A STUDY ON DESIGNING CREATIVE SECURITY EDUCATION FOR RESPONDING TO SECURITY THREAT IN ACCORDANCE TO CHANGE OF UBIQUITOUS ENVIRONMENT

[1]ONECHUL NA, [2]SANGHO PARK, [3]JAWON KIM, [4]HYOJIK LEE, [5]HANGBAE CHANG

[1,2,3,4] Chung-Ang University, Department of Security Convergence, 84, Heukseok-ro, Dongjak-gu, Seoul, Korea
[5] Chung-Ang University, Department of Industrial Security, 84, Heukseok-ro, Dongjak-gu, Seoul, Korea
E-mail: nastop, sanghopark@cau.ac.kr, jjawon@cau.ac.kr, leehyojik@cau.ac.kr, hbchang@cau.ac.kr

Abstract - Recently infrastructure environment for creating new value is being built by introducing ubiquitous technology in social life and industrial filed. But it is expected to generate convergence security vulnerabilities because of it. Therefore, cultivating ability of creative problem-solving is necessary is new goal in security education for meeting recent needs of the times when convergence security risk occurs.
Therefore, this study emphasized necessity of security course for improving creative problem-solving through previous studies. Furthermore, it designed creative security subject which is necessary in ubiquitous environment.

Index Terms - Ubiquitous Environment, Convergence Security Threat, Creative Design, Security education

I. INTRODUCTION

Recently infrastructure environment for creating new value is being built and transformed into intelligent convergence environment by introducing ubiquitous technology in social life and industrial filed. It is expected to generate convergence security risk instead of original risk. Therefore, It is required to apply industrial security which can build a multi-dimensional security environment out of one dimensional security regulation introduction and security system construction for the life safe and sustainable economic growth in company. Also, It is necessary to train security manpower who can deal with such a convergence security threat in ubiquitous environment.

Thus, this study will emphasize necessity of security course for improving creative problem-solving through previous studies about necessity of creative design in security and other security course. Based on this necessity, it will design new security subjects in the view of industrial security for improving creative security design referring security course for improving creative design in other security course.

II. PREVIOUS STUDIES

A.Necessity of Security Education for Creative Security Design

Creativity and original problem solution are emphasizing on engineering education in university for solving engineering problems.(Kwak, 2004).

Department of industrial security in Chung-ang University(2015) investigated security expertise and capability for cultivating security manpower who security manpower who can deal with security threat in intelligent environment Preemptively through interview of industry security expert. This report explained to need creative problem-solving and design ability instead of learning theoretical security knowledge.

B.Previous Study of Education for Improving Creative Design in Engineering education

Approach to education for improving creative design ability have been tried initially and the model of creative problem solving(CPS) among these approach has been rated as the most representative. CPS is a process of thinking which derive new, novel and creative solution. This discovered problem using divergent thinking and convergence thinking in each step of model and make various idea as explain specific problem with related data.

Im(2011) derived design principle, theoretical composition and detail design which can support the process of creative problem-solving in engineering education based on CPS model.

III. DESIGN OF SECURITY EDUCATION SUBJECT

FOR CREATIVE DESIGN ABILITY

In this chapter, We will design subject of education for improving creative design based on necessity of creative design in ubiquitous. . For designing security subject of education, We newly design the subject of education in the view of security referring the subject of education for creative design in engineering and other education course. This study will design 4 security subject related with creative design and explain basic direction and effects of these subject.

A.Steam Security Education

The Korean government has encouraged to carry out convergent human resource education(STEAM) for cultivating creative human resource with holistic thinking and problem-solving ability about most

advanced scientific technology. The existing steam education is teaching method which can have holist think and problem-solving ability as connecting Mathematics and Science of theory center with engineering and art. Therefore, We graft STEAM education into the view of security for improving creativity about security technology, security system and humanistic imagination . we teach students to solve a problem as application of various knowledge including Security, Science, Technology, Engineering, Liberal arts, Mathematics and Humanities. Components of Steam are "Convergent contents" and "Creative design". "Convergent contents" is teaching method which can be integrated with two or more academic content and "Creative design" is comprehensive process which can search for the best solution as expressing creativity, effectiveness, economics and esthetics

As Learning two component of STEAM, Students can feel positive feeling about learning and occur to "emotional experience" which experience the joy of achievement and value of failures. Also, It is possible to build imagination which is one of security Necessary competence and cultivate human resource who have convergent expertise and creativity and can communicate other person well as security expert.

B. Security Design Process

Security Design Process graft design thinking into security education. Design thinking is methodology which can help creative problem solving at home and abroad. This education program can understand the need through continuous communication with on-site because solving the discomfort experienced by people with human-centered perspective. Also it is the way of creative problem solving which derive innovate results as imaging all possible alternative and repeating to apply and improve the way This course is to apply a variety of theoretical and practical course design thinking to begin from generation to demand survey and design plans, concepts from the theory of design with a geometric design basic product / system utilization, and implement this common security system design and acquire. There this security subject aim to support experience of the practical skill use. Lastly, Students apply learned concept in everyday life and comprehensively link the ideas, experiences, information and seek solutions or alternatives to the problem as working security design through the team project units.

C. Creative Product Development

Recently, It is important to design efficiently on the step of security product development for designing effective security system. The step of security product development is considered to convergence security engineering, human factors engineering, aesthetic view and various liberal factors such as business and consumer view. In this subject students create design drawing as grafting liberal and design view in the step of design-plan-practice of product development. Also, professor and other students evaluate the designed drawing and product model and this lead them to have motivation and sense of accomplishment. Lastly, it encourage them to participate in idea contest and competitive exhibition.

D. Flipped Security Classroom

The existing university education has been operating class-oriented knowledge memorization and student acquire knowledge passively from professor as executing professor-centered class. it didn't develop personal creativity and talent/aptitude. Therefore, recent many security course aim to flipped classroom for breaking away from the existing passive learning. Flipped learning is synthesized a passive 'flipped' of the English verb 'flip' and 'learning' meaning lesson. This mean teach method which turn original teaching method on. This mean that thing to learn in the classroom traditionally change to the thing to learn outside. First students take a online class at home and then they perform various assignments in the class. Professor provide teaching material and textbook about basic concept and recent trend of security to student and make online lecture for supporting basic theory and assignment of security. Students acquire theoretical theory at home first through these home lesson, after that it is proceeding to execute student-centered class in the type of discussion and explaining assignment among students. Through this subject, Students can do self-directed learning and creative personality education as do learning for them.

CONCLUSION

There are many positive aspect in the part of life convenience by introducing ubiquitous technology, but it results in occurring convergence security risk. For preventing this, we should build a multi-dimensional security measure out of one dimensional security regulation introduction and security system construction. So it is necessary for cultivating creative security expert who prepare and apply various security measure and design security system effectively.

For this reason, this study designed security subject for improving creative design for cultivating industrial security expert who can handle convergence security threat preemptively in ubiquitous environment. First, , this study will emphasize necessity of security course for improving creative design through analyzing previous study of necessity for improving creative design in security and other education course. Finally, we designed 4 security subjects for improving creative design in the view of security referring security subject for creative design implementing in the existing engineering and other education courses.

ACKNOWLEDGEMENT

This work was supported by Institute for Information & communications Technology Promotion(IITP) grant funded by the Korea government(MSIP) (B0713-16-0007) and Institute for Information & communications Technology Promotion(IITP) grant funded by the Korea government(MSIP) (H8501-16-1018)

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