



PILOT

Programme

Individualised

Learning

Online

Tutoring



PILOT

- Learners enter HNC/D Engineering from a variety of backgrounds
- Maths is a difficult area for many students
- Focus on Maths

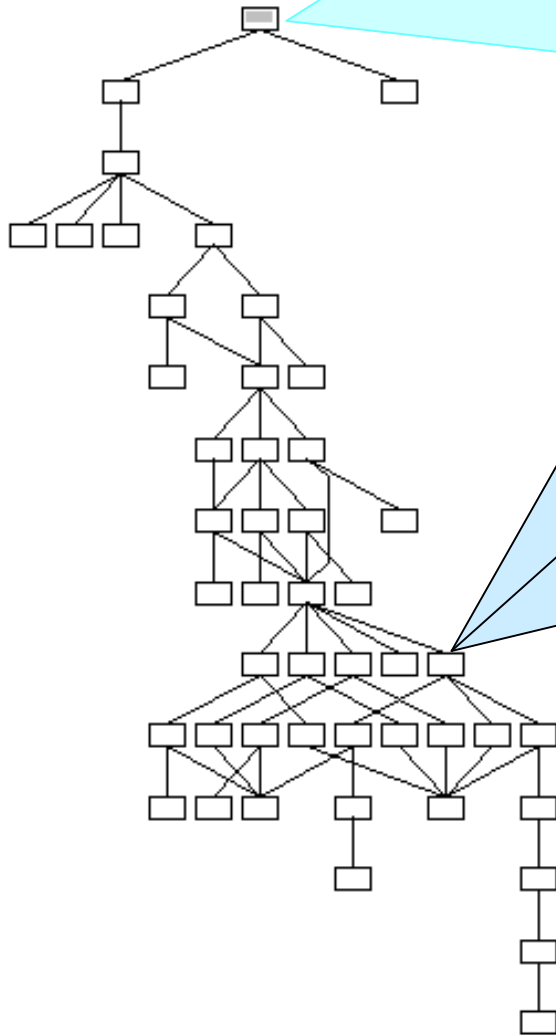


PILOT

- Identify curriculum areas
 - Engineering
 - Earth Sciences
- Interview teaching staff
- Construct dependency maps
- Identify materials
- Construct graphical interface
- Trial
- Report

PILOT

Calculus for
Higher National
Engineering
Courses

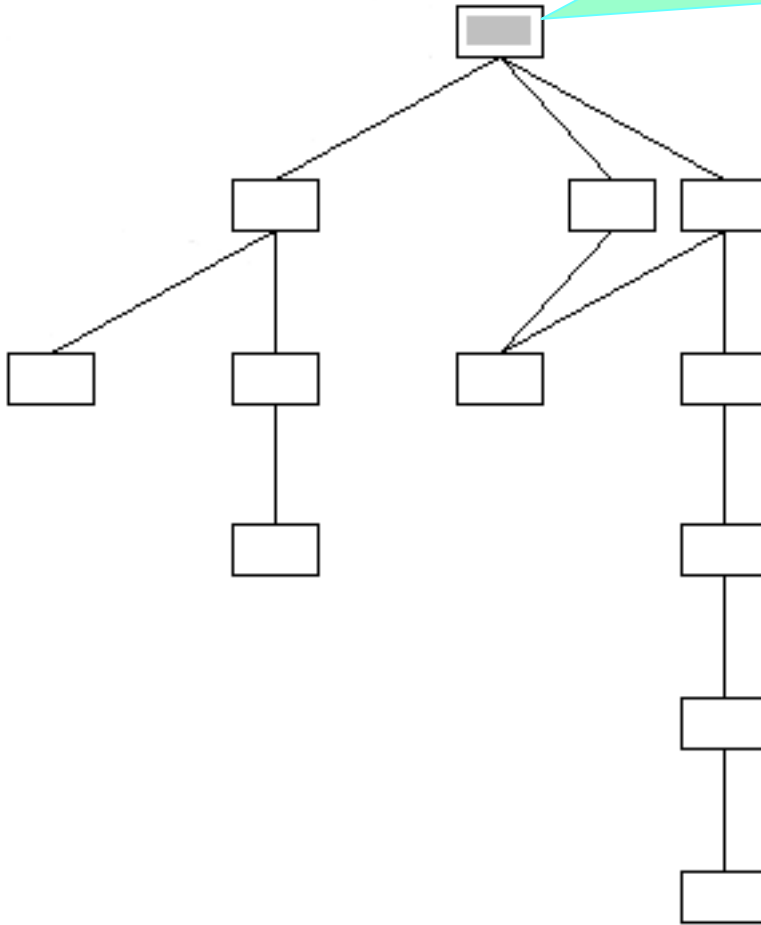


Differentiate
polynomial
functions

Knowledge
e
Dependency Map

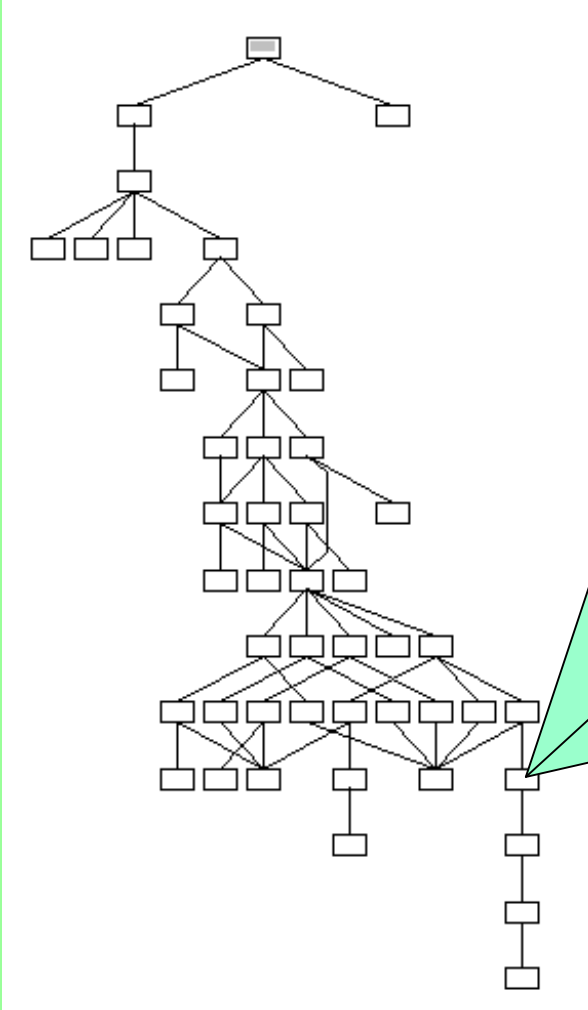
PILOT

Differentiate
polynomial
functions



Knowledge
Dependenc
y Sub-Map

Graph

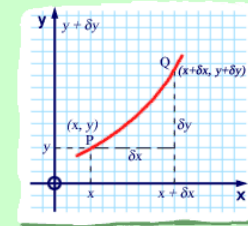


Gradient

[Rates of Change](#)
The idea of a rate of change

Rates of Change

The notation $\frac{dy}{dx}$ originates in the concept that the gradient is the limiting value of $\frac{\delta y}{\delta x}$ as $\delta x \rightarrow 0$. The process is called differentiation with respect to x .



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The Idea of a Rate of Change

For small increments of x there must be corresponding small increments of y . The ratio formed by these small increments is one of the most powerful concepts in mathematics $\frac{\delta y}{\delta x}$. To make use of it, Newton and Leibniz independently developed the ideas of the differential calculus.

Knowledge
Dependency Map
– Interface to
Learning
Materials