

A Strategy for the development of lifelong learning and personal skills

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Introduction

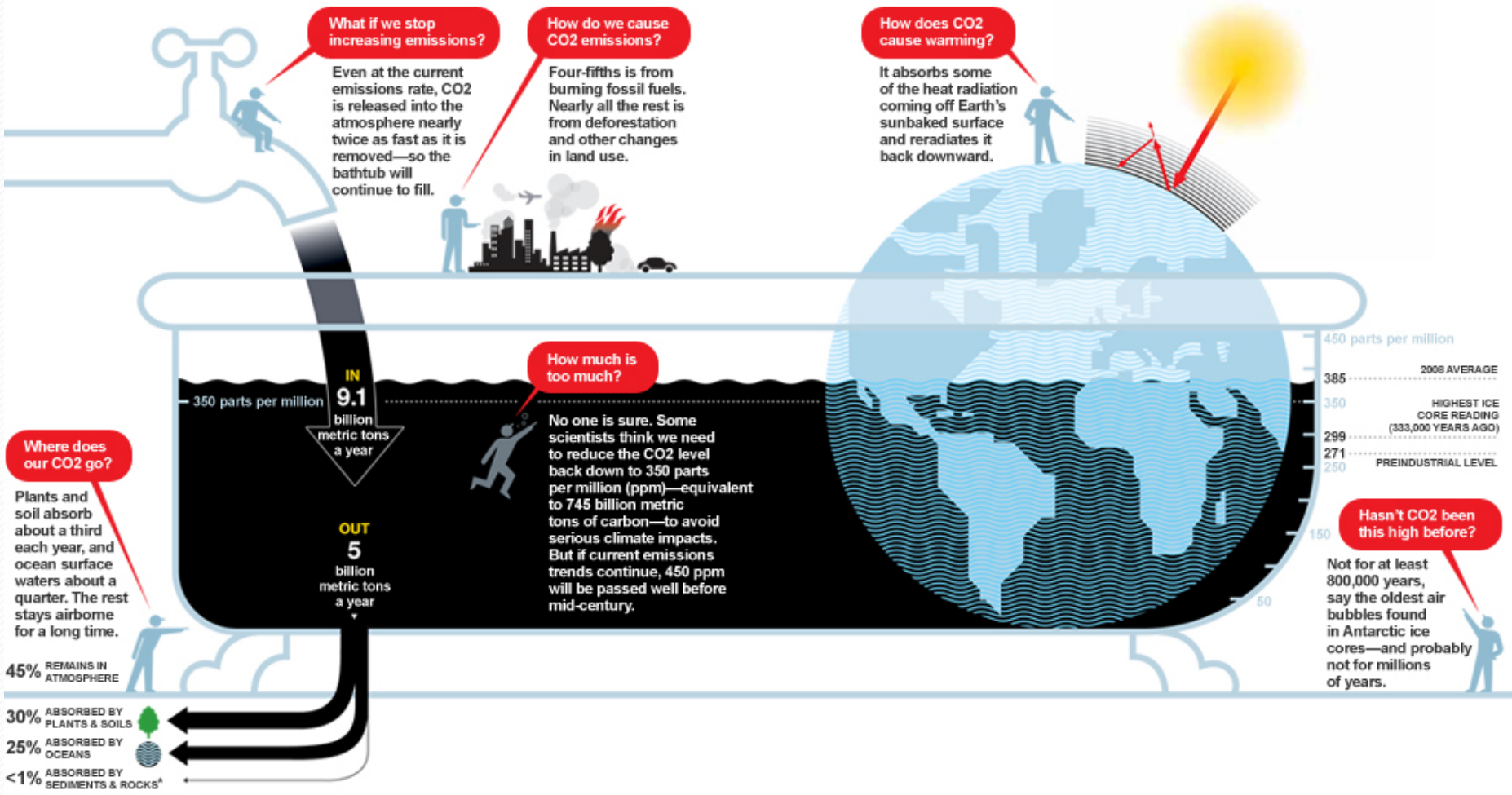
- Sustainable solutions
- Constructive alignment
- The traditional view of engineering education
- A student-centred view: group-based and project driven
- The progressive development of personal skills
- A framework to develop personal skills

The future is new

- “The world we live in demands **self-starting, self-directing** citizens capable of **independent** action. The world is changing so fast we cannot hope to **teach each person** what he/she will need to know in twenty years. Our only hope to meet the demands of the future is the production of **intelligent, independent** people”

(Combs 1972 as cited in Candy, 1991).





* PERCENTAGES DO NOT ADD UP TO 100 BECAUSE OF ROUNDING.

What Programme Outcomes?

TECHNICAL

derive...apply...science...
technology...maths...
conduct...experiments...
analyze...data...
design a system...

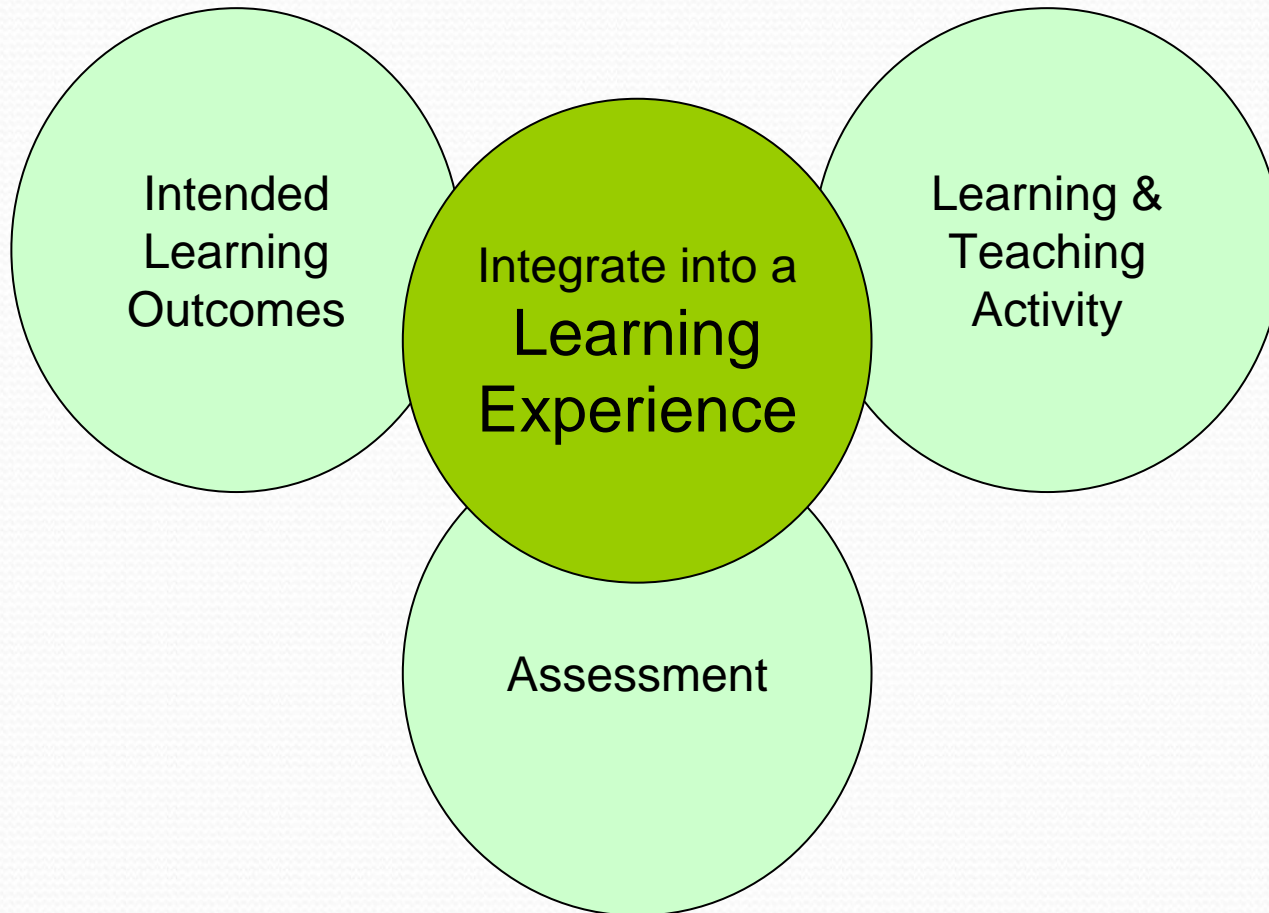
INTEGRATION

derive...apply...science
individual...teams...multi-
disciplinary...analyze...
solve maths...ethics...
conduct...experiments...
people...environment...
communicate...lifelong
learning

NON-TECHNICAL

work effectively...
individual...teams...multi-
disciplinary...analyze...
solve problems...ethics...
people...environment...
communicate...lifelong
learning


Constructive Alignment



Biggs 2003, Biggs & Tang 2007

Traditional approach

- Lectures + recipe labs
- Unless modified...
 - requires spontaneous self-engagement,
 - ignores the severe limitations of working memory,
 - exams test memorisation, labs follow a recipe, i.e. assessment is limited
 - and is not aligned with/does not *require* the development of personal skills



“Traditional engineering programmes were designed to teach a student that no longer exists and to produce an engineer that is no longer needed”

Group-based AND project-driven

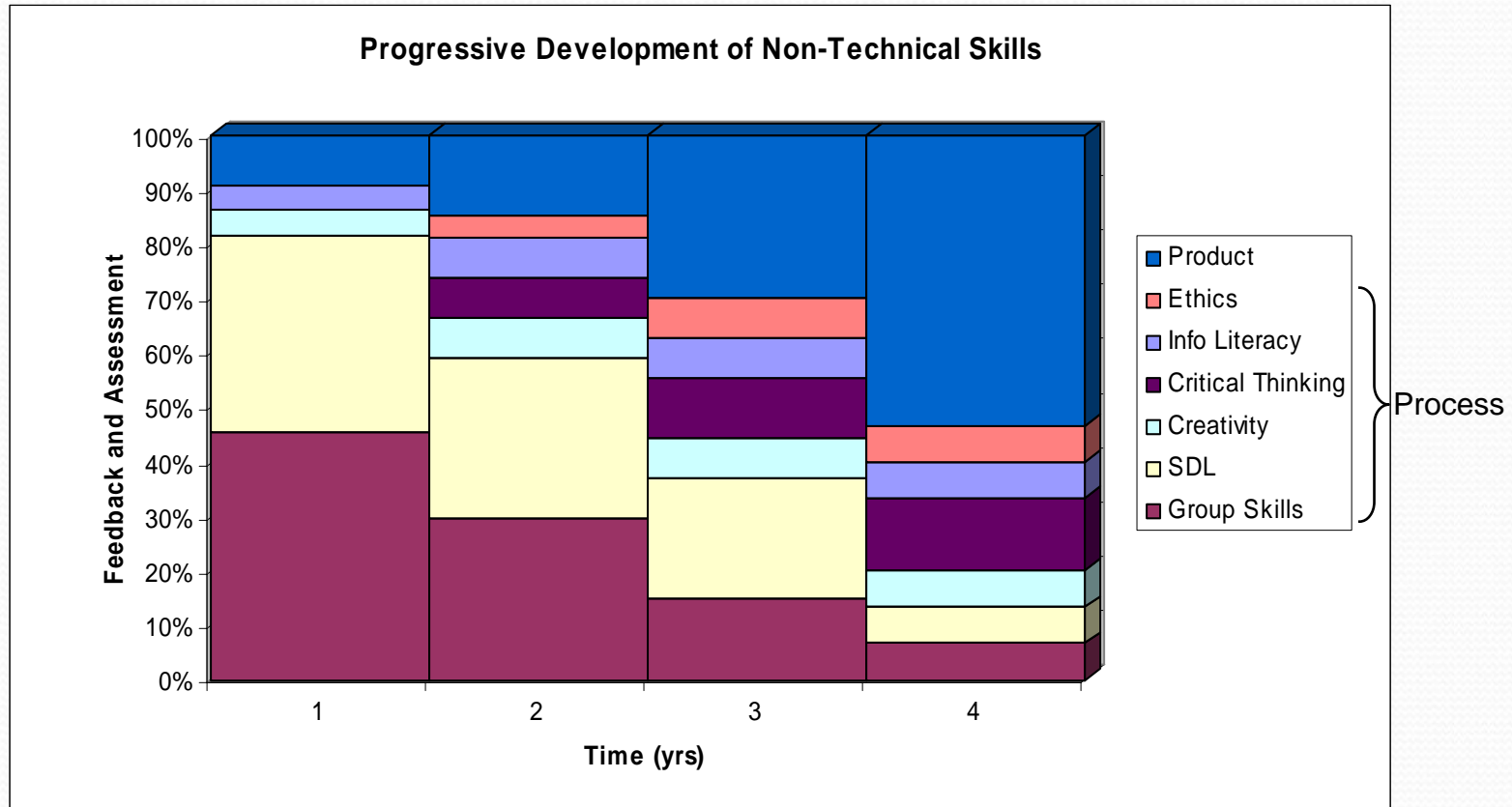


Personal skills require Progressive development

- Technical knowledge is developed from basic in year 1 to advanced in final year
- Personal skills must also be developed
 - these are low in year 1, lack of interaction in group
 - expected high level of skills on exit
 - practice, lots of, needed to bridge the gap
 - isolated group-based modules may not be effective
 - one or two integrated group-based modules are not enough
 - there are many personal skills, not all can be focused on at the same time



Framework for progressive development Elec. Eng. DIT



Presentation summary

- A move to strong sustainability is not a 'copy exact' of the past. Creativity, initiative, team work, ethics and other skills are needed to solve complex, open-ended multi-disciplinary problems.
- Group-based project driven learning allows the concurrent development of tech and non-tech skills
- A sustained development of these skills is needed throughout the undergraduate programme if high levels are to be achieved
- We suggest a framework to facilitate this development

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- Questions?