Line 2:
Subject Related Competences
Line 2:
Subject Related Competences - Introduction

Development of the subject area work groups

- Phase 1: Informing
- Phase 2: Storming
- Phase 3: Norming
- Phase 4: Performing

• Cross-fertilisation
  - Other subject area groups
  - synergy groups
  - plenary sessions
  - ......from the platforms of academics from EU MS
PRESENTATION

TUNING PROJECT

Line 1: Subject Specific Skills &

Line 2: Knowledge and Curricula

Tuning Business Subject Area
A Methodology for Classifying Business courses

Subjects in Business

Knowledge Acquisition and Widening
Knowledge Acquisition and Deepening
Methodology & Skills to learn and to transfer

Support
Organisation and communication
Transfer / Theory in practice

Horizontal
Vertical
Diverse
The Decoupling point in Business programs

Decoupling point

Input
First Cycle
“Mass” production
General Knowledge Acquisition and Widening
Transformation from pupils into students

Needs
Second Cycle
Specialisation
Heavy emphasis on research
Good opportunities to satisfy stakeholder demands and needs
Academics perception of subjects importance at first and second cycle

Academics’ rating of importance of subject specific skills (grouped)
Education
Educational Sciences

• Subject area usually divided into:
  A. Education Science as an Academic Discipline
  B. Education for the teaching profession

• General and subject-specific skills and competences will vary, depending on whether A or B is the focus of the Higher Education Program
Educational Sciences

• Do Educational Studies have a common core? Observed Differences at Surface level might hide similarities at the deep level

• Teacher Education needs a stronger Research Component with Professional Relevance, for a European “Core Curricula” to become feasible
Geology
Geology Working Group

• Geology is a wide discipline
  – ranging from natural resources to the origins of life
• Broad agreement
  – not about precise curriculum
  – but about **the set of skills** graduates need
    • Ability to make good decisions
    • Ability to work independently
    • Ability to observe, process and analyze
Geology (2)

- Geology subject specific skills
  - Laboratory work
  - Fieldwork
    - formal taught course
  - Independent field project
    - encourages independent thought
- Course of study
  - early years learn the vocabulary and skills
  - later years learn to analyze and integrate
History: **General** Competences

**Specificity of History Graduates:**
- high percentage employed in work not directly related to degree
- high level of satisfaction with teaching/learning experience

**Employers of Graduates:**
*High importance and high achievement*
- capacity for analysis and synthesis
- basic general knowledge
- Ability to gather and integrate data from a variety of sources
- Ability to place events and processes in time

**BUT...as in other subject areas... graduates and employers:**
*Low rating for importance, achievement*
- second language
- international aspects
History: Subject Specific Competences

Three subject specific skills included in general consultation:
- 31 Capacity to approach texts and data critically
- 32 Ability to place events and processes in time
- 33 Ability to gather and integrate data from a variety of sources

All high in both importance and achievement for Graduates, Employers, Academics

Consultation with academics:
- Thematic Network CLIOHnet participates - results from accession countries
- Questionnaire in 4 parts (single course, double degree, first, second cycle degree)
- Linked to definition of learning outcomes by levels

In this Subject area:
- *important general skills enhanced by subject specific teaching/learning*
History: Reference Points for Curricula and Courses I

Working Method: Mapping....
- What is mandatory for History students in each participating institution?
- How is it conceptualised and justified?
- What terms are used to describe this ‘mandatory’ learning?

Definition of reference points and levels in 4 parts:
- Single History course
- Part of a Degree with another subject (“double honours” or similar)
- First Cycle History Degree
- Second Cycle History Degree

In this Subject area:
- Overarching subject specific outcomes for all levels
- Subject specific outcomes calibrated by level
History: Reference Points for Curricula and Courses II

Overarching objectives in all History teaching/learning:
- A critical view of the human past
- Respect for other viewpoints
- General chronological framework
- Contact with documentary sources and with professional research

General observations:
- Teaching/Learning methods must be varied in order to foster diverse important ‘general’ and specific competences.
- Overarching subject specific objectives are important for general competences, for European citizenship – and for employability, not only of historians.
Mathematics
Towards a common framework for Mathematics degrees in Europe

• The aim is to facilitate an automatic recognition of degrees in order to help mobility
• The idea of a common framework must be combined with an accreditation system
• 2 components: similar (although not necessarily identical) structures and a basic common core curriculum (allowing for some degree of local flexibility) for the first two or three years).
• Beyond the basic common core curriculum, and certainly the second cycle, programmes could diverge significantly. Flexibility is of the utmost importance
Common ground (1st cycle)

- Will include calculus in one and several real variables and linear algebra.
- Broad list of further areas that graduates should be acquainted with.
- There should be time to learn some computing and to meet at least 1 major application area.
- Skills that any mathematics graduate should acquire:
  1. The ability to conceive a proof,
  2. The ability to model a situation,
  3. The ability to solve problems.
Second cycle

• Any notion of a common curriculum for second cycle studies would be a mistake.

• We should aim for a wide variety of flavours in 2nd cycle programmes in mathematics.

• The unifying characteristics feature should be that all students carry out a significant amount of individual work.
Physics
PHYSICS TUNING

• COMPETENCES
  • the signature competences are MODELLING and specific PROBLEM SOLVING
  • the Academics valued the two cycles for providing lasting academic competences rather than short term job qualifications
  • job market preparation is really fruitful only after the 2nd cycle degree completion

• clearcut definitions of CORE CONTENT are difficult
  • CORE CONTENTS are complemented by other ESSENTIAL ELEMENTS;
  • COMMON DIDACTIC OFFER is different from COMMON COMPULSORY CONTENT

• common CORE CONTENT
  • is a meaningful concept in the first cycle, but not in the second cycle (i.e. when scientific deepening in specialised fields occurs).
  • However, core content in BaMa is quite similar to IntMa
  • Even IntMa usually distinguishes 2 training cycles
FIG 3 - COMMON CORE CONTENT CHARACTERISATION
TUNING 2002

COMMON ECTS CREDITS

<table>
<thead>
<tr>
<th>TUNING GROUPING</th>
<th>BaMa</th>
<th>Int Ma</th>
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<tr>
<td>Mathematics and Related Subjects</td>
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<tr>
<td>Applied Physics and Related Subjects</td>
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<td>OTHER COMPULSORY ELEMENTS</td>
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<tr>
<td>completely free choice</td>
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</tr>
</tbody>
</table>
The Chemistry Eurobachelor

- ECTN has already dealt with core curricula, teaching methods and assessment, and communication skills. Thus we decided to devise a framework for 180 credit first cycle degree.
- Guiding principle: do not step on too many toes (also known as “subsidiarity”)
- Ingredients:
  - Bologna
  - Helsinki
  - ECTS
  - Prague

- ...and a little bit of chemistry
Aspects considered in the proposal

- **Outcomes: Subject Knowledge, Abilities and Skills** (derived from the UK Quality Assurance Agency chemistry benchmark)
- **ECTS and Student Workload** (guidelines on student workload distribution, including definition of pre-examination study periods and examination periods separate from the teaching period)
- **Methods of Teaching and Learning** (lectures, multimedia techniques, practical courses, problem-solving classes, tutorials)
- **Course Organisation** (modular, multiple of 5 credits, divided into compulsory, semi-optional and optional, bachelor thesis compulsory)
- **Teaching Committees** (student participation)
- **Grading Criteria** (to measure the different types of skills)
- **Use of the Diploma Supplement** (standard)
- **Quality Assurance** (supranational)
Subject Related Competences - General Conclusions

- Obviously there is
  - a *great willingness and openness* of academics to exchange their views on subject related competences and skills within their subject area
  - a *significant common line of understanding*
  - an *identifiable common anxiety* as regards external pressure to harmonise contents of subject areas
  - a *clear orientation from subject input towards learning outcomes* in the design of study-programmes
  - an *identifiable acceptance of the need of a quality assurance system*
Subject Related Competences - Specific Conclusions

- *Diversity* between the groups
- Common framework appears to be acceptable as regards *first-cycle programmes*. Identification of
  - a common core (*Mathematics, Business*)
  - a common study-programme (*Chemistry, Physics, Business*)
  - subject areas which appear to be different but are in fact very similar (*Education, Physics*)
  - learning outcomes (*Geology*)
Subject Related Competences - Specific Conclusions

• A common framework in *second-cycle programmes* appears to be counter-productive
• *This does not exclude to*  
  • *form* partnerships, strategic alliances as at first cycle level
Line 2: Subject Related Competences - Specific Conclusions

- *It may, however, mean to*
  - *design* individual profiles at an identified level of second-cycle which could be based on
    - vertical knowledge widening and deepening (specialisation)
    - horizontal knowledge widening and deepening (additional related)
    - diverse knowledge widening and deepening (additional unrelated)
Subject Related Competences - Specific Conclusions

- *satisfy* stakeholder demands (Business)
- *evaluate and accredit* study-programmes within the European Education Area which may be based on benchmarking (Mathematics)

- Across the cycles it appears that the more the study-programme is geared towards a specified profession the more likely an agreement on a common core may be reached, if this is a profession which can be pursued across borders (Education)
• TUNING has identified three major characteristics of subject areas within the European Education Area
  – Commonality
  – Diversity
  – Dynamism
Line 2: Subject Related Competences - Specific Conclusions

- **Commonality**
  - in terms of a common core at first cycle
  - cover basics of a study-programme and often include subjects which help to understand the basic subject matters
  - can be taught at any institution - are interchangeable
  - permanent update
Subject Related Competences - Specific Conclusions

- **Diversity**
  - Specific subjects deliver the flavour
  - have to be taught where the specific competences of an institution are
  - should be nourished as they highlight the diversity as an advantage of the European Education Area
  - no harmonisation
Subject Related Competences - Specific Conclusions

• **Dynamism**
  – there is no standstill
  – constant update
  – be a moving target
  – be aware and exploit your competences as an institution
Subject Related Competences - Specific Conclusions

- **Subject related area approach** appears to be crucial to
  - define various cycles
  - describe the contents of the respective levels
Subject Related Competences - Specific Conclusions

• Within the disciplines *subjects can be clustered*
  – knowledge acquisition and widening
  – knowledge acquisition and deepening
  – knowledge opening and transfer (Support-, organisation and communication- and transfer skills and competences)

• TUNING has emphasised the latter:
  – *Without it knowledge acquisition is useless.*
• By focusing on the output (*learning outcomes*)
  – the necessary *throughput* has to be identified (*syllabus*) and
  – the *requirements specified* for those who want to enter the programme (*input*)
• And linking this to ECTS *mobility* and *access* across borders, in local, regional and international terms and in the sense of lifelong-learning becomes a reality
Line 2: Subject Related Competences - Specific Conclusions

• The *Learning Outcomes* are geared towards employability, i.e.
  – Not to the present labour market situation as this would mean an orientation to the *PAST*
  – But to learn from the past and design the future so that the graduate will be able to survive
Subject Related Competences - Specific Conclusions

- TUNING proved
  - clear objectives in education can be achieved within a limited period of time if an adequate platform is installed
  - such platforms at European level are a critical success factor to give academics the opportunity to
    - exchange views
    - discuss upcoming issues
    - constantly update what is common, diverse and dynamic
Subject Related Competences - Specific Conclusions

• Only by relating knowledge and subject related competences to profiles of academic degrees and to those of professions, transparency can be created and coherence identified across Europe.
Subject Related Competences - Specific Conclusions

• Let’s create a snowball-effect
  – Continue to work with more disciplines within institutions
  – exploit more interdisciplinarity
  – in more regions