

# **Construction of College Students Learning Platform with Deep Learning under the Learning Science**

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## **Abstract**

*With the deepening of learning research, people gradually realize that the deep learning to adapt the current era is an important and effective learning methods and learning concept. Especially under the background of information, how to realize the depth of learning under the network learning environment become the concerns of the education. With the instruction of the deep learning science' theory, the article analyzes what characteristics the depth of the learning platform is possessed.*

**Key words:** learning science, deep learning, learning platform

## **1. Introduction**

Highly information-based era of knowledge economy requires the learners have a solid knowledge foundation, a more effective way of knowledge processing, more flexible knowledge migration ability, just embodying the memories of declarative knowledge and procedural knowledge is not enough, what's more, it requires seep understanding of complex concept, can use complex concepts for knowledge innovation, and create new ideas and new products. It is modern times that require deep learning. The current education information has experienced a massive investment of hardware for more than ten years and has been under the situation in which the hardware has been improved, however, the plenty of platform and software services don's arouse a significant change in study. The reasons included as follow, the software platform provides a shallow level of the learning process, and a lack of mechanism to promote the students' reflection and deep thinking. Therefore, the education needs to seek how implement deep learning in network learning environment under the guidance of advanced learning theory in the modern times. it is important to promote the learners' deep learning software platform.

## **2. The origin and the connotation of the learning science**

With the development of brain science and the progress of research method, cognitive science has been gradually studying human how to learn from the angle of the multidisciplinary since 1970s. At the perspective of the learners', cognitive science focus on how learning happens at the first time, in which learners highly thought of as the main body of the learning process, moreover, it supports and promotes people's learning activities through the integration of multi-disciplinary view research, as result, learning science comes into being. More importantly, the republication of *How People Learn* (Branford, Brown & Cocking, 2000) makes system knowledge for people to study science. Learning science is the study of the interdisciplinary field of teaching and learning, which relates to Cognitive Science, Psychology, Computer Science, Anthropology, Sociology, Information Science, Neuroscience pedagogy and teaching design, etc. Away from the traditional situation of professor, studying science not only pays attention to the formal learning in class, but also to the informal learning out of class, besides that, it wants to understand the cognitive process through research, and devotes the science knowledge to the design of all sorts of learning environment, and enhances the depth of learning. In conclusion, the ultimate goal to learn science is to integrate the knowledge in the multiple fields in order to promote learners deep learning environment for learning.

## **3. The definition and characters of deep learning**

Depth is typical constructive learning and a kind of active learning method. According to the definition of learning on constructivism, depth on the basis of the understanding of learning, learners will be able to critically learn new ideas and facts, even put them into the original cognitive structure. Furthermore, learners can link various thoughts of the existing knowledge to the new situation, and make decisions and solve the learning problems.

Its main features as follow: deep learning emphasizing on active learning, critical understanding; emphasizing on the combination between the old and new knowledge, reconstructing knowledge system; using knowledge migration, formation of problem-solving. The final result caused by depth is the formation of higher-order thinking, cognitive level to advanced development stage. That is, according to Bloom's Classify the Learning Objectives, depth embodies the abilities of application, analysis, comprehension, evaluation, etc.

## **4. The characters of Learning platform under learning science**

Learning science considers the Constructivism Learning Theory, the Connected Learning Theory, the Situation Metacognitive Theory, and the Cognitive Learning Theory as the foundation theories. Under the instruction of learning sciences perspectives of theories, this article explores what characters the network learning platform should have to become effective online learning environment. As for intelligent, learning science focus two kinds of real situation, the formal learning and the informal learning. Formal learning is limited in class, however, the students 'knowledge extended mainly rely on informal learning, which may occurs in any environment. Therefore, with the help of the physical properties of the display terminal dynamic, the learning platform under the horizon of science learning should have terminal display adaptability, can adjust content format to adapt to a variety of display terminal (computer, mobile, handheld, PDA, etc) and the operating system. What's more, according to user's learning record dynamic, it can adjusts the learning content presentation sequence, feeds back information, and lies a solid foundation for the realization of the

depth study.

#### **4.1 Resources Construction.**

The creator of a platform, who is the key platform builder on the resources of the traditional learning builder, spends a lot of time and energy seeking more abundant learning resources for different types of learners, unfortunately, these resources quantity and quality may not satisfy the ever increasing number of learners' demands so that learners' interest in learning will be affected, such as the initiative reduced, worse learning efficiency and so on. Constructivism emphasizes that the students can deeply understand the concept by participating in their own study. Therefore, the learning platform under the horizon of science learning should allow learners to participate in the resources construction, pay to the collective wisdom of sharing, make learners transform from knowledge of the consumer to the creators and the uses of knowledge. Only by these methods can it improve the resource update speed, provide different types of learners with more types of learning resources, and meet the needs of personalized learning, realize the depth learning.

#### **4.2 Learning Activities.**

Learning science emphasizes the understanding learning. Only by deep understanding can learners learn declarative knowledge and procedural knowledge in a more profound way. Moreover learners can migrate knowledge to the real situation. In summary, it is very important to promote students' comprehension of the design of learning activities. As for Desmond' learning and teaching of integration theory pointing, learning content and learning activities effectively combined is to ensure the students has been changed accordance with the teaching goal in knowledge, skills and attitudes, which is considered as an essential condition of deep learning process. The single activities design on traditional platform make learners can only do some low and shallow learning, and even be lack of understanding of complex knowledge and knowledge transfer activities. The nature of studying activities under the scientific activities is the content and knowledge creation and output learning activities. Therefore, learning activities not only can guide the learners to achieve the goal of multiple cognitive levels, but also support different curriculum design. It makes learning activities more targeted to promote learners input to a great extent. Moreover, the learning activities are able to contact the existing knowledge with new knowledge. The deep interaction between learning activities and learning content promote learners to advance thinking ability training and to realize the deep learning.

#### **4.3 Negotiation Session Environment.**

Connectionism finds it important that learners in different areas, in different populations, present the connection between different ideas and concepts, identify paradigm and create meaning. Knowledge is a communication result between people and society cooperation. Collaborative learning includes consultation and sharing. Study groups can do together in the process of interaction between the maintenance and construction of the same topic. Therefore, the platform under the horizon of science learning open content edit permissions, should be based on the tool supporting multiple learners collaborative content, group collaborative construction of knowledge system, and can edit comments on others the knowledge of the editor, during which high-order thinking ability is formed in the collision of ideas.

#### **4.4 Inquiry Learning Situation.**

Situated cognition theory points that knowledge is not obtained by teachers, but are the attributes and interactive products between person and physical or social situation. Situation is an important and meaningful part of the whole learning. When learning is embedded in the use of the knowledge of the situation, and the situation for learners achieves the learning goals with the background of support, meaningful learning can occur. Therefore, to study inquiry learning environment under the science learning should treat the problem of complicated actual life as a learning environment to stimulate students to actively participate. Or, adopting the way of asking question constantly guides the inquiry-based learning to solve problems, transfers the knowledge into real life situation to solve practical problems and to achieve deep learning.

#### **4.5 Reflection.**

Metacognitive theory is that the individual in learning should use some strategy to assess their cognitive activities, carry on the supervision, control, adjustment; the individual lays the basis for deep reflection and learning by evaluating cognitive activities to change cognitive target, cognitive strategies and cognitive operation, or with the method of choosing effective planning to study and solve problem Traditional way of platform is generally summative evaluation, learners can get a test scores with the purpose of improvement. Therefore, the evaluation under the science learning pays more attention to learning process, which is not only good for finding the problem in the process of learning, but also good for making objective and fair scientific and reasonable evaluation to the students' behaviors, efforts and academic progress. As result, it arouses the enthusiasm of students' learning Initiative and creativity, stimulates students' interest in learning, and promotes students to reflect on and to achieve deep learning. From the point of view of implementation, on the one hand, evaluation system can supervise and track the learning process, record the information of the whole learning process, through which learners reflect on the learning process, adjust learning methods and learning strategies to implement deep learning; on the other hand, the evaluation system supports multiple evaluation, such as evaluation of peer mutual, teacher, and self-assessment. All in all, it tries to evaluate all aspects of correct learners, perfects their knowledge structure through others evaluation, and strengthens the learners' assessment and adjustment in the learning process.

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