

Review of International Activities on Nuclear Knowledge Management and Proposals for Further Refinements

Mr. B. J. Chung

Cheju National University, Jeju, Korea

E-mail address of main author: bjchung@cheju.ac.kr

Concerns are raised world-wide on the sustainability of nuclear society due to the ageing of nuclear manpower, coming massive retirements of senior workers within the next several years, declination of nuclear education and training, as well as the shortage of nuclear manpower supply. These concerns were reflected in the international activities such as the OECD/NEA report on the nuclear education and training [1] and the IAEA conference on Nuclear Knowledge Management [2]. Many more follow-up activities are currently being formulated and implemented.

The OECD/NEA published a report concerning the declination of nuclear education and training organizations [1]. Regardless of the accuracy of the statistical data cited, it introduced the issue to the international society in a timely manner. It investigated into the problem of worldwide deterioration of nuclear education such as decreasing number and dilution of nuclear programs, decreasing number of students taking nuclear subjects, lack of young faculty members, and ageing research facilities. Also, the report came up with a set of recommendations to the responsible bodies of governments, industries, and universities. However lacking active measures to implement the recommendations such as international policy-making, budget allocation and strong commitment of the agency, only a few countries have been influenced by the report and many more countries are either still ignorant of or ignoring the recommendations.

The IAEA held the Nuclear Knowledge Management Conference with the premise of massive retirements of the first generation nuclear experts [2]. An immediate need to preserve existing knowledge in nuclear science and technology was recognized and a unanimous consensus was reached on the IAEA's obligations to lead activities towards preservation and enhancement of nuclear knowledge. It also resolved top priority and additional activities. However the difference in nuclear knowledge lost by retirement and by layoff should have been distinguished. The activities seemed to have been formulated and their priorities seemed to be given lacking in understanding about the difference. The IAEA seems to be digressing further from the nature of the issue. The problem of massive retirements of the first generation nuclear experts was changed to nuclear knowledge preservation, which was changed again to nuclear knowledge management covering almost all of the information related technologies.

Based upon the above personal speculations of the international activities and the Four Season Model proposed by the author [3], proposals for further refinements of the nuclear knowledge management activities are suggested. The Four Season Model describes the fluctuation in the nuclear industry from the 1950's to the 20th Century.

First, a more precise definition of nuclear knowledge is needed. The nuclear knowledge that can be lost by retirements or lost by layoffs should be differentiated and activities should be devised to tackle the issue directly for the maximum usage of societal resources. Without a precise definition of nuclear knowledge for each specific field, the nuclear knowledge management activities will have to cover every aspect in the nuclear world.

Secondly, a comprehensive and frank review of the current international activities should be followed to see if we are a) preparing for massive retirements, b) seeking nuclear knowledge transfer to the next generation, c) seeking accumulation of all the nuclear knowledge in an ample form, d) attaching our programs to an international program, or e) just increasing the international collaboration activities.

Thirdly, if the problem we are discussing is related to a life cycle model or a Four-Season Model of manpower demand and supply, then we have to devise ways to achieve an equilibrium in manpower demand and supply lest we should discuss the same issue again in 40 years.

Fourthly, in the discussion of the sustainability issue, both experienced seniors and responsible young generation should both be privy to the available information. A good policy is generated from the blending of different voices instead of listing all the voices from just one party. If only the senior officials from organizations have the opportunity to attend these conferences, it will lead to the lack of participation from the young generation who will ultimately be responsible for carrying on the nuclear society.

Finally, if we are to prepare for massive retirements in the future, then the nuclear knowledge that should be preserved and transferred to the next generation such as the experience, management, supervising skills, and international politics. These cannot be simply documented or uploaded to cyber space. A mentoring program or a shadow delegation program is needed to transfer that knowledge.

[1] Nuclear Education and Training: Cause for Concern, OECD/NEA (2001)

[2] Summary Report for Senior Level Meeting on Nuclear Knowledge Management, IAEA (2002)

[3] CHUNG, B. J., Growing Concerns on Nuclear Manpower Shortage and Korean Initiatives (Transaction of IYNC 2004), International Youth Nuclear Congress, Toronto, Canada