Enhancing Innovation Potential through Local Capacity Building in Education

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Jaana Holvikivi, DSc.
School of ICT

Helsinki Metropolia University of Applied Sciences

Outline

- Culture and educational practices
  - Western science
  - Science traditions
  - Developing countries' situation
- Survey at Metropolia: Results
- Local education
- Innovation potential
- Proposals

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Culture and cognitive practices

- Western science is an extreme way of perceiving the world ("WEIRD" people [1])
- Western, educated, industrialized, rich, developed
- Western culture deviates in individuality, decision-making, perception, analytical thinking and spatial reasoning from most other cultures
- Example Africa:
  - collective responsibility,
  - education based on rote learning,
  - oral vs. written knowledge
  - social relations more important than artifacts

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1) Henrich,J., Heine, S.J. & Norenzayan, A. (2010).

Western science

- Most research on human behavior done with American university undergraduates (67% in psychology);
- most research published by Western researchers (97% in psychology)
- Special case assumed as a norm
- Assumed superiority of Western science
- Anthropology studies "other cultures"
- Publications accept one standard way of writing; opening of editorial policies

University practices

- Western universities have not really attempted to accommodate the diverse student population by changing any of their practices
- Off-shore and overseas' branches copy home university models
- Problems such as plagiarism & "cheating"
- Individual initiative and responsibility vs. respecting elders

Non-Western science

- Chinese tradition: medicine, chemistry, astronomy, etc.
- Construction engineering, hydraulic engineering
- Astronomy
  - Maya and Chinese calendars
- Agriculture & fishing
  - potato knowledge in Peru
  - Madagascar knowledge of land fertility
- Micronesian navigation
- Healing & herbal medicine in all native traditions

Organizational and social studies

- Differences in social practices shape organizational cultures
- Not understanding local customs causes problems in business
  - and also in business studies
  - and information systems studies
- Theory base can be enlarged
  - The Art of Warfare – strategic thinking
  - holistic thinking
  - aiming at balance (homeostasis)

Africa learning barometer

- 76% of children attend primary school
- Learning results very modest
- Even teachers fail basic tests
  - no computers in schools
  - textbook contents based on life in industrialized countries
  - lack of qualified teachers

- Teacher education & teacher salaries low
- Very large classrooms even in best schools

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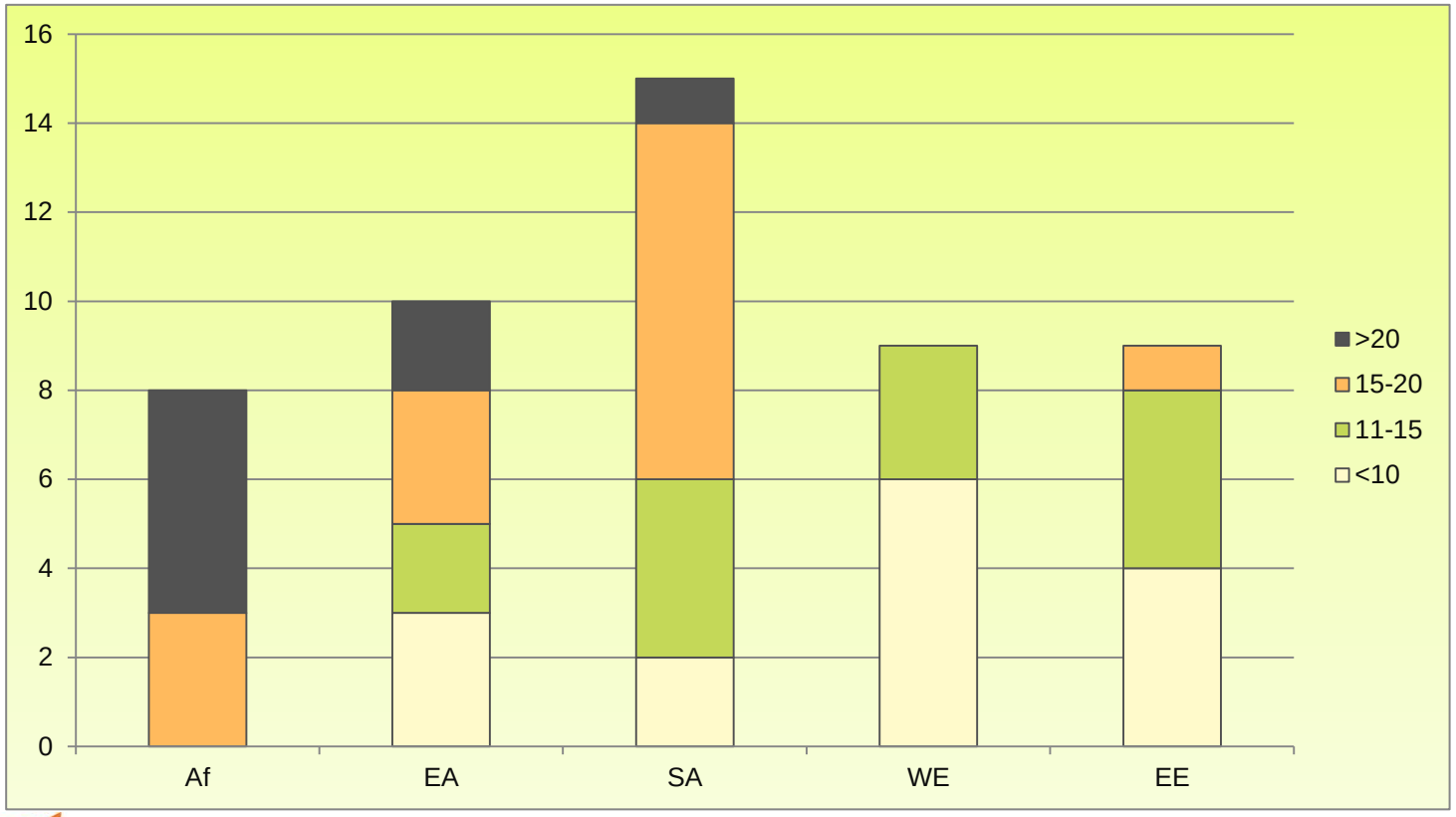
Survey

- At Helsinki Metropolia University of Applied Sciences
- Aim: to see how wide the differences actually are in our current international student population
- Google forms survey
- 34 questions (multiple choice and open)

Study population

- 56 first-year ICT and media engineering students
  Ages 18 – 34 years, average 23 years.
- 9 of the respondents were women
- Regions:
  - 8 from Africa (Af),
  - 9 from Eastern Europe (EE),
  - 9 from Western Europe (WE),
  - 15 from South Asia (mainly Nepal, SA),
  - 10 from East Asia (Vietnam, China, EA), and
  - 5 from Middle Eastern (ME) countries.
- They reported being fluent in 26 languages.

Starting age of regular computer use by nationality.



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Conclusion

- Huge disparity between starting skills
- Students are required to adapt a new set of skills and working practices
- Studying abroad a big investment
- Operating from Europe problematic (Muxlim)
- What about strengthening education in home country?

Local capacity building in education

- Using and developing local knowledge base
- Adapting education to student experience and using it as a resource
- Development initiative in local hands
- Support and resources from rich countries
- Mobile technologies could replace web-based instruction (which is seldom available)

Innovation potential

- Understanding of local conditions
- Needs that arise from everyday life
- Limitations and problems known to researchers
  - "witchcraft" messages
- Utilizing local technologies and traditions
- Mobile technologies:
  - distribution of market situation in Africa
  - lack of cable infrastructure: uses differ from Europe
  - literacy level low – visual or oral information
  - offer new connections
  - replace banking

Suggested measures

1. Curriculum review to suit local needs: school background as starting point for education. Job market needs to be understood and met.
2. Teacher training requires a collaborative effort with international professionals, local staff and consulting anthropologists or sociologist.
3. Development of teaching methods that best suit the students and increase their professional abilities.
4. Creation of research programs to study native engineering science and related knowledge.
5. Creation of local innovation centers close to universities in developing countries.

Conclusions

- Higher education can build on previous working models and practices
- Technical adaptations which are based on local worldview; functional, context-sensitive
- Ideas can also travel from South to North

Sources

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