

Science & Engineering Education in Pakistan

The issue of access

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The Problem

- Report of Steering Committee on Higher Education (2001):
 - Total enrollment in HE: 475,000
 - **(2.6% of the 17-23 year age group)**
 - University enrollment: 139,000
 - **(< 0.8% of the same age group)**

The Problem

□ Compare:

- India 10%
- Malaysia 30% (40% by 2020)
- Tunisia 34%
- South Korea 68% !!!

Major causes

- Capacity of existing institutions
 - Universities are full to the brim!
 - New ones have been added and many more are needed

BUT

Acute shortage of qualified faculty

Major causes

- Feeding mechanism:
 - Coverage, access and quality issues at the primary and secondary level
- Concentration of Universities in large cities only
- Prohibitive cost of HE:
 - Fees and cost of living can easily outstrip the average family income

What can be done?

- Organic growth:
 - Money buys buildings and equipment
 - Does not grow professors!

Population is still going up!

What can be done?

Thinking outside the box:
■ Can ICTs help?

For theoretical subjects:
■ **Yes!**

For practical / hands-on subjects:
■ **Why not?**

If you can fly one of these:



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By sitting in one of these:



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Why not use information and communication technologies to deliver tertiary education, including science & engineering education?

Advantages

- Take education to the students!
- Force multiply faculty skills
- Overcome issues of talent migration
- Lower cost

Challenges

- Many unanswered questions:
 - Mechanisms – video, Internet ...
 - Infrastructure issues
 - Acceptability issues
 - Software selection, adaptation and implementation
 - **Instructional design**
 - **Content development**
 - Assessment strategies

Thank You

Questions?