Engineering & Environment: The Current Situation

Ageing and the Undergraduate Curriculum
Gerontechnology

• Rehabilitation Engineering
  – focus on the disabled person - some aspects are not at all unusual in engineering courses

• Assistive Technology
  – greater concern for those in the grey area between disabled and fully functioning – can be found in a wider range of courses (especially where electronics and computing are involved)

• Inclusive Design
  – broad concern for people of all abilities, social model – considers design and technology of environments, products and services to produce barrier-free environments

• However, AT and ID are not strongly represented, and are absent from most courses.
Two Perspectives

• Medical Model
  – Emphasis on disability and declining function
    • Physical disability
    • Vision and hearing impairment
    • Cognition and memory decline
  – Perspective of most Rehabilitation Engineering and some AT work

• Social Model
  – Age is not a disability
    • Environment and products can be disabling
    • Full participation in society is a right
    • Social connections and mobility are essential to good quality of life
  – Perspective of some AT and most ID work
Physical challenges

• Handicapped and disabled
  – is it the person who is handicapped or disabled
  – or the environment or product which is handicapping or disabling them?

• Dependent
  – why is the individual dependent?
  – Why can’t they do the task for themselves?
  – Can’t we compensate for physical, sensory, cognitive impairments?
Typical place

• Final year optional subject
  – mixture of
    • lectures
    • briefings from older or disabled people
    • covers sensory and cognitive as well as physical impairment
    • experiential element
    • project work

• Very unusually - introduced at an earlier stage
Main motivation to include these in undergraduate courses

• Personal interest of lecturers
  – often driven by
    • their research interests and
    • drawing on their up-to-date research materials
  – Reinforced by enthusiastic response of students

• Requirements of legislation
  – for example, some vocational courses require some coverage of disability (such as DDA, building regulations). Why not take it further?

• But such courses are unusual!!!

• Indeed, Council of Europe - Resolution ResAP(2001)1 on the introduction of the principles of universal design into the curricula of all occupations working on the built environment - is not an incentive
Available resources

- Depends on subject area
- For example, in construction, surveying, planning
  - Much available information on designing for disabled people and older people
  - A fair amount is linked to statutory requirements, regulations and standards
  - Some specialist texts in design area available for lecturers
  - Plenty of easy-to-do and attractive simulations (such as for different visual impairments, wheelchair exercises)
  - Quite easy to get outside speakers
  - Lends itself to project work and dissertations
- Recently some attractive materials becoming available
  - Cambridge Engineering Design Centre
    - Impairment simulators – physical, hearing, vision
  - Materials generated by specialist networks of designers interested in education and training (for example, European Disability Forum, Design for All Networks etc)
  - Yet because the contents are not prescribed by, say, legislation, there remains scope for developing very distinctive courses.
Three Very Different Examples

• EDeAN
  – (European Design for All e-Accessibility Network) – major activity in ICT area - speak to Gill Whitney

• Healthy Homes, Healthier Lives
  – Care & Repair for Department of Health’s Care Services Improvement Partnership – information in your pack - appropriate to a wide range of courses

• Cambridge Engineering Design Centre –
  – Impairment simulator software, Inclusive Design toolkit, Physical impairment simulators, Exclusion calculator software
Main challenges for Engineering & Environment

• Getting wider take up rather than availability of materials

• Familiarising students with ageing/disability issues earlier in their courses

• Gaining acceptance by professional bodies that this is a mainstream issue not a nice add-on, so that it becomes a requirement
Universal Value

• Many of the materials
  – applicable across a wide range of courses

• Simulators
  – can be of value to
    • social scientists and artists exploring totally different environments as much as to designers trying to help people overcome the constraints caused by their impairments!
    • in medical and health for understanding how impairments and disabilities can be managed by changing the design of the environment, products etc
Ideal scenario

- Opportunity to bring courses together, to take a multidisciplinary approach to student projects
- Medical and health, physical sciences, social sciences, arts and humanities
That’s all!