

## A Study of the pre-retirement program implementation for KAERI nuclear experts

Hyo-Jeong Hong\*, Hye-Seon Hwang, Young-Mi Nam, You-Rim Jin, Eun-Ju Song  
Daedeok-daero 989-111, Yuseong-gu, Daejeon, 305-353,  
Nuclear Training and Education Center, Korea Atomic Energy Research Institute(KAERI)  
\*Corresponding author: [hjeduhong@kaeri.re.kr](mailto:hjeduhong@kaeri.re.kr)

### 1. Introduction

The development of science & technology and medical technology makes it possible to extend human's lifetime. On the other hand, birthrate gets low very fast for various reasons, and as a result, our society is about to enter the aging society that will cause a lot of problems without proper measures. Currently, people at the age of fifties to sixties are the generation of baby boomer who were born just after the civil war in Korea, and most of them are supposed to retire over the next five years. According to the report by the Ministry of Health and Welfare in 2012, Korea is one of the countries that have the fastest aging population in the world. In addition, Korea faces different social issues caused by the retirement of the baby boomers. The worst of them is in the science and technology field which would be left behind in the competition of the advanced countries due to a shortage of the qualified workers[1].

Recently, people in Korea take far more of interests in the nuclear power and whether they are well prepared in the lack of professional human resources in it in the foreseeable future. It is not only personal concern anymore, but also national concern. In particular, retirement of the experts in nuclear field is likely to lose our competitiveness in the world[2]. It is urgent for the government and institutions in Korea to develop and implement educational programs to secure talented new workers in the field.

This study analyzes the cases of development and application of pre-retirement education program of professional talent for nuclear R&D and then, develops programs to help nuclear experts retire. We also put out the strategies to produce useful program and manage successful education. In addition, I would like to suggest management methods to the government to let them contribute as national human resources even after their retirement. .

### 2. Methods

#### 2.1 ISD(Instructional Systems Development) based Action research

In this study, the ISD(Instructional Systems Development) model, instruction systems design model, is described in order to guarantee the systemic of the

program[3]. The ISD model is often referred to as the ADDIE model and proceeds with analysis, design, development, implementation and evaluation. And this study conducted action research. The Action research is a research method to change the field of education through direct intervention by researchers. And action research is aimed at improving the objectives of the curriculum in actual practice, and the benefits of research and practice are cyclical[4].

#### 2.2 Research participants

This case study is for a pre-retirement program of the Korea Atomic Energy Research Institute (KAERI). Participants of the program are 17 nuclear experts to be retired at KAERI.

### 3. Results

#### 3.1 Analysis & development of pre-retirement program

The initial program was developed from benchmark of other organizations. It was a type of program that operates 12<sup>th</sup> times to deliver educations. However, the contents and method of program were different from the initial developed program which participants used, and designers developed before. The contents and method of the initial program were revised and supplemented after analyzing the needs of participants. Needs analysis was conducted using educational content and operation method.

As a result, first, the contents of the pre-retirement program are more required to continue the special activities related to nuclear. Pre-retirees hope their career to be managed continuously after their retirement. Meanwhile, they require activity-centered methods to learn from hands-on experience rather than direct teaching. Also, they want to have the time to share their information while being educated. The revised program reflecting the analysis results was compared with the initial program as shown in table1.

Table 1. Process of development for pre-retirement program: see the back.

### 3.2 Implementation & evaluation of pre-retirement program

This program was conducted 20 times which took 100 hours for individual education, and 5 follow-up meetings for 5 months. As a result, all the participants perfectly completed this project. Also, the overall rate of their satisfaction was high. The specific results are as follows.

First, satisfaction of the program contents is as follows in fig.1. IPA(Importance Performance Analysis) results of each program were higher than those of initial ones. (for example, the facilitator, the teaching method, the domestic and foreign service activities, the SNS utilization, and etc.) This is the result of the demand analysis that requires us to maintain their careers rather than to finish them after retirement.

Second, the participants preferred to learn how to apply their talents in their work place rather than learning from the others (follows fig.1.).



Fig.1. Result of IPA

In addition, the program put the participants in positive mindset. First, it offered them opportunities to reflect over their lives. Participants in the program said “they are able to create new plans for their retirement lives after thinking back what they used to be.”

Second, they were able to gain confidence for the future. One of them said “I felt a little bit depressed before joining this program because I almost reach the age of retirement. However, now I feel very confident to get over any challenges I’ll face in the future. This program helped me to find information and approach in the various fields. I think my career wouldn’t be over following retirement”. Before participating in the pre-retirement program, they were a little bit depressed and lacked confidence having an idea that their career wouldn’t go on as experts in the nuclear field after retirement. From the results of this study, it is shown that the pre-retirement program gave them confidence in the challenge of finding information and approaching various fields.

Finally, participants in the study said that their perceptions of retirement changed positively. The retirement is not their personal problems anymore. It

could be shared with colleagues, families, and consultants who can help them. It seems that this program has a positive impact on their internal and social lives in their retirement lives.

### 4. Conclusions

In the aging society, the retirement of nuclear experts is a national issue that can’t be held off rather than each worker’s problem. There are people at the heart of nuclear power. This is because they do all the things like nuclear research and development, and construction. Therefore, it is important to nurture and manage nuclear experts to ensure the sustainable development of nuclear with safety. This program could be also a part of it.

KAERI is the organization that represents domestic nuclear research, and it is their urgent task to prepare for aging. This study could derive how to develop and implement educational program that helps all the workers and institutions to get ready for retirements in the aging society.

And the conclusion of this study is as follows. First, the goal of this education program for pre-retirement program can’t simply offer some instructions. It must be more than that. The program must be made up of effective contents that can be used at the working place. Therefore, they can feel sense of responsibilities and belongings to the society even after retiring as experts in the nuclear area.

Second, it is necessary for institutions to train them to be more competent, so they can work as national human resources after retirement. In addition, the government has to establish the system to help them to be used as human resources.

Third, retirement will be a new opportunity for retirees. Therefore, in pre-retirement education, it is necessary to give education contents to keep their careers as nuclear specialists after retirement.

And finally, the program designers play pivotal roles to expand and stabilize pre-retirement education within institutions. They not only act as coordinators who can assist the participants to join the program, but also promote its importance and effectiveness in the institutions.

### REFERENCES

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- [4] Creswell, J. W, Qualitative inquiry & research design: Choosing among five approaches (2<sup>nd</sup> ed), 2010.

Table 1. Process of development for pre-retirement program

	<b>Initial program</b>	<b>Needs assessment</b>	<b>Needs reflection</b>	<b>Modification program</b>
<b>Contents</b>	<ol style="list-style-type: none"> <li>1. [case] Life story of retiree</li> <li>2. [case] Life story of retiree who experts in science &amp; technology</li> <li>3. Preparing for life after retirement</li> <li>4. System of retired science and technology experts</li> <li>5. Social activities of retired science and technology experts</li> <li>6. Social activities of retirees</li> <li>7. Asset management</li> <li>8. Tax administration</li> <li>9. Conversation with couple(family)</li> <li>10. Medical Information</li> <li>11. Leisure</li> <li>12. How to use SNS(blog etc.)</li> </ol>	<ul style="list-style-type: none"> <li>- Sharing information related to professionalism</li> <li>- Foster younger students</li> <li>- Extension of program related to hobby &amp; leisure</li> <li>- Extension of common program common related to professionalism</li> </ul>	<ul style="list-style-type: none"> <li>- Sharing information on social contribution fields related to nuclear</li> <li>- How to grow junior researcher, students etc.</li> <li>- Teaching method</li> <li>- How to facilitating</li> <li>- Hobby and leisure programs are developed by individual education programs</li> </ul>	<ol style="list-style-type: none"> <li>1. [case] Life story of retiree</li> <li>2. [case] Life story of retiree who experts in science &amp; technology</li> <li>3. Preparing for life after retirement</li> <li>4. System of retired science and technology experts</li> <li>5. Social activities of retired science and technology experts</li> <li>6. Social activities of retirees</li> <li>7. Asset management</li> <li>8. Tax administration</li> <li>9. Conversation with couple(family)</li> <li>10. Medical Information</li> <li>11. Leisure</li> <li>12. How to use SNS(blog etc.)</li> <li>13. healing workshop</li> <li>14. Life design workshop (Personal consulting)</li> <li>15. How to serve overseas (sharing information KOICA)</li> <li>16. Health</li> <li>17. Presentation/ Facilitation</li> <li>18. Cleanup consulting</li> <li>19. Foster the Facilitator (teaching method)</li> <li>20. Reflection</li> </ol>
<b>Method</b>	- Lecture	- Participation program - Practice	- Lecture & theory sublation - Participation program	- Workshop - Participation program
<b>Consulting</b>	- Two times consulting for selection of individual specialized training	- Sharing information on program contents and social activities	- Expand consulting - Sharing information	- Continuous consulting during training - Follow-up meeting
<b>Period</b>	- Common program: 5 weeks, 12 <sup>th</sup> times - Individual specialized training : 100 hours	- Extension of program period	- Extension of common program - Opportunity to share information	- Common program: 10weeks, 20 <sup>th</sup> times - Follow-up meeting : 5 times - Individual specialized training: 100hours
<b>The others</b>		- Opportunity to share information	- Extension of opportunity to share information	- Follow-up meeting & consulting for individual specialized training - Sharing information on program contents and social activities related to nuclear - Observation and consulting of ongoing participation of program designer

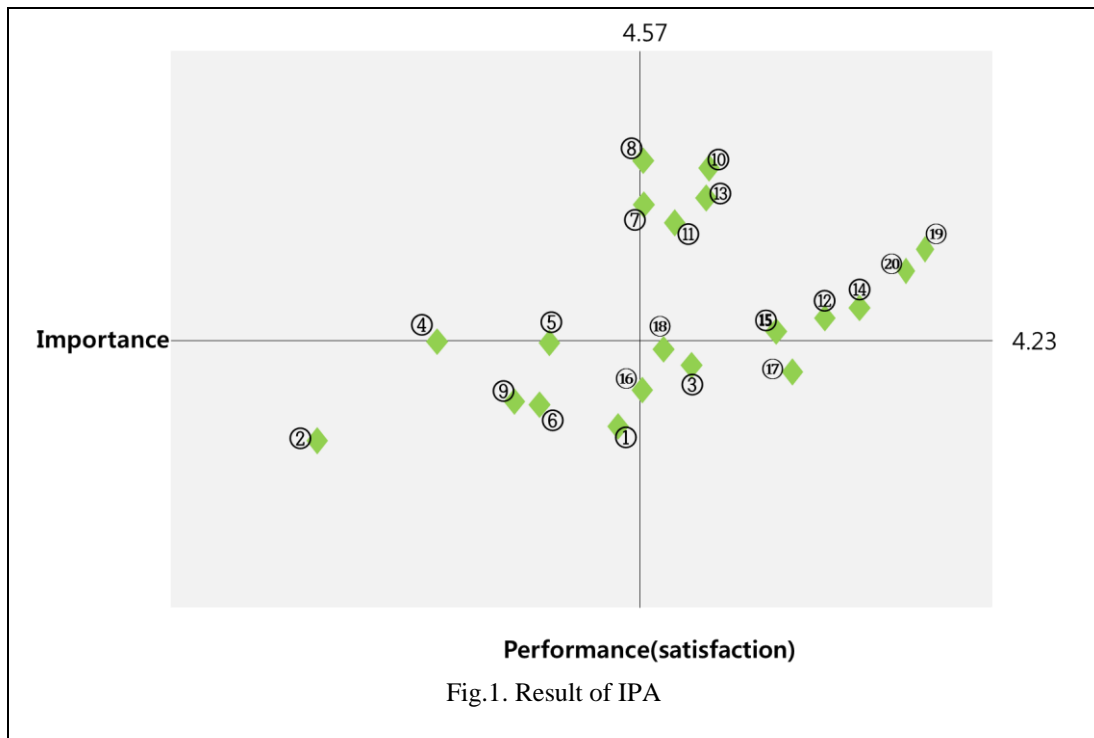


Fig.1. Result of IPA

- ① [case] Life story of retiree
- ② [case] Life story of retiree who experts in science & technology
- ③ Preparing for life after retirement
- ④ System of retired science and technology experts
- ⑤ Social activities of retired science and technology experts
- ⑥ Social activities of retirees
- ⑦ Asset management
- ⑧ Tax administration
- ⑨ conversation with couple(family)
- ⑩ Medical Information
- ⑪ Leisure
- ⑫ How to use SNS(blog etc.)
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- ⑭ Life Design Workshop(Personal consulting)
- ⑮ How to serve overseas (sharing information KOICA)
- ⑯ Health
- ⑰ Presentation/ Facilitation
- ⑱ Cleanup consulting
- ⑲ Foster the Facilitator(teaching method)
- ⑳ Reflection