Intergenerational Knowledge Transfer

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Introduction

• Evolution in methods adopted for knowledge transfer
  – Transfer within the family and the community,
  – Trade guilds,
  – Universities and institutes of higher education,
  – Internship and pre-induction training at work places.

• Workplaces including large corporations, research centres and national and international organizations, have emerged as users of knowledge as well as contributors to knowledge generation.

• Knowledge now exists at multiple places and in diverse formats, which is good for knowledge preservation.

• One has to keep looking for gaps in how mankind preserves knowledge and address the gaps.
Co-existence of the young and the old facilitates K transfer – 1

• An expanding activity assures such co-existence, organization remains vibrant.
• K transfer takes place through formal and informal processes.
  – In a university it includes lectures, text books, laboratory practice, interaction between research supervisors and students.
  – At workplaces, it includes pre-induction training, mid-career training, documentation of practices in manuals and reports, exit interviews.
  – Oral history projects.
  – Informal processes include exchange of information in informal settings such as in cafeteria. Many workplaces are converting sitting arrangement into an informal arrangement to encourage exchange of ideas and information.
Co-existence of the young and the old facilitates K transfer – 2

• When an activity is at steady state, one can plan for an overlap between young and the old, but there is a reluctance on the part of the young to join an organization that is not expanding.
• When an activity is declining, it becomes further difficult to attract young persons to the activity.
• However, technology provides for K transfer without co-existence of the young and the old,
  – Self-study with books and on-line material as resources,
  – Use technology to store information in a form that can be retrieved quickly and develop taxonomy to aid such retrieval.
• The situation in India,
  – expanding nuclear sector, nuclear facilities owned and operated directly by the Government or by companies owned by the Government,
  – A vibrant university system, but employment only in the government sector.
A Framework

• The classical approach separates workplaces (that is professional organizations) making use of the knowledge in a given discipline from universities which transfer knowledge to students.

• This separation is, however, not universal.
  
  – In the field of medicine, schools and hospitals are integrated into a single institution or are co-located. Medical professionals teach students as well as practice their profession.
  
  – Why not extend this model to other disciplines?
• Considering the squeeze on public funding of higher education across nations, exhortation by governments to value work-based learning as a part of higher education and demand for graduates ready to start working immediately on joining a workplace, it is necessary to rethink and tweak the classical approach towards imparting higher education.

• Extending the model of medical education to other disciplines will increase vocationalism, which has always been contested by academicians who subscribe to the belief that most important mission of higher education is the “pursuit of truth”. In spite of such contestation, vocationalism has taken place.

• Throughout the long history of the higher education, to adapt to circumstances and to fulfill various functions, several ideas of the university co-exist. [N. Kaoru, “The Co-existence of Several Ideas of a University”, in The Idea of a University in Historical Perspective: Germany, Britain and Japan, edited by K. Sneba, Y. Yasuhara and T. Hata, (Reviews in Higher Education 84), Research Institute for Higher Education, Hiroshima University, November 2005, pp 79-84.]
The Framework in India

- Young graduates have interest in taking up a career in nuclear science and engineering, but vibrant educational programs on the subject in institutions of higher education are at sub-critical level.

- A Training School was established in late nineteen fifties in Bhabha Atomic Research Centre (BARC) to provide training in nuclear science and engineering. Over the years the pre-induction program had evolved into a rigorous graduate program.

- The program was not accredited to any university, though the training was fully academic. Faculty is drawn from among the practicing professionals working in the nuclear establishment.

- One can see a similarity with medical profession.

- A young person always has attraction for a higher degree as it increases both social status and professional mobility.
The Framework in India

• Around the turn of the century, it was realized that for continued success, it is necessary to get accreditation for the pre-induction training program.

• From the point of view of management, a pre-condition for any such accreditation by a university was that there should be no loss of autonomy in decision making, that is in the formulation of syllabi, selection of faculty, pattern of examination, and evaluation of student performance.

• The management realized that this level of autonomy would be possible only if the Department of Atomic Energy has full control of the university accrediting the program.

• As a result, a university level institution, having accreditation in accordance with the system of higher education in India, was set up in 2005.
Homi Bhabha National Institute

- A unique framework for intergenerational K transfer
- The Institute has a distributed structure and has 11 Constituent Institutions.
  - BARC, IGCAR, RRCAT, VECC, IPR, SINP, TMC, IoP, HRI, IMSc, NISER
  - HBNI is a leading research university and educates students at the Doctoral and Masters level. The HBNI has been accredited by the National Assessment and Accreditation Council (NAAC) with a CGPA of 3.53 on a four-point scale. HBNI has been ranked at 17th position in the University category in India’s Rankings 2016.
  - Distinctive characteristic of the Institute is to advance indigenous nuclear technological capability. The first five institutions listed above are engaged in technology development and are at the forefront of developing new nuclear knowledge, which is now being passed on to the next generation of students through the framework established by the setting up of HBNI.
Homi Bhabha National Institute

• Within a span of about 11 years, HBNI has established itself as one of the leading research universities in India.
• It integrates a workplace and a university. Setting it up and running it did pose challenges. Success was achieved following an approach based on prudent gradualism. This was on two fronts.
  – In interaction with academics and officials from accrediting agencies outside of the HBNI, one had to explain the unique architecture of HBNI as a further evolution of the ‘idea of a university’.
  – In dealing with stakeholders inside the HBNI, one had to work to superimpose a 'university culture' over the existing culture and this involved several facets:
    • one was to explain the role and responsibilities of the faculty towards students to practicing professionals;
    • the other was to explain the difference between doctoral research that has to be completed by a student in a certain time frame versus working on large research problems which may be done by individuals or teams of researchers over a longer time period.
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• Training School has been functioning like any Graduate School. Now it is formally a Graduate School.
• The programme has been expanded and includes masters in fusion science and technology
• PG and super-specialty programme in medical discipline related to Oncology expanded.
• Other programmes being run are Ph.D., Diploma in Radiation Protection, Diploma in Fusion Imaging Technology, Diploma in Medical Radio-Isotope Technology etc.
Year wise Ph.D results declared since inception

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Programme wise Ph.D results declared since inception

- Physical Science: 330
- Chemical Science: 125
- Mathematics: 77
- Life Science: 72
- Engineering Science: 81
- Health Science: 22
- Strategic Studies: 22
In conclusion

• HBNI has a unique architecture and achieves several objectives including knowledge management.
• Squeeze in public funding for higher education has led to concepts like cooperation and partnership between universities and workplaces.
• The model of HBNI takes this forward by integrating a ‘workplace’ and a ‘university’ in a single entity.
• It is a step in the process of further evolution of the concept of a university or the ‘idea of a university’. Educationists talk about ‘unity of education and research’. Why not extend it to ‘unity of education, research and practice’.
• While implementing the concept, it has been ensured that the academic rigour is not lost.
Thank You