Case Study Applied to Smart Learning's Quality Management for Working Employee

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The International Academic Forum 2015
Official Conference Proceedings

Abstract
Emergence of diverse smart devices by developing information and communications technology has affected every phase of life. These devices able us to pursue various conveniences of lifestyle. The smart device learners now have an active demand and they are asking for the most appropriate learning service for technology's evolution and proliferation. With the change in smart learning environment, smart learning adapts to working employee improvement training. Through the introduction of smart learning, more training chances will be provided for active learning of working employees and training result seems to improve. However, problem of low program quality has risen due to expansion and overproduction and criticism is being made which can lead to decrease of the education quality. Due to this problem, the exertion to reform the quality of education service by systematic management of smart content is demanded in several learning fields. Therefore, this study is trying to introduce Korean examples to increase the effectiveness of working employees' ability improvement training. This is to improve smart learning quality by making evaluation sheet and conducting pilot tests. Thus providing qualified smart learning process to training market.

Keywords: Smart device, Smart learning, Quality evaluation index of smart learning

Introduction

While e-learning was a one-way form applicable in web-based environment, learning type in the smart environment aims bidirectional learning with learner-centered education. This type is possible by the combination of smart infrastructure (such as smart phone, tablet personal computer and smart television) and software technology (such as social network and virtual reality). The evolution and expansion of technology is demanding the most suitable learning service based on the needs of proactive working employee.

Sunwoo Nam(2014) said that the term smart learning started with the development of smart phone typified by iPhone made in Apple, the United States. Although a number of scholars have studied about the term, it is not academically defined.

Adapting Education to the Information Age(2011) referred that smart learning is not only an intelligent and personalized learning system but also a power system which can innovate whole educational system including learning environment and contents, teaching method and evaluation. In this paper, it mentions that SMART could be interpreted as a learning method of Self-directed and Motivated, Adaptive learner's level and aptitude, Rich resource, Technology embedded. Smart learning is an image of future education which has characteristic of education environment where any information devices can utilize hardwired and wireless network in learning. In addition, smart learning means extension of time, space, learning materials, and method surpassing the limitation of traditional class instruction.

Index		Content
S	Self-directed	Learner is changed from knowledge consumer to leading producer and instructor is altered from knowledge transmitter to assistant via smart learning.
M	Motivated	Smart learning learner's interest is aroused by restructuring knowledge from formulaic text centered knowledge to experience based one.
A	Adaptive	Learning facility evolves from the already existing place of transferring massive amount of knowledge to the place of supporting learning suited for level and aptitude.
R	Resource free	Public, private, and individual institutes freely use knowledge contents on education.
T	Technology embedded	Various learning methods are viable through information technology which opens learning tools to people.

Source : Adapting Education to the Information Age. 2011

Figure 1: Smart learning characteristics

The Study

There are three reasons why education fields including distance learning and e-learning, smart learning are stressed as the necessity of quality management. First, highly arguing that quality of education resource and process should be unveiled to the public, people claim responsibility for the educational institution(Jaewoong Kim, et al., 2000; Youngju Joo, et al., 2005; Hulpiau & Waeytens, 2001; Robinson, 1999). Second, with educational market becoming globalized and corporatizaed and showing up a variety of programs from Korea and abroad, ensuring competitiveness is the most significant factor to put differentiation against other companies(Robinson, 1999). Finally, recent concerns and worries have been expressed at decline in quality of education based on negative appraisals about traditionally conformed of training(Youngju Joo, et la., 2005). The spread of traditional e-learning and cyber education, smart learning appeared with quantitative expansion and overproduction of educational program, and this is resulting unfavourable sentiments about the quality level of the programs. While these problems are pointed out, it is not easy to achieve the goal of learning just by providing various educational program or service to the people. For these, effort to make better condition of service quality is requested by systematically managing whole production process of e-learning, cyber learning, distant learning and smart learning areas.

Because smart learning contents are fundamentally operating in the mobile devices such as smart phone and pad, it needs to review the researches for not only mobile learning, quality management of contents or program, evaluation standard or criteria but also characteristics and quality management of smart learning. By comparison with wire based e-learning, wireless network centered mobile learning has diverse feature in technological and educational ways. First, Ik Jang, et al.(2003) emphasized the features of mobile learning which is mobility, accessibility, expandability, hurriedness, Secondly Insook Lee(2006) said nomadism, interactivity, extension of sharing culture, improvement of reflective learning. Thirdly Ogata, et al.(2004) argued the permanent management of learning resource, accessibility, immediacy, contextuality of learning activity. Especially, Junghoon Leem(2009) integrated characteristics of mobile device, content, and education that smart learning had and proposed six marks such as mobility of learning space, utility, usefulness of educational resource access, personalized learner's subject, simplicity of learning content, interactivity with learner, and contextuality of learning activity.

When smart device was in the initial phase, smart learning meant one of learning types that can work with simple educational application or visual of the video by using the devices. Nowadays, however, as function of smart phone or mobile devices is growing to intelligent and advanced, smart learning is extending its meaning to personalized one. Junghoon Leem(2013) synthesized various research related with definition, meaning and characteristic of smart learning and deducted the five core properties that the learning must have, (1) the newest smart device based instruction with smart technology, (2) intelligent, adaptive and customized instruction, (3) social interaction and collaborative learning utilizing social network, (4) convergence combining formal with informal learning, (5) boosting tactical mind and problem solving learning. Hyunchule Kim(2011) suggested that four characteristics that smart contents must have is participation, sharability, collaboration and accessibility, also, Byungro Lim, et al.,(2013) presented five things: equipment utilization, cooperative

interaction, scalability of knowledge, immediate accessibility and contextual adaptability.

1. Smart learning type for working employee

For the corporate e-learning market in Korea, in the survey conducted in 2010, the agency responded that had the investment plans for 2011 smart learning accounted for 50.5% as a remote training institutions, in accordance with the continuous expansion of participation and investment in the smart environments, smart learning of remote training institutions are expected to have been larger than before(Sookyoung Lee, et al,. 2010). Thus, when considering the number of smart phone subscribers and the level of participation of domestic smart learning in e-learning training institutions, readiness of smart environment based on smart learning for the consumers of remote training(working employees) and suppliers(training institutions) can be seen at a very high level when compared to 1998.

In the e-learning environment and training environment of Korea incumbent, there are four application types of smart learning developed for quality management.

Index	Contents
Smart devices dedicated training	■ This is mobile-specific training courses and utilizing the characteristics and advantages of mobile positively. This learning model is made on a mobile learning and the BA management takes place through learning the system.
Smart devices in parallel training	■ This is learning courses from both PC(internet) and mobile devices available training and makes the connection between the PC and mobile devices progress. This is reflected in the model that differentiates properties between the devices.
Multimedia book-based training	■ This is provided in the form of a multimedia such as video and text, the main content of the training combined digital books(e-book, web-book). This is a type that enables the personalized training level through interaction between the learning content and instructor.
Platform-based training	■ This is not belonging to the type of 1, 2 and 3, however, it leverages advanced information and communication technologies to improve the limitations of existing mobile incumbent vocational training. Moreover, this refers to all types of creative made, attempted to increase the efficiency and effectiveness of the training. Utilizing various mobile platforms, solutions other than those existing in the form of training and remote training types of creative forms are included in here.

Source : Korea University of Technology and Education

Figure 2: Definitions of smart learning type

2. Quality evaluation index of smart learning for working employee

Quality control procedures of smart learning can be divided into two steps. In the first step of quality management, it should be made sure it is related to the job performance

and smart learning that is appropriate and in the second step it should not only check the learning plan activity of smart learning, learning activity for performance, participation of assessment but also written the comment about inappropriate topics.

2.1. Meet the basic requirements of smart learning

In the first step of examination, this should examine the suitability of the relevance and smart learning with job performance. This review aims to ensure that the remote training program meets the screening requirements of smart learning. If the contents receive an appropriate decision as a result of this review, it has determined that the configuration requirements is a smart learning. That is, the contents is recognized with the higher job performance and relationships. However, if it receives an unsuitable decision, this means that the lack of some components related to job performance cannot be recognized as a smart learning. In this step, panels reviews whether the contents of the basic components as a remote training course offers(this includes content delivery methods, assessment items and learning activities.), self-directed training of working employees and it meets the basic requirement for smart learning process by learning this content. If the content is configured to describe the learning materials with the video, since this is one of the types of teaching and learning activities rather than just listening, it must be made within the program together. Detailed audit criteria can be equipped with the basic requirements of remote training process and specifically the questions such as ‘is the characteristic of the smart devices(screen size, interactive method, interface) and functions properly reflected in the training process?’ or ‘what specific teaching and learning activities are included in smart devices?’ can be applied.

In the next step, this examines the appropriateness of the training process’s level. This review aims to give training grade of the smart learning process, depending on whether or not to reflect on topics such as working employees’ training type and industry employment subject to employee training and job training, the potential of industrial application and instructional design. Through this review process, the content will be granted one of the A to C grade. Receiving an A grade means that the content meets at least three of the ten detailed clauses and getting a B grade means that it meets at least three of the five detailed clauses and finally taking C grade means that it meets required items in the detailed clauses. However, there are items that meet class A topic at which details of class B may be accepted as an alternative.

When evaluation request is made, evaluation institution decides the class detail items of training process, evaluates according to detail criteria selected by Korea University of Technology and Education and gives the training grade. Korea University of Technology and Education evaluates related to grade made by the evaluation request institution but the grade can be adjusted.
This table categorizes the first step of detail evaluation items of smart learning.

Evaluation clause	Content	Result
1. Job performance Relation	■ Whether the training process is directly related to increasing employee's job performance.	□ Appropriate □ Inappropriate
2. Remote Training process Suitability	■ Whether it has the basic requirement for remote training process. ■ Whether it has the basic requirement for smart learning process.	□ Appropriate □ Inappropriate

Source : Korea University of Technology and Education

Figure 3: Evaluation clauses in the first step

2.2. Propriety of learning plan activity

The second step of quality evaluation evaluates the suitability of learning planning activity. This has the objective to identify the content suitability of learning orientation and training objective setting. This item utilizes process outline, LMS, and contents for evaluation data. Specifically, it evaluates whether training time, procedure for understanding learning process is introduced well and has the appropriate content. The result of evaluation is in suitable or unsuitable. Next table categorizes the detail items second step in smart learning quality evaluation.

Evaluation item	Content	Result
1. Learning Planning Activity Suitability	■ Whether the introduction of learning method, process or teaching faculty is appropriately presented? ■ Whether training object of training process is appropriately presented.	□ Appropriate □ Inappropriate
2. Learning Performance Activity Suitability	■ Whether training content and method are composed of latest trend and appropriate for meeting training objective.	□ Appropriate □ Inappropriate
3. Evaluation Participation Activity Suitability	■ Whether evaluating content of meeting the training objective is visible or made of appropriate method. ■ Whether appropriate feedback is made about evaluation task submission.	□ Appropriate □ Inappropriate

Source : Korea University of Technology and Education

Figure 4: Evaluation item in the second step

This step sets the checklist according to evaluation standard about evaluation items and is shown on the next table.

Evaluation item	Detailed evaluation item	Checklist	Result
Learning Planning Activity	1. Orientation	■ Are training time, procedure(period, evaluation method, finishing standard) for understanding learning process introduced well and is the content appropriate?	□ Appropriate □ Inappropriate
	2. Setting Training Objective	■ Is the introduction of the teaching staff of this process appropriate? (Reference check essential)	□ Appropriate □ Inappropriate
		■ Is the training objective or target about training process well present and is the content appropriate?	□ Appropriate □ Inappropriate
Learning Performance Activity	1. Learning Readiness per Class	■ Is LMS or contents able to identify? ■ Is each period's training objective introduced and is the content appropriate?	□ Appropriate □ Inappropriate
	2. Process Learning	■ Is training objective, target, and content well connected? ■ Doess the training content appropriately reflects the latest industrial trend? ■ Does the training content appropriately reflects latest law revision? ■ Is effective training method being used to learn training contents? ■ Is learning encouragement function made on web(LMS)?	□ Appropriate □ Inappropriate
	3. Learning Arrangement	■ Does the survey presents and makes function to write satisfaction or opinion on learning made on LMS?	□ Appropriate □ Inappropriate

Evaluation Participation Activity	1. Evaluation Examination	■ Is appropriate evaluation method used for training objective, target, content, method and is the content appropriate? ■ Is answer, explanation, grading standard, point, question objective for each questions well introduced? ■ Is test or task question related with training objective introduced in item pool method and is the content appropriate? ■Is learning evaluation of training process appropriately presented on the web? ■ Is Q&A function related with the presented evaluation made on LMS? ■ In examination, is test period and questions made on LMS?	□ Appropriate □ Inappropriate
	2. Submit the Evaluation Subject	■ Is the content of teaching faculty's feedback guideline about evaluation appropriate?	□ Appropriate □ Inappropriate
	3. Check the Evaluation Result	■ Is grading result feedback function made on LMS?	□ Appropriate □ Inappropriate

Source : Korea University of Technology and Education

Figure 5: Checklist of detailed evaluation item in the second step

When contents are appropriately composed of each detail evaluation checklist items of second step of evaluation item, the content gets a suitable grade. However, when one item gets an unsuitable grade, the whole evaluation item becomes unsuitable. For example, in the evaluation participation item, when evaluation examination gets a unsuitable grade for evaluation result, the whole item gets unsuitable grade although results of other detail items are suitable.

Conclusions

With adapting smart learning, individualization training for employees can be reinforced. By combining necessary contents according to each employee's need and level, adapting managing method for making training process is needed. To increase employee's field application, necessary information, knowledge presentation, and interaction between teacher and learner should be activated. Also, to actively utilize the strength of smart learning, which is mobility and accessibility, teaching activity should be conducted. To do this, quality evaluation index of smart learning which reflects characteristic and contents of teaching has to be designed.

Effectivity analysis about job capacity improvement conducted on employees who completed the smart learning process and analysis about the effect of smart learning on manager and teaching faculty should be made.

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