CURRENT STATUS OF ENGINEERING EDUCATION RESEARCH IN INDIA

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I CURRENT STATUS OF ENGINEERING EDUCATION RESEARCH IN INDIA

•**Engineering Education Research (EER) is a relatively new area of activity in India.**

• **Traditionally, Engineering Education has received meager attention at the Engineering College level.**

•**The Indian Institutes of Technology (IITs) , which are at the apex of the Engineering Education pyramid in India, have established :**
 Centres of Continuing Education and
 Centres of Educational Technology.

- **Their principal activities are:**

➢**Faculty and Professional Development,**

➢**Curriculum Development,**

➢**Engineering Pedagogy, and**

➢**Technology-Enhanced Learning (TEL).**

- **The four NITTRs (National Institutes of Technical Training and Research) – formerly called the TTTIs (Technical Teacher Training Institutes) -- are engaged in subject matter and pedagogy training of Teachers, particularly at the Diploma-level; and research in related areas.**

•In as much as any Teaching, Research, Service activities in an Institution are directly in proportion to the Institutional Mission and Key Result Areas, and the prioritization accorded by the leadership,

it is very necessary for this leadership to assign high priority to EER, if it is to grow as a significant area of activity.

• As of now, EER has not yet become an important activity in most engineering institutions.

• **An important trigger and motivation for promoting EER is the availability/existence of a high-quality and well-recognized peer-reviewed journal, such as the Journal of Engineering Education (JEE).**

• **There are other Engineering Education journals which publish papers in areas other than EER, such as the International Journal of Engineering Education (IJEE), and the Indian Journal of Technical Education – IJTE (published by the Indian Society for Technical Education -- ISTE).**

•**Many faculty members/HR professionals publish their work in IJTE, e.g., dealing with several aspects of Engineering Education, but not relating to EER.**

• **There are also several Engineering Education conferences in India, some of the most important of which are the annual conventions of ISTE, and annual regional conferences of ISTE.**

• **Rarely would one encounter papers on EER in these conferences.**

• **Recently, considerable interest in Engineering Pedagogy has been generated, mainly because of:**

➤ **The two 3-day Workshops conducted by Prof Rich Felder and Dr Rebecca Brent at the Indo-US Collaboration in Engineering Education (IUCEE) seminar events over the past two years.**

➢**The World Bank – supported national projects, TEQIP – Phase I (2006 -2009) and the upcoming TEQIP –Phase II (2011 – 2014), which place considerable importance on :**

Faculty Development,

Engineering Pedagogy and

Curriculum Development.

➢**Corporate programs, such as Wipro – 10X, which are also focused on :**

➢**Faculty Development,**

➢**Pedagogy and**

➢**Curriculum Development.**

•**Initiatives, such as Board for IT Education Standards (BITES), whose twin goals are:**

- **to improve the quality of IT education and**
- **enhance the employability of the graduates**

(in the State of Karnataka).

• **This is accomplished through Faculty Development workshops ,with resource persons drawn from both the academe and industry.**

II SOME EER ACTIVITIES IN INDIA

• **Preparation of 2D and 3D animations-based instructional materials for enhancing learning effectiveness**

• **Virtual lab experiments – part of NPTEL**

• **Curriculum Development using Bloom's Taxonomy concepts.**

• **Ph D Research and Theses:**
  • **WIPRO –Learnability (Learning to Learn)**
  • **IISc –Accreditation and Quality Assurance Strategies**

III WHAT SHOULD BE DONE (IN INDIA)

•Promote inter-disciplinary collaboration between faculty of Engineering and of Education

• Promote collaboration between faculty of Engineering , and professionals preparing and marketing e-learning resource materials.

•**Encourage faculty members to organize and participate in EER Conferences and Workshops, and to publish in Journals such as JEE.**

• **Identify thrust areas in EER and constitute national Task Forces for defining projects and allocating funding.**

• **Ensure the commitment of the top tier institutions and academic leaders to EER and recognition of achievements in EER.**

IV OPPORTUNITIES FOR NETWORKING

- •BRICS
- IBSA (India, Brazil, South Africa)
- Bilateral collaborations – current and future
- ASEE, IFEES, GEDC, IUCEE

V OBJECTIVES OF NETWORKING / COLLABORATIONS

- **To exploit the opportunities created by globalization**

- **Share Best Practices**

- **Joint activities (Conferences, Workshops, Projects)**

- **Exchange of Faculty, Research Scholars, Students**

VI FOLLOW-UP ACTION POINTS – SOME SUGGESTIONS

•**An e-Newsletter at regular intervals for exchange of information on :**

- **collaborative activities**
- **Best Practices in relevant areas**
- **EER**
- **Quality Assurance and Accreditation**

•**Nodal Agencies to be identified in each country for sustaining the efforts, and be responsible for moving forward:**

- • **a relevant Professional Society (e.g. , ISTE)**
- • **a relevant Industry Association (e.g., CII)**
- •**A few technical institutions**
- •**A relevant govt. Agency**
- • **a few Industries**

• **Joint Discussions / Round Tables / Workshops**