Smart Learning under “Internet+” Education

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Abstract. Smart education represents the trend of education development and reform in the future, and is a new education pattern generated by deep fusion of education and information technology. Smart learning is the necessary means to realize smart education. This paper states the smart learning activities under Internet + education mainly from the connotation, learning environment and learning space of smart learning.

Introduction

The innovation development of education informatization under the guidance of smart education is the big trend of information age, thereby giving impetus to the innovation and development of the education and teaching. Modern economic society, culture, education, science and technology and other areas are pushing all industries to integrate with it under the guidance of “Internet +” concept. With the new engine of “Internet +” guidance, “Internet +” need to be given full play to the role in education, to explore the new ideas of education, look for new road of education, achieving the perfect combination of education and technology.

Smart Learning

IBM put forward “smarter planet” in 2008 for the first time in *Smarter Planet*. Then the concept of “smart planet” was quickly expanded to various fields, and then smart city, smart health, smart transportation, smart grid and other concepts appear. Education field, of course, has no exception. Smart education is generated with the combination of “smart planet” with culture. Under the information technology support, smart education has obvious era characteristics, and it mainly cultivates beautiful and practical, good personality, pragmatic and intelligent talents with initiative practice ability. Under the influence of new generation information technology cloud computing, big data, internet of things, ubiquitous network and so on; all countries are in the racing to develop smart education construction to keep pace of the era. The wave of smart education promotes the change of education mode and the way of learning. Learning is the important representation of ability view, knowledge view and learning view under smart education.

On smart study, two similar conclusions are obtained through data analysis and integration, foreign scholars believe that it is to promote efficient interaction between learners and learners and teachers in a self-designed environment under the integration of information technology and learning resources. Domestic scholars believe that smart learning takes the learners as the center of self-learning, it can flexibly use modern information technology on demand and efficiently access to learning resources to promote learners' meaning construction, and realize the development of advanced thinking ability.

Smart learning is different from previous network learning. Digital learning is a simple interaction, lack of perception of learning environment, but smart learning a new kind of study based on the existing digital learning, mobile learning, and ubiquitous learning, which can fully grasp the abundance and complex of resources, reflect the initiative of teaching mode, interactivity and flexibility of learning way. It is a kind of new supporting, scalable and customizable study way, and its implementation form should meet the requirements of “anytime, any-where, something, any resource, any method and any idea" (at anytime, anywhere, anybody, any resource, anyway, any idea”). It is a physical and virtual environment fusion, supporting both traditional learning activities, and extended learning activities outside. Smart learning embodies that it can implement efficient,

dedicated, demanding and personalized learning.

Theoretical Basis of Smart Learning

Social Cognitive Learning Theory. Social cognitive theory refers that the learning environment and students' learning skills have intimate connection. In 21st century, the international community generally believes that students should have critical thinking, collaboration and communication, and creation and innovation ability in addition to mastering the traditional reading, writing, computing ability. Under the guidance of this goal, student's learning process will inevitably change from passive learning with predominantly accepting and knowledge memory to active learning with exploring and generating knowledge. In order to adapt to the change of learning and promote students' advanced cognition and the acquisition of skills, the learning environment needs to be designed and adjusted again. Smart learning environment is considered to be effectively support the student to obtain the learning skills.

Constructivism Learning Theory. Constructivists believe that learning is a process of constructing learners' internal mental representation. The process that learners acquire knowledge is not to simply memorize the outer knowledge in brain, but to construct the knowledge, acquire new cognition on the basis of the original experience, through the interaction with the outside world. Namely, it is the development course of high-order thinking ability.

Situated Cognition Theory. Situated cognition theory indicates that the essence of learning is the individual participation experience, and the process interacting with other people and the environment, as well as improving the cognitive level of socialization. The influence of smart learning environment on teachers and students mainly include (1) positive influence on students, especially in the field of emotion including learning participation, learning motivation and learning interaction; (2) strengthening the interaction between students and courses; (3) improving the students' interest in learning and self-learning ability, reducing the teachers' workload; (4) helping teachers organize curriculum structure.

Humanistic Learning Theory. Humanism theory indicates that the growth of people originates from the need of individual self-fulfillment, and self-actualization need is the force for the development and formation of personality, and extending the mature. Learning is to meet the needs of self-actualization. Humanistic learning theory takes self-actualization as the maximum inter driving force to promote people to grow and develop, and even the motivation promoting social development. Therefore, self-actualization should become the essential goal of teaching. Smart learning can help activate high-level motivation, realize the free development of students, which coincides with humanistic learning theory.

The Establishment Principle of Smart Learning Environment

Activating Learning Activities Automatically. For different kinds of students, the driver force of learning activity is different, for example, in lifelong learning, many learners learn spontaneously. This type of learners will use a variety of debris time for learning. So the study application of mobile equipment is very popular. However, for students in basic education stage, the learning process is usually boring, forced. One of the design principles of smart learning experience is to provide the learning environment that has natural activation for all kinds of learners, which enables the learners to start learning activities in the relaxed, natural and even cheerful condition.

The Automatic Identification of Learning Situation and Learning Resources. The automatic matching technology of resources and situation has been matured gradually. In our life, automatic positioning, navigation, etc. are often used. In the automatic positioning and navigation, reference resources will be provided according to your position. For example, when you are in studio, the intelligent terminal can provide the resources needed in the studio; when learners encounter problems, intelligent terminal can provide a variety of solutions, etc.

Construction of Smart Learning Space

Activities are inseparable from the environment and space creation, and for the smart learning space to build, this paper mainly expounds from the following several aspects.

Construct Open Service Space. Smart study space should emphasize more on interaction and multiple use of the medium and the sharing of polymorphism of resources and cooperation in innovation processes. As the main place to cultivate senior thinking ability of learners, smart learning space is not limited to the open of learning resources, but emphasize more on the openness of construction service space. An ultra-organizational smart space shall be built up, and in this space, the learners can break through the institutional barrier; perform various learning experience naturally, training learners' creative ability and creative thinking.

Creation of Situated Learning Service on Demand. Smart learning space can provide learners with situated learning service that can meet individual needs. Learners generate a lot of behavior data in the learning process. Study diagnosis, decision making, accurate delivery and multivariate evaluation for learners can be done through these data. It is also the scientific basis to meet the learners' adaptive learning service. On-demand learning services can mine and analyze the action data of learners, and form a visual image of line chart, thus each learner's learning status and advantages and disadvantages can be comprehensively and objectively understood, which can accurately deliver the learning resources in accordance with the learners' characteristics, learners' learning enthusiasm can be stimulated, and learning efficiency also can be improved.

Construction of On-Line and Off-Line Seamless Learning Environment. E-commerce cited the concept of online and offline in the earliest time, that is 020, using the advantages of online to promote offline marketing, which is quite similar with smart education. The final learning purpose is to meet the needs of self-realization, namely the application and self-promotion. Therefore, smart learning space constructs seamless learning environment based on the idea of online and offline. So learners can enjoy the superior intelligent, personalized learning service in the virtual space, completing the internalization of knowledge, and completing the migration of knowledge in the offline physical space.

Constructing Ecological Learning Space. Smart education takes humanistic learning theory as the guide; therefore, it is assumed that learners are both the starting point and ending point of smart education. Smart study space should have the ability of self-controlling, self-perfection and self-development, with the functions of openness, balance, self-organizing, and other functions. It is the precondition of constructing intelligent learning space to building an ecological learning space. In this space, learners can fully enjoy instant sharing and communication, cloud storage, mobile intelligence and visual collaboration service; advanced thinking and concept, innovative knowledge and skills, etc. can be shared at any time, so this is an ecological learning space.

Conclusion and Prospection

In order to meet the social demand for innovative talents and speed up the transformation from a great manufacturer country to a great smart manufacturer country, in the 4.0 industry era characterized with internet of things, big data and cloud computing, new type of talents with innovation ability and advanced thinking should be cultivated. Education teaching and reform under the new era has new demands, and smart learning is one of the new learning styles in smart era. It mainly focuses on the cultivation of ability to act, thinking quality, and innovative consciousness, and its core idea is that it can make learners perform spontaneous learning and cooperative learning. It supports students to obtain the development way suitable for personal thinking characteristics, providing students with a good learning experience and specific feasible methodology for the realization of smart education. In the subsequent research, smart learning evaluation standard should be made. The construction of smart learning model and the practice of smart learning theory lay foundation for better promotion of smart learning.

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