1) Infrastructure as a Service (IaaS)

Users deploy and run their own software on the platform provided by cloud service providers and do

not care about hardware devices.

(2) DataCenter as a Service (Daas)

Cloud service providers only provide some space for users. They can upload and download their own data, but do not care about where the data stored and how to store.

(3) Platform as a Service (PaaS)

Cloud service providers will provide a space with the operating environment to the user, the user can select the operating system version, the database type and the corresponding application environment configuration, to meet the needs of their own software deployment.

(4) Software as a Service (SaaS)

Cloud service providers provide software with their own operating environment to the user. The user can use the software provided by the service provider, and feel that the software seems to be specifically for their only. But in fact the service provider software will be used by many other users. Users do not have to worry about the software operating environment maintenance or data backup.

3.5 Virtualization Technology

Virtualization is the key technology of cloud computing. The concept of virtualization is constantly changing. The purpose of it is to optimize the resources, simplify management, expand the hardware capacity and simplify the configuration process.

Infrastructure of virtualization technology. The use of virtualization technology can make the program more scalable, and also make data access more flexible. Virtualization maps the physical resources of the infrastructure to the driver of the application. Virtualization infrastructure enables optimal combination of resources, reduces costs while improving flexibility. The virtualization infrastructure is shown as Fig. 4.

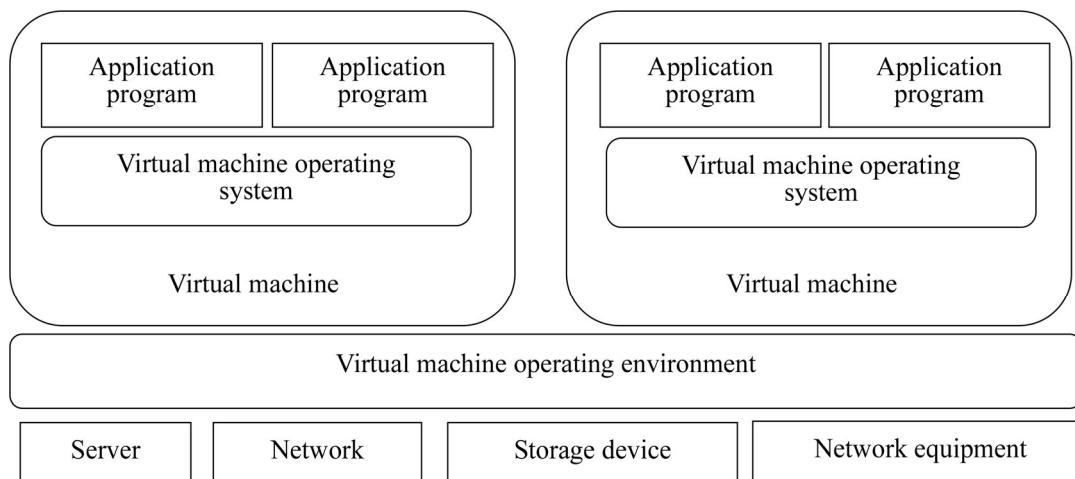


Fig. 4. The virtualization infrastructure

Virtualization infrastructure can create a shared resource pool, accommodate multiple servers, storage and network aggregation, so that the software environment and hardware architecture separated from each other. Users can also maximize the cost savings, build their own optimized data center, complete the creation of shared cloud platform, so that utilization, security, flexibility and availability can achieve a good state.

Server virtualization. Virtualization is divided into storage virtualization, network virtualization, and server virtualization according to application fields.

(1) Storage virtualization

Storage virtualization is mapping the physical storage device to a single logical storage resource pool, and unifying the various heterogeneous storage resources into a single view of the resources.

(2) Network virtualization

Network virtualization is to provide users with a whole virtual network link, whose content is the integration of network hardware and software resources.

(3) Server virtualization

Server virtualization is the direct application of virtualization technology on the server, which

simulates a virtual server into a number of servers to provide services.

The essence of server virtualization is the introduction of a software called Virtual Machine Monitor (VMM), which is responsible for providing hardware resources for virtual machines, and with it, users can implement the operating system. Virtual machine monitors effectively isolate underlying hardware and upper-level applications, making application deployment less restrictive and more flexible. The architecture is shown in Fig. 5.

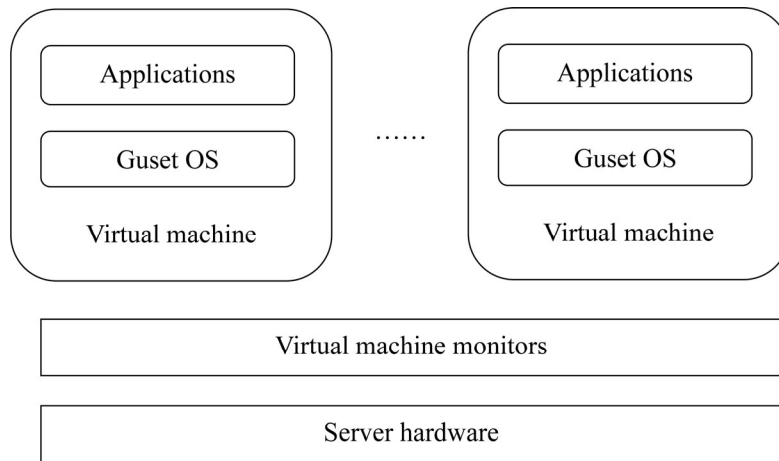


Fig. 5. Server architecture virtualization

Typical features of server virtualization technology are as follows:

(1) Multiple instances

A server can be regarded as more than one server. Server virtualization is the logical integration of the server on the virtual machine, and physical resources, such as CPU, hard disk, memory, network, are in a controlled mode virtual machine.

(2) Isolation

Virtual machines are completely isolated from each other in multi-instance server virtualization. Isolation mechanism is that even if one or more virtual machines crash, it will not affect other virtual machines and data leakage does not occur between the virtual machine. Similar to traditional physical servers, processes or applications in multiple virtual machines communicate with each other through a configured network.

(3) Encapsulation

After the servers are virtualized, they can be expressed as a complete virtual machine environment. Users can easily complete the backup, copy and move maintenance operations. At the same time, server virtualization encapsulates a physical hardware device into a standard virtual hardware device, and provides virtual machine-specific operating systems and application software, so that the deployment of the application will be more convenient, and there will be no compatibility issues.

4 Construction of Teaching Mode Based on Connectivism Learning Theory in Cloud Environment

4.1 Construction of Mobile Learning Resources

Resource construction design concept.

(1) Learners are learning centers

During the development of mobile learning resources, resource builders should accurately grasp the characteristics of learners. Resource construction not only refines to the knowledge point, but also improves the resource structure and allows different learners to extend the self-learning. In addition, because the learners have dispersed time to learn the resources, learning content should be fragmented as possible [6].

(2) Resource positioning is reasonable

In the development of resources, resource developers must first confirm the construction goal is the

technical practice or theoretical academic. The clear definition of resources is the basis for resource construction and determines the overall effect of follow-up resources. In addition, we should clarify a series of problems such as resource object, target user demand, similar resource superiority, mobile terminal attribute, learner network condition and so on. On this basis, we select the content, form and design of resource construction to ensure the resources reliability and validity so to achieve maximum utilization of resources.

(3) A variety of learning patterns coexist

As a result of the differences in their own learning habits and intended purposes, learners have led to the emergence of a diversified learning model, such as autonomous learning patterns, problem-based learning patterns, empirical learning models, cooperative learning models, and mixed learning models. Mobile learning resources should be flexible and optional to meet the characteristics of learners learning requirements.

(4) Online learning and offline learning are unified

As the Internet environment, the learning environment of mobile learning must be inseparable from the network conditions support. Resource builders should consider in the construction process that the local cache offline playback function of the resources should be supported, allowing learners through hot spots, bluetooth or infrared and other functions to share resources, and thus to maximize the realization of the learning needs anytime and anywhere.

(5) The interface is simple and easy to operate

Due to the constraints of mobile learning fragmentation and the constraints of mobile terminal conditions, the resource builder must ensure that the learner can clearly learn the path of the path on a certain size screen for a limited period of time, quickly get started with various navigation functions. Therefore, the interface design should achieve the theme of unity, style, simple and focused. In the navigation function design, resource users should be as the center. Interface and navigation effectively cooperate to ensure the smooth development of learning activities.

Resource construction design process. Based on the above analysis of resource construction concept, principle, reference model and learner's demand, the general curriculum resource design model of Hall is perfected and improved. Based on the spirit of communication theory of connectivism as the basic guiding ideology, Learning and SCORM standards, this paper puts forward the specific ideas of resource development and the overall process shown as in Fig. 6.

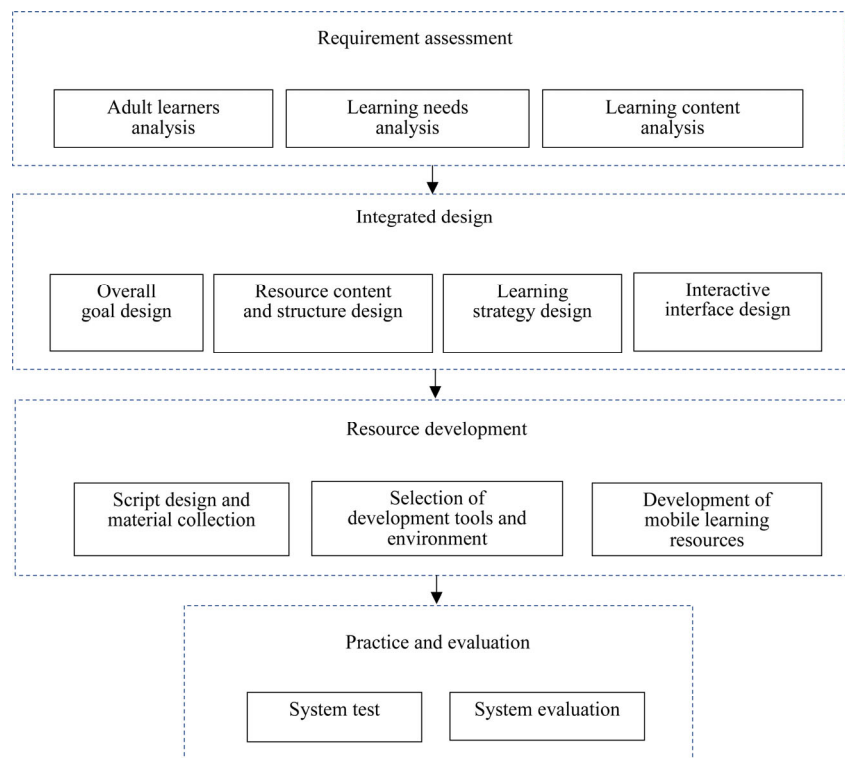


Fig. 6. Mobile learning resource construction process

(1) Requirement assessment

Designers mainly carried out three aspects of the early demand analysis: adult learners analysis, learning needs analysis, learning content analysis. Learner analysis is the foundation, demand analysis is the key, content analysis is guaranteed. In this paper, the author recalls the data from the questionnaire as an important reference for the needs assessment.

(2) Integrated design

This phase includes four aspects: the overall goal, resource structure, learning strategies and interactive interface.

1) Overall goal design

The goal of the resource is to define the direction and general path of the resource development, and all subsequent development content should be realized around the goal of the resource. In this paper, the overall goal of the learning resources development is to develop a comprehensive mobile learning APP which can meet the needs of learners.

2) Resource content and structure design

The system design of learning content concludes three aspects: node design, chain design and learning path design. Node is the knowledge point and the basic unit of learning resources which includes text, pictures, audio, video and so on. Chain refers to the interaction between different knowledge nodes which is the resource migration, reorganization, innovation. Learning path is the linear direction of communication between learning resources. In the order of resource presentation, “inverted pyramid” is adopted. The guide is first presented which includes the learning process, resource highlights and learning objectives. Secondly, on a certain point of knowledge, in-depth argument is proceeding, and finally, information or background material is introduced.

In addition, according to the basic requirements of co-construction and sharing of connectivism, we can see that in the process of mobile learning, learners are not only the consumers of learning resources but also the construction and improvement of resources.

The paper puts forward the concept of open planning curriculum, and focuses on the resource development function which mainly embodies the dynamic modification and the new class to increase the function. Users can reflect their new learning needs and opinions through keywords, labels, etc., depending on the resource suggestion and wish function. The system will reflect the labels that represent these new learning needs by recording the statistics. When the label accumulates over a certain period of time and a certain number is reached, the manual classification program is automatically triggered, and the background administrator will generate a new classification node to meet the new learning needs of the user.

3) Learning strategy design

Learning strategies as a methodology, is the decisive factor in efficient learning. Mobile learning strategies mainly include informal learning, situational learning and collaborative learning strategies. The resource builders in the resources development should grasp the learning strategies of learners commonly used and keep up with the learners’ habit to design and develop resources.

4) Interactive interface design

Interactive interface as a resource access to the portal and channel, directly determine the user’s real-time experience and information access path. In general, the interface design needs to be efficient and in line with the logic task flow. Specifically, the navigation path should be clear and interactive convenience. In addition, designer may also be appropriate to use AR technology to enrich the learning experience. In this paper, the author focuses on the “learning circle” function which can be used to share the information of the learning community, and carries out the cooperation and competition learning function of the surrounding friends through the enhancement of the practical technology.

(3) Resource development

The development phase of the resource includes three steps: script design and material collection, selection of development tools and environment, and development of mobile learning resources. The role of the script is equivalent to the preflight of the film and television resources production, which is the precise design of the various points of the mobile learning resources. In addition, the complete mobile learning resources include personalized knowledge management systems, practice and Q & A systems, collaborative learning support systems, and resource management systems that are directly related to resource learning. These are collectively referred to as learning support systems and are designed to help users to solve the knowledge and emotional difficulties encountered in learning, to enhance learning self-

confidence and sense of belonging.

(4) Practice and evaluation

Mobile learning resources must conduct a comprehensive test before it is put into use for the content and function. Through the test we can find that the loopholes and problems of the resources and changes and improve it timely. At the same time, the test is also a means of assessment, through the test we can examine whether the resources eventually reached the initial target requirements, content arrangement is scientific, structural design is complete, shared pipeline is smooth, navigation is clear, the interaction is timely. In addition, in the follow-up process, the resource designer also long-term track the use of recorded resources to collect the various feedback of learners for the learning resources, and timely update the content of resources to provide a good follow-up learning support services.

4.2 Mobile Learning Platform Design

The main functions of mobile learning platform include course selection system, examination system, questionnaire survey, news bulletin, forum management other major functions. On the mobile platform, the student can complete the course and the examination. Through forums and interactive structures, we can build a platform and a bridge for students, as well as teachers and students. Because of the limitations of the mobile terminal screen, it is particularly important to set the most important function in a limited interface and reduce the cumbersome and complex pages, which makes it easier for the trainees to see the functions they need. The function diagram is shown in Fig. 7.

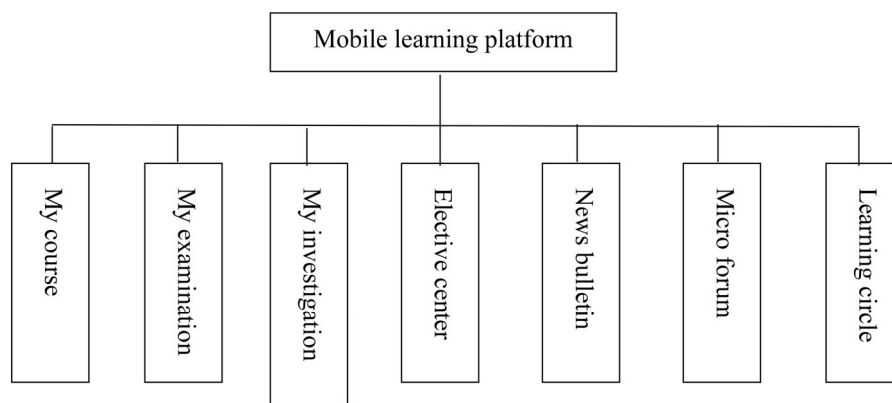


Fig. 7. The function diagram of mobile learning platform

My course. This module mainly implements the system’s learning function. All the selected courses can be displayed in this “My Course” module. Students can click on the course to study, and the learning page displayed after the student’s login will give a brief introduction to all courses.

My examination. This module can display all the exam contents arranged in the background. Students can click on “Take the exam” to enter the examination and start the answer. On this page, we will display the attribute information of the examination, including the examination name, duration, total score, number of participants, start time and the deadline.

My investigation. This module shows all the backgrounds of the questionnaire. Students can see the questionnaire assigned to them and click into the survey. After completing the survey, student can view the completed questionnaires.

Elective center. This module shows all the courses that can be selected and can be associated. The page shows the course name, credits, courseware duration and deadline.

News bulletin. This module shows all the announcements published in the background, and the page displays the name of the message bulletin, brief introduction, thumbnail and posting time.

Micro forum. As a mobile learning model under the theory of connectivism, teachers act as a planner of knowledge. In the teaching process, teachers build a learning network by a variety of ways so that students communicate easily. The interaction between the teacher and the student can be achieved by commenting and discussing in the course of study, micro forum and group interaction. This interaction is not like face-to-face interaction in classroom learning, but rather a cross-regional, cross-temporal interaction. This interaction cannot be compared by classroom interaction.

Learning circle. With the popularity of intelligent mobile devices, especially the rapid development of smart phones, more and more people choose to watch news, read, watch TV by phones, which prompt the major portals, as well as other profitable or non-profit organizations and institutions are involved in the promotion of the mobile. The education industry is also involved in the major institutions. Some training institutions have launched their own mobile portal, or through the WeChat to build their own public number, and the corresponding function are ported to the mobile side, such as: elective, payment, query results, forums and other functions. Everyone is connected together because of the same content, and is also present in other network systems because different content. Everyone is a node described in connectivism. We can connect people together to build a network through technical means so that people with the same attributes exist in the network. In connectivism, the teacher is no longer a role in imparting knowledge, but the knowledge of the designer. The teacher can build platform and design scripts for the students to get knowledge. We can set a course the same attributes for the students, so that students who choose the same course will be built on a network platform and learn the relevant knowledge through the system platform.

5 Conclusion

Internet thinking is a new way of thinking under the network environment. It achieves the real-time interaction needs between students, teachers and students through large data, cloud computing and multi-directional interaction. The three core natures of internet thought are the link, non-centralization and socialization.

Among them, the “link” in the internet thought just corresponds to the “learning channel” in the theory of connectivism, emphasizing the connection path between different knowledge. The establishment of the link is actually the process of learning in the process, focusing on the knowledge innovative integration between different areas and different disciplines.

The basic requirements of “non-centralization” of internet thought are also consistent with knowledge sharing of connectivism learning theory. “Non-centralization” emphasizes the multi-party and common construction, and connectivism learning theory pointed out that each learner is the construction of resources, builders. It puts more emphasis on multi-subject co-construction, in order to achieve a balanced and sustainable development of mobile learning.

Finally, the “socialization” in internet thought directly corresponds to the construction of learning community in the theory of connectivism, both of which emphasize the important role of the user community. On the one hand, the socialized user groups can communicate information more easily and broaden the knowledge, on the other hand, the community of user groups can also provide more scientific and rational development proposals for the construction of products or resources.

Therefore, the spiritual essence of internet thought is highly consistent with connectivism learning theory. Mobile learning is a new learning way under the Internet. Therefore, this article provides an effective theoretical support for mobile learning in the Internet environment.

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