



Co-funded by the
Erasmus+ Programme
of the European Union

Pathway in Enterprise Systems Engineering (PENS)

Designing a pathway

Georgios Dafoulas

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Alcala de Henares



Agenda

- Previous experiences
- Bologna process compliance (ECTS)
- Integration to existing programmes
- TLA approach
- Learning taxonomies
- Content development
- PENS survey

Previous experiences

- JMSE
 - 2 countries / 6 institutions
- MAHATMA
 - 2 countries / 8 institutions
- FORC
 - 2 countries / 4 institutions
- PAWER
 - 8 countries / 23 institutions
 - Credit transfer / Grade conversion

Bologna process compliance

- How many weeks should the course last?
- How many credits (guided/unguided learning hours) should it have?
- How many ECTS will it have?
- What balance between lectures/labs?

Integration

- How many courses in each year?
- Should we start in year one?
- Should we be consistent with existing courses?
- What balance between compulsory and optional modules (who would register for the eight courses)?
- Would the pathway be a separate programme accredited by each institution?
- Recruitment / Employability / Sustainability

TLA approach

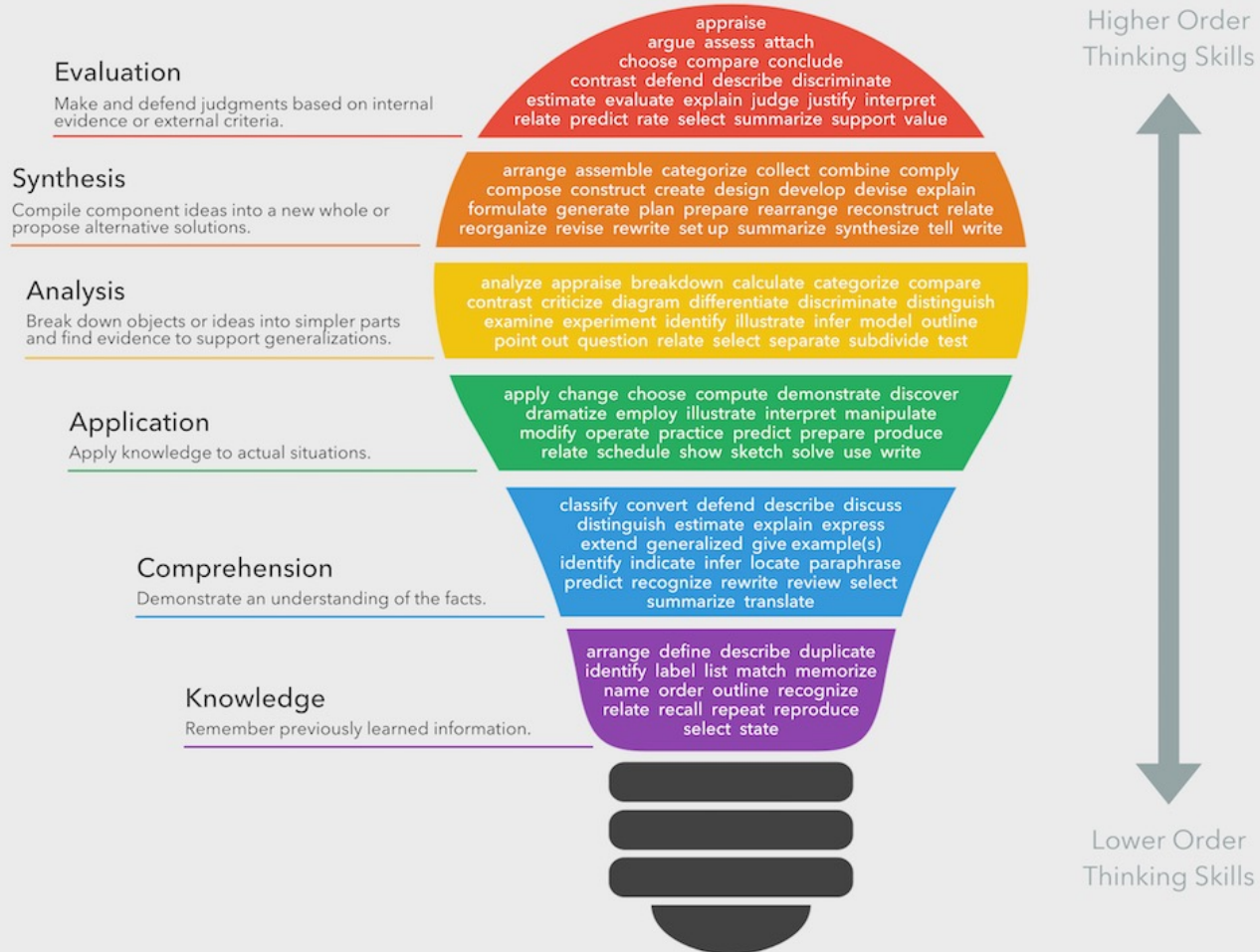
- Selecting appropriate teaching methods.
- Putting together an assessment strategy.
- Using the PENS Erasmus+ resources for learning support.
- Planning for sustainability after the project completion.
- Considering innovative practices.
- Thinking whether content development can generate textbooks.

Learning taxonomies

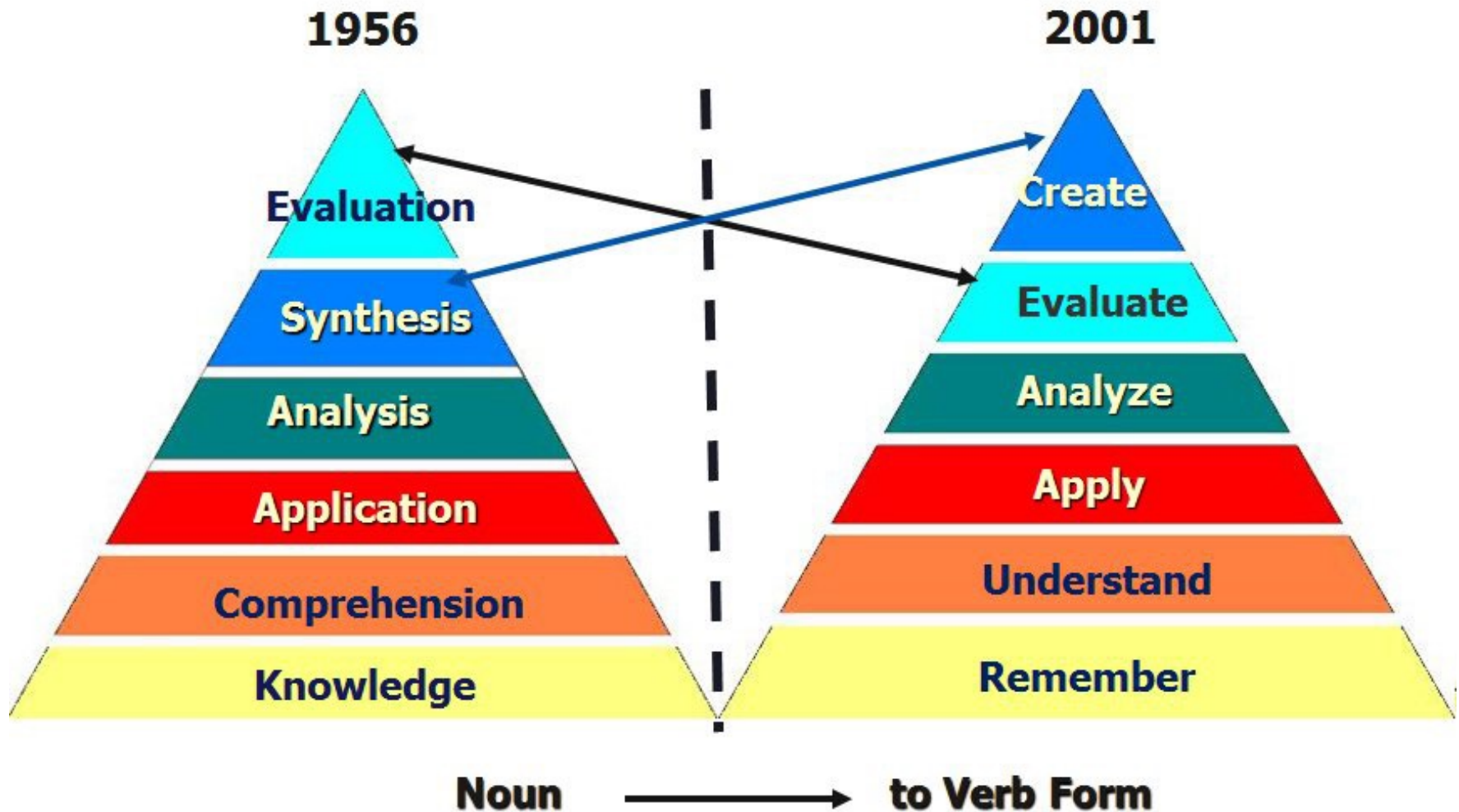
1. Educational objectives taxonomy (Bloom and Krathwohl, 1956)
2. Revised educational objectives taxonomy (Anderson and Krathwohl, 2002)
3. Six Facets of Understanding (Wiggins and McTighe, 1998)
4. Structure of Observed Learning Outcomes (SOLO) (Biggs and Collis, 1982)
5. Taxonomy of Significant Learning (Fink, 2003)

Educational objectives taxonomy

Bloom's Taxonomy Verbs



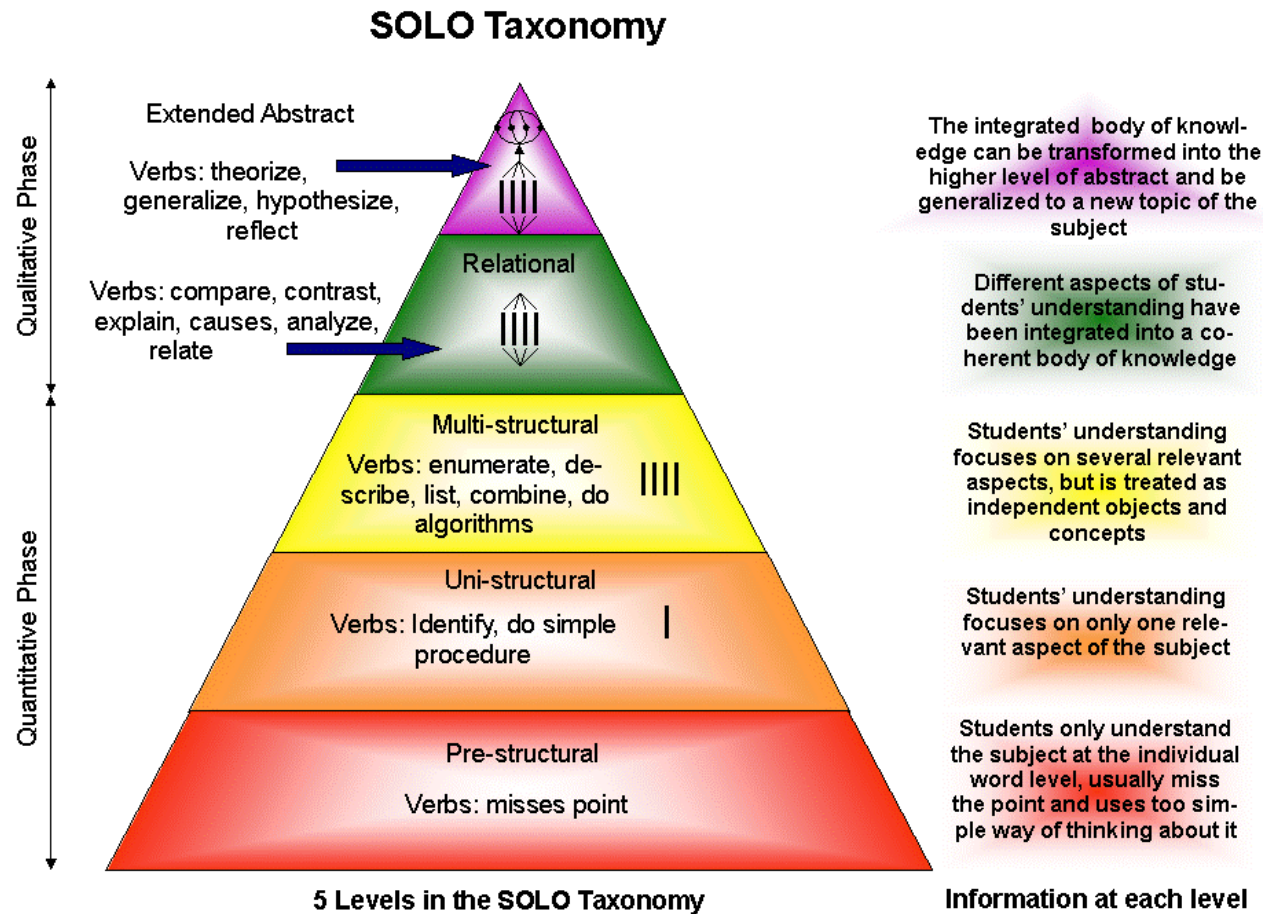
Revised educational objectives taxonomy



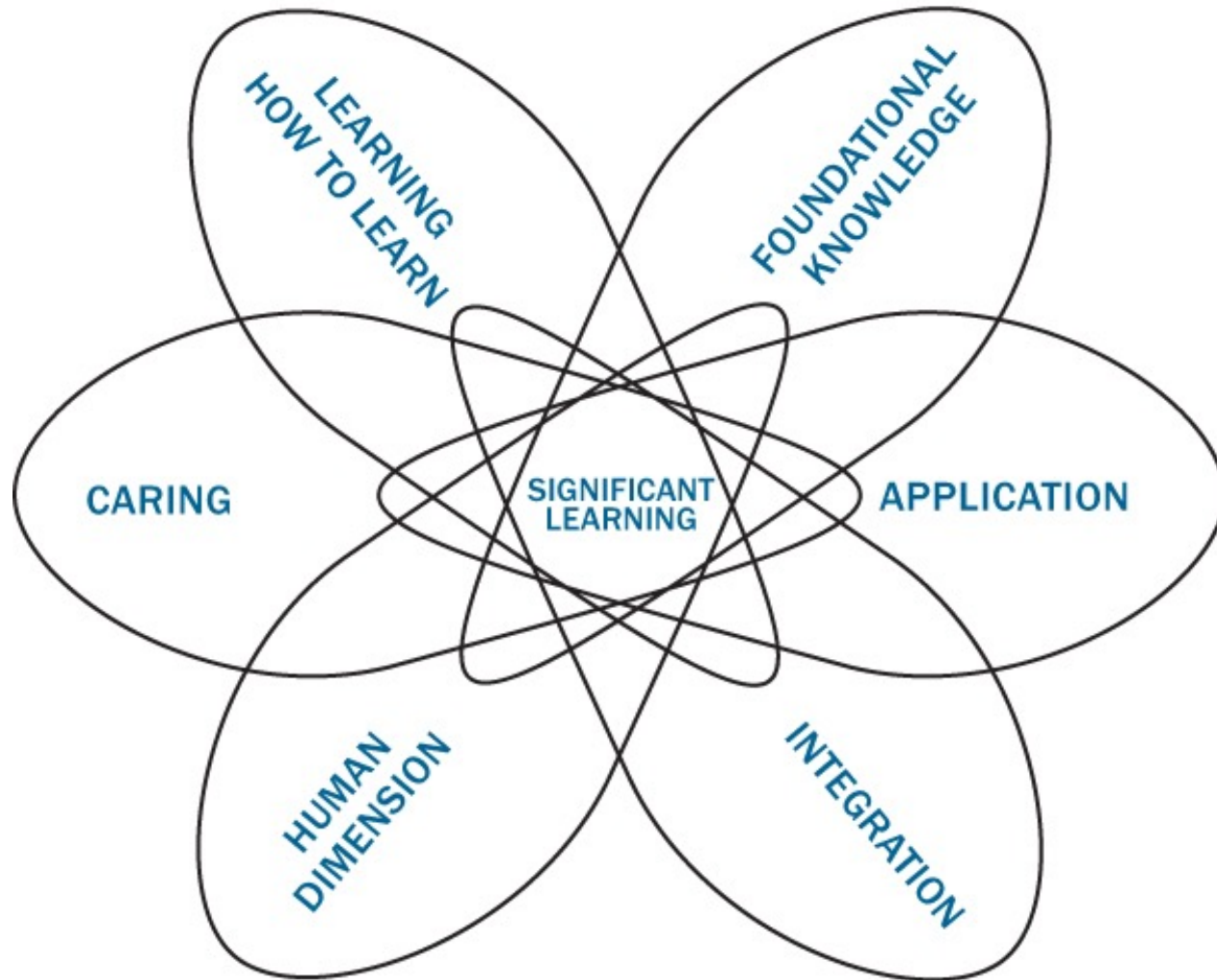
Six Facets of Understanding



Structure of Observed Learning Outcomes



Taxonomy of Significant Learning



Content development

- Series editors / Book editors / Chapter authors
- 9 books / 10-12 chapters each
- SCATE model
- International publishers contract

PENS survey

<https://docs.google.com/forms/d/1CEGwdH44O2rPr64PWN4fgGwBYyfwaNJcyIfpJZnFjbl/edit>



g.dafoulas@mdx.ac.uk

Thank you for your attention!

