

## **Development of a Standardization Model for Effective Education in the Classroom** (Diagnosis and Improvement of Education in the KNPEI by Applying Performance Technology)

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### **I . Introduction**

To survive in a global society, organizations should be more effective and efficient. The learning organizations actively adapt themselves to social changes by learning like a live organism. Information and knowledge become the driving force to generate new value in an information society. In this point of view, knowledge management is an approach to maintain organizations' competitiveness by obtaining, saving, sharing, and utilizing the organizations' knowledge.

This research is based on a case study that applies the performance technology model to the Nuclear Power Education Institute in the Korea Hydro & Nuclear Power Company.(KNPEI). KNPEI suggested three performance problems to be solved through this case study focusing on the classroom training. The problems are the textbook for basic skill education, the classroom environment and the educational method.

Therefore, the study applies performance technology to diagnose and solve the performance problems of the KNPEI systematically and scientifically.

### **II . Diagnosis and intervention for the performance problems of the KNPEI**

#### **1. Performance Technology**

Nilson (1999) insist that performance is to use mental, physical, and emotional ability to achieve intended goals. Performance is activities to achieve special results and the results should have value.

The meaning of performance technology (PT) is a little different according to researchers, but many researchers agree on the following three main points. First, PT focuses on the improvement of human performance (Stolovitch & Keeps, 1999). The ultimate purpose of PT is to improve efficiency and effectiveness of an organization and human performance.

Second, PT solves the problems of an organization systematically in the systemic viewpoint (Robinson & Robinson, 1996). It views the problems of an organization in the organic viewpoint by considering every input, supra-system, subsystem, and process of the organization.

Third, PT is applied discipline rather than creating a new one and integrates the existing knowledge from the system theory, information technology, organization

theory, and management theory to solve the problems of the field.

#### **2. Diagnosis of performance problems of the KNPEI**

KNPEI is a professional training institute with the purpose of cultivating future-oriented nuclear experts under the vision of "Creating A Nuclear Safety Culture with Regard to Fundamentals." KNPEI provided about 154 job-related courses for both internal and external employees in 2006.

The study used benchmarking, surveys, interviews, and participatory observations to gather data and diagnose the performance problems of the KNPEI.

##### **2.1 Benchmarking**

The study executed international and domestic benchmarking. Two kinds of organizations were chosen by the project team. One was training center that provides skill education or nuclear training programs. The other was university that provides skill education in the classroom.

##### **2.2 Surveys and Interviews**

Surveys were conducted for 140 trainees and 21 instructors. Interviews were also performed for three instructors and four trainees respectively.

##### **2.3 Participatory Observation**

The research team observed the instructors' lectures several times and analyzed the classroom environment. The team also scrutinized the textbooks that were used in the Nuclear Theory Fundamental Course.

Upon examining the textbooks, we found that they did not describe the object of the course and did not follow the principles of the textbook writing. The amount of the textbook volume to be covered was too overwhelming to teach and learn for the instructors and trainees.

The classroom environment showed the following issues. Those were too crowded and distracted. The front of the classroom was too complex and misarranged with many facilities.

In educational methods, the one-way lecture was performed during the classroom training. There was no interaction between instructors and trainees. Therefore, trainees' motivation was very low. Almost all of the instructors used Powerpoint for content delivery. However, The Powerpoint was only used for text

showing instead of its strength of audio-visual contents delivery.

### 3. Performance Problems of the KNPEI

#### Business Need: Cultivating Future-oriented Nuclear Experts

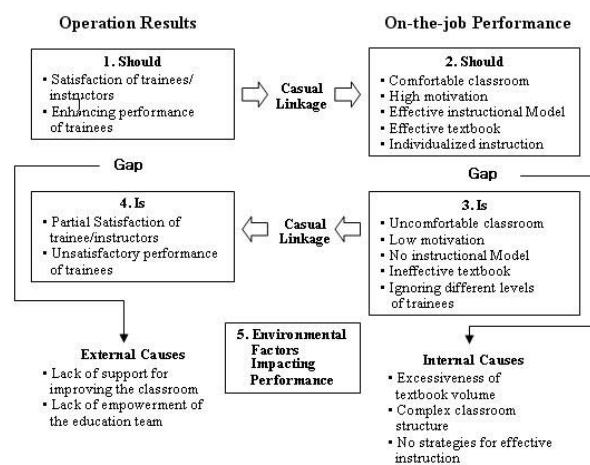


Figure 1. Performance Relationship Map of the KNPEI

The performance relationship map(Fig.1) was constructed based on the results of the benchmarking, surveys, interviews and participatory observations.

### 4. Interventions for the performance of the KNPEI

#### 4.1 Textbook problems

The textbook volume should be reduced so trainees and instructors can keep them during class time allotted. It is necessary to rewrite the textbooks by observing educational principles.

#### 4.2 Classroom environment

Some interventions are suggested. The first one is to provide trainees and instructors with a comfortable classroom. The classrooms are needed to have sufficient space and reformed in lighting and air-conditioning. Second, the classrooms need to be a place in which trainees can pay attention only to instructors' lectures and a clean front without anything to distract trainees' attention. Screens should be rearranged at the side of the whiteboard so instructors can use both simultaneously. The side wall should be used as a supplementary writing place by installing a small cork board or whiteboard. Third, the classrooms always need to be in an optimal state for more effective management and should be inspected periodically by a responsible person.

#### 4.3 Education methods

Three interventions are suggested. First, The nine events of Gagne(1992) are suggested as principles for the skill education. One hour lessons can be performed in three stages. The first stage is an introduction which takes about five minutes and has activities to gain trainees' attention, present the objectives, and recall

prior knowledge are provided. The second stage is the development stage which takes about forty minutes and has activities to present contents, guide trainees' learning, elicit performance, and give feedback are provided. The last stage is closing and evaluating trainees' outcome and promoting transfer what they learn from training to their actual job. It takes about five minutes.

Second, customized instruction according to the level of the trainees should be provided. The trainees should be divided into two or three levels and instructors should provide individualized instruction.

Third, motivation strategies are needed. Our team applied ARCS(Attention, Relevance, Confidence, Satisfaction) theory suggested by Keller(1987) to enhance learners' motivation.

The most important thing is to integrate the three strategies above into one instructional model. Therefore, the research team suggested one sample instruction model that is constructed by applying these interventions and presented as a DVD. The DVD could be used for the instructors to improve their own skills.

### III. Conclusion

This study diagnosed the status of the KNPEI and suggested interventions through the viewpoint of performance technology. However, the study was restricted in solving the internal problems of the KNPEI, the external causes, such as the policies for the curriculum and textbook, trainees per instructor and budget, should be solved. This study will provide organizations or people who have the same problems with an opportunity to reflect on their situations.

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