



The concept-context approach for biology education

IMPRESSE 2006, Gulpen 29-09-2006

Board for the Innovation of Biology Education

Initiated by the Minister of Education (2004)

Commission:

- a framework for a longitudinal curriculum for students from 4 to 18 years old
- examination programs for upper secondary education (HAVO, VWO)
- based on a concept–context approach

The concept-context approach

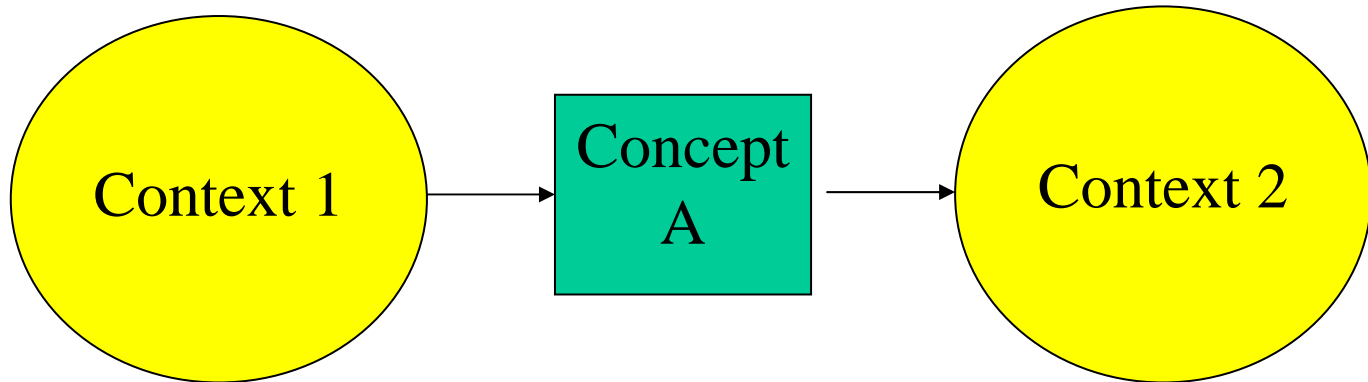
Difficulties in biology education and suggested solutions

Curricular overload	Selection of key concepts
Internal and external coherence	Elaboration of whole systems and relations between levels of organization
Relevance for students	Relating concepts to contexts

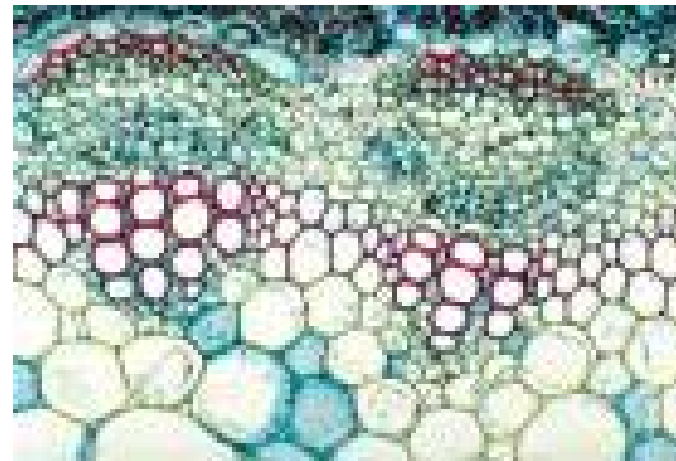
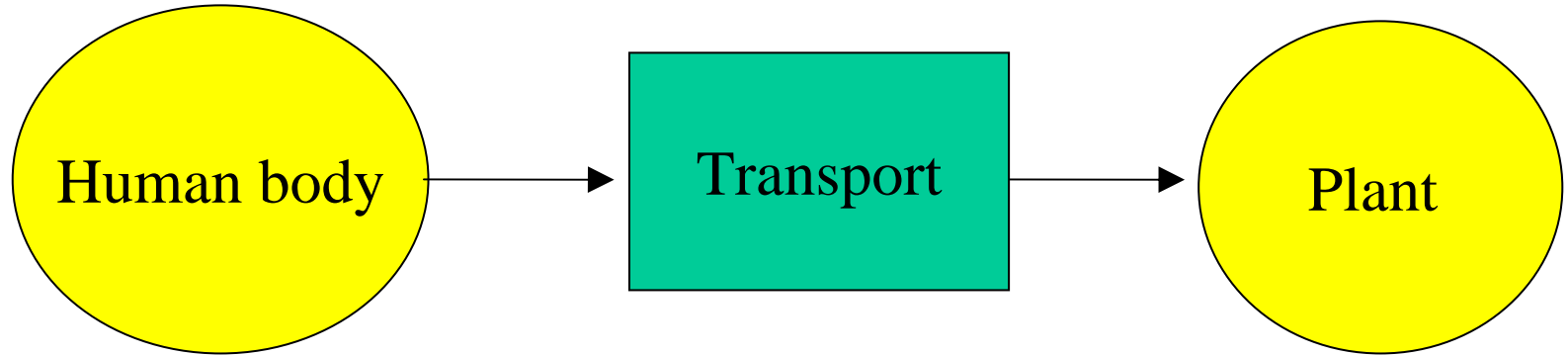
The traditional view on contexts

- Contexts as situation or example
- Contexts for improving learning results
- Context for increasing the relevance of curriculum content

The traditional view on contexts



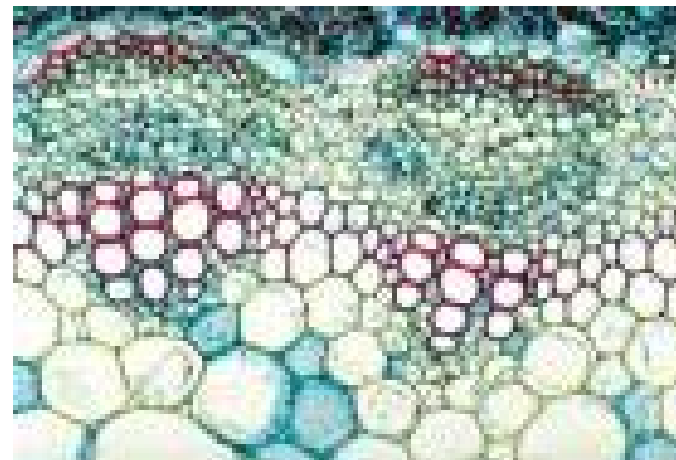
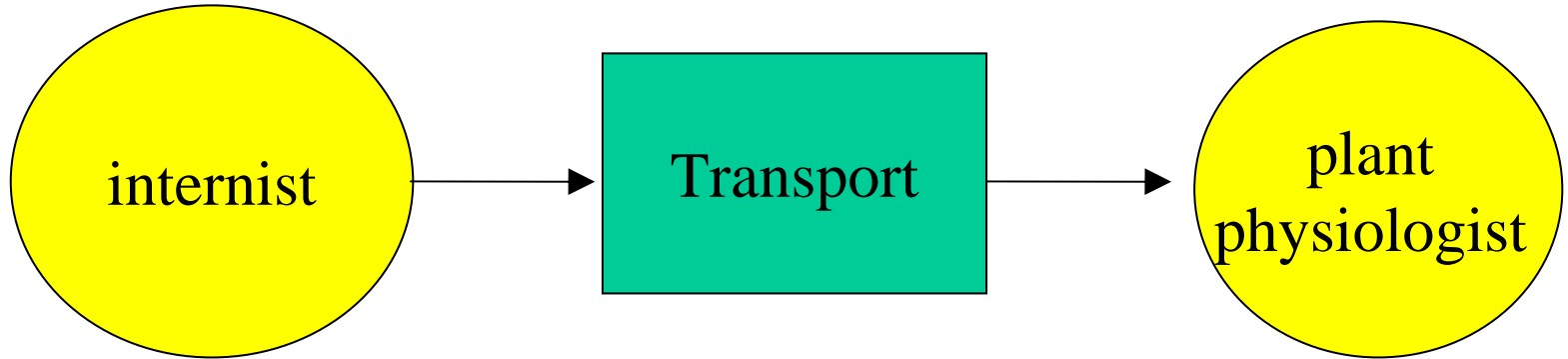
Example: transport



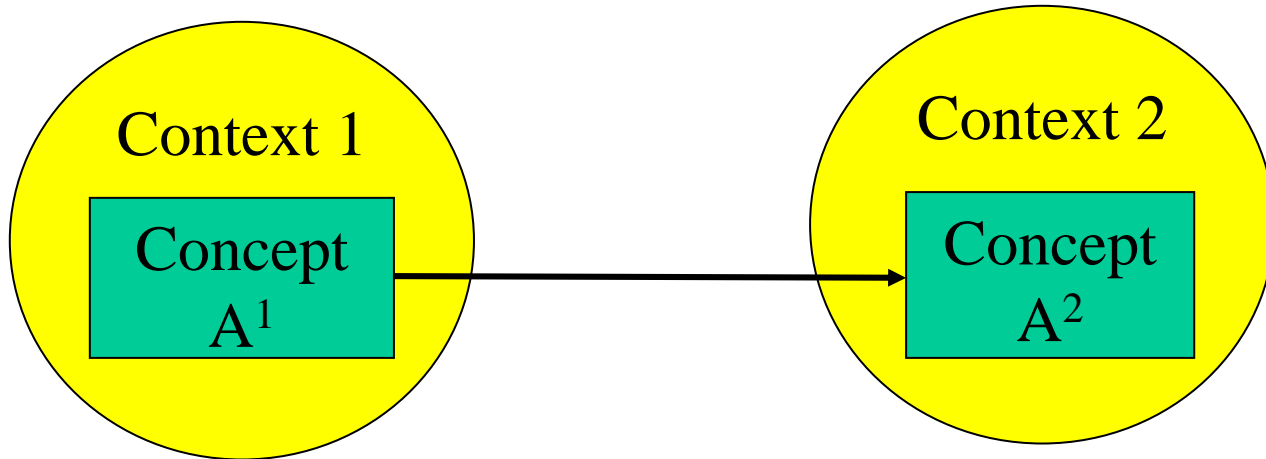
The role of contexts (reconsidered)

- The meaning of a concept is determined by the context in which it is used
- Concepts have no meaning outside contexts
- A context is a social practice, in which participants use tools, thinking and working methods, and knowledge to perform activities

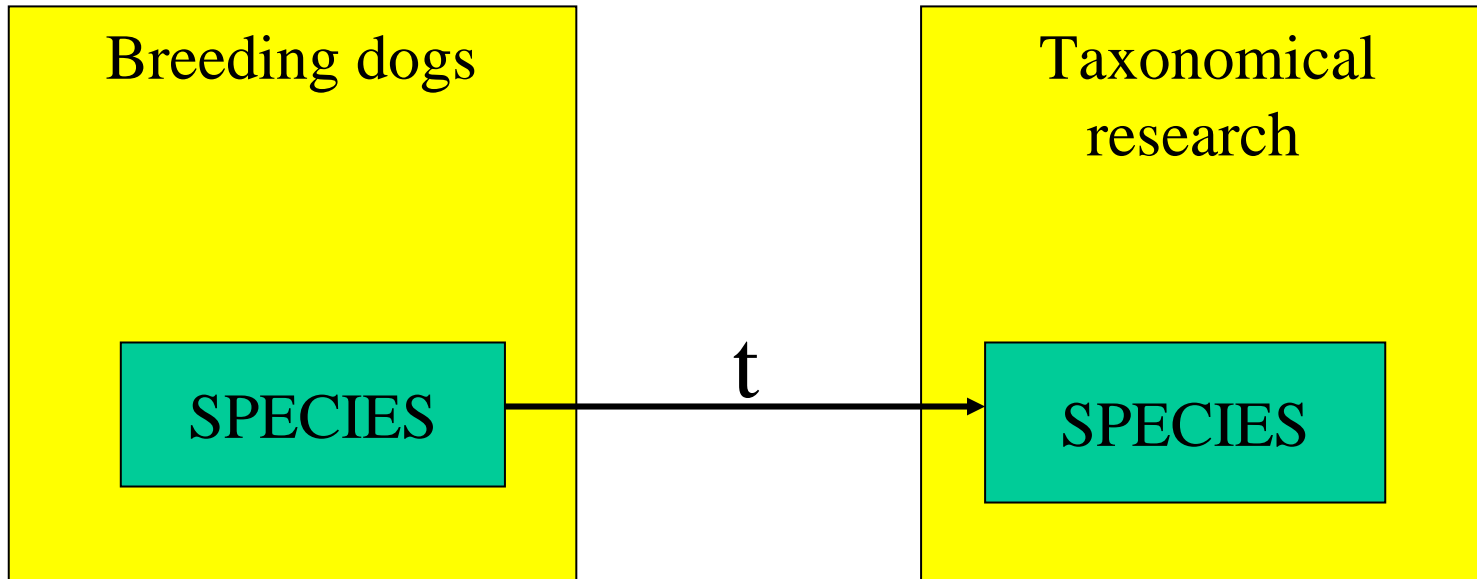
Example: transport



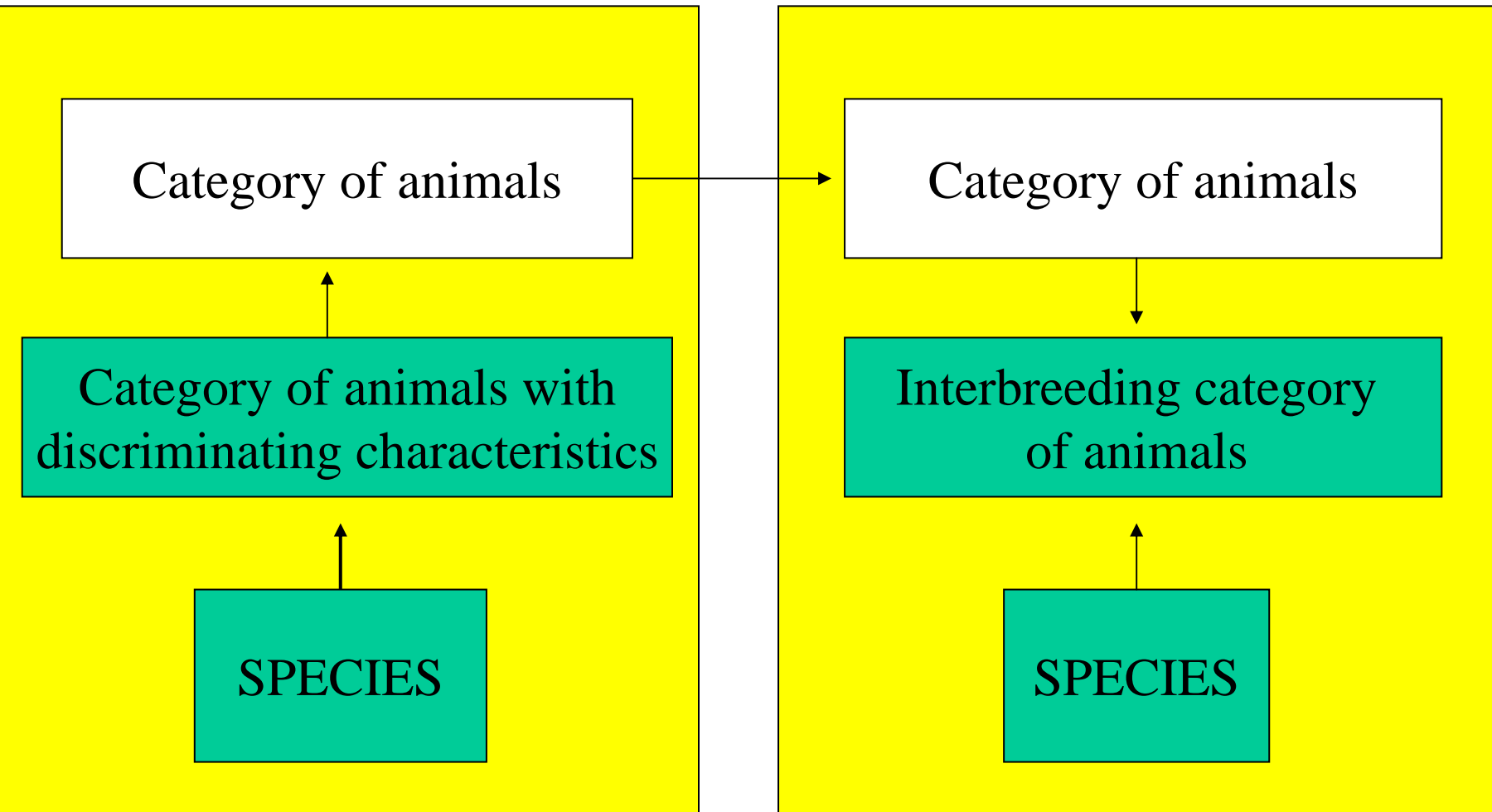
Concepts and contexts (reconsidered)



Recontextualization ('transfer')



Recontextualizing 2



Context and activities

- A context is a social practice, in which participants use tools, thinking and working methods, and knowledge to perform activities
- Focus on activities

Concepts –activities - concepts

context

activity

concept

nature conservation

investigating

community

Implications for the development of biology curricula for students from 4 to 18

- Selection of curricular content:
combinations of concepts, activities, and
contexts
- Development of learning and teaching
strategies, including strategies for
recontextualization

Categories of contexts

Life-world contexts	all age and ability groups in primary and secondary education
Professional contexts	all ability groups in upper secondary education
Scientific and technological contexts	higher ability and pre-university groups in upper secondary education

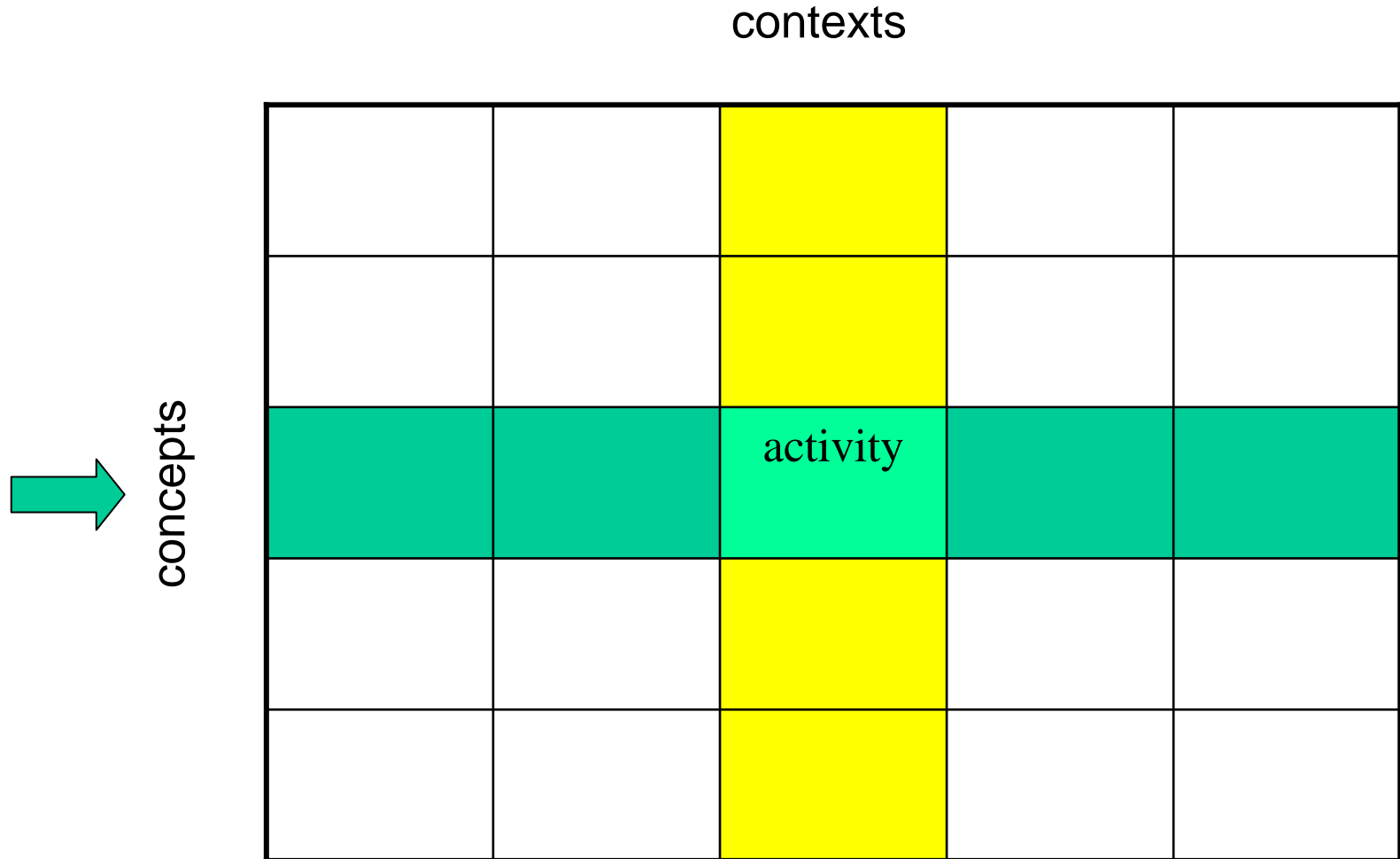
Activities

observing	information processing	attending
going through	inquiring	consuming
selecting	taking care of	producing
collecting & ordering	managing	selling

Matrix for selection of concepts

	Biol. Unit	Selfregulation Selforganization	Interaction	Reproduction	Evolution
Molecule					
Cell					
Organ (system)					
Organism					
Population					
Community Ecosystem					
Biosphere					

Selection of concepts, activities and contexts

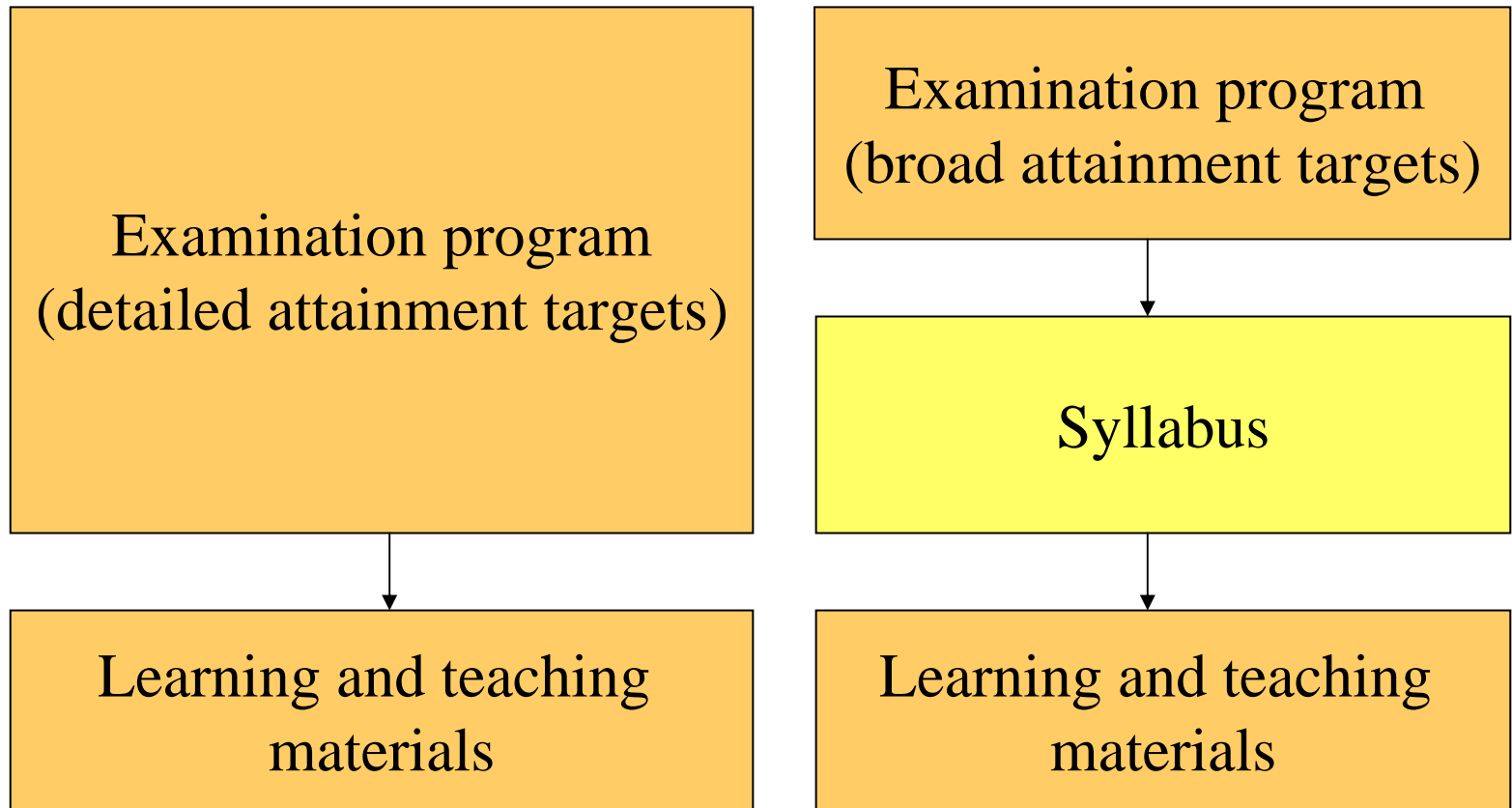


Development of a framework for
a longitudinal curriculum and of
examination programs

The extend of specification of the examination programs

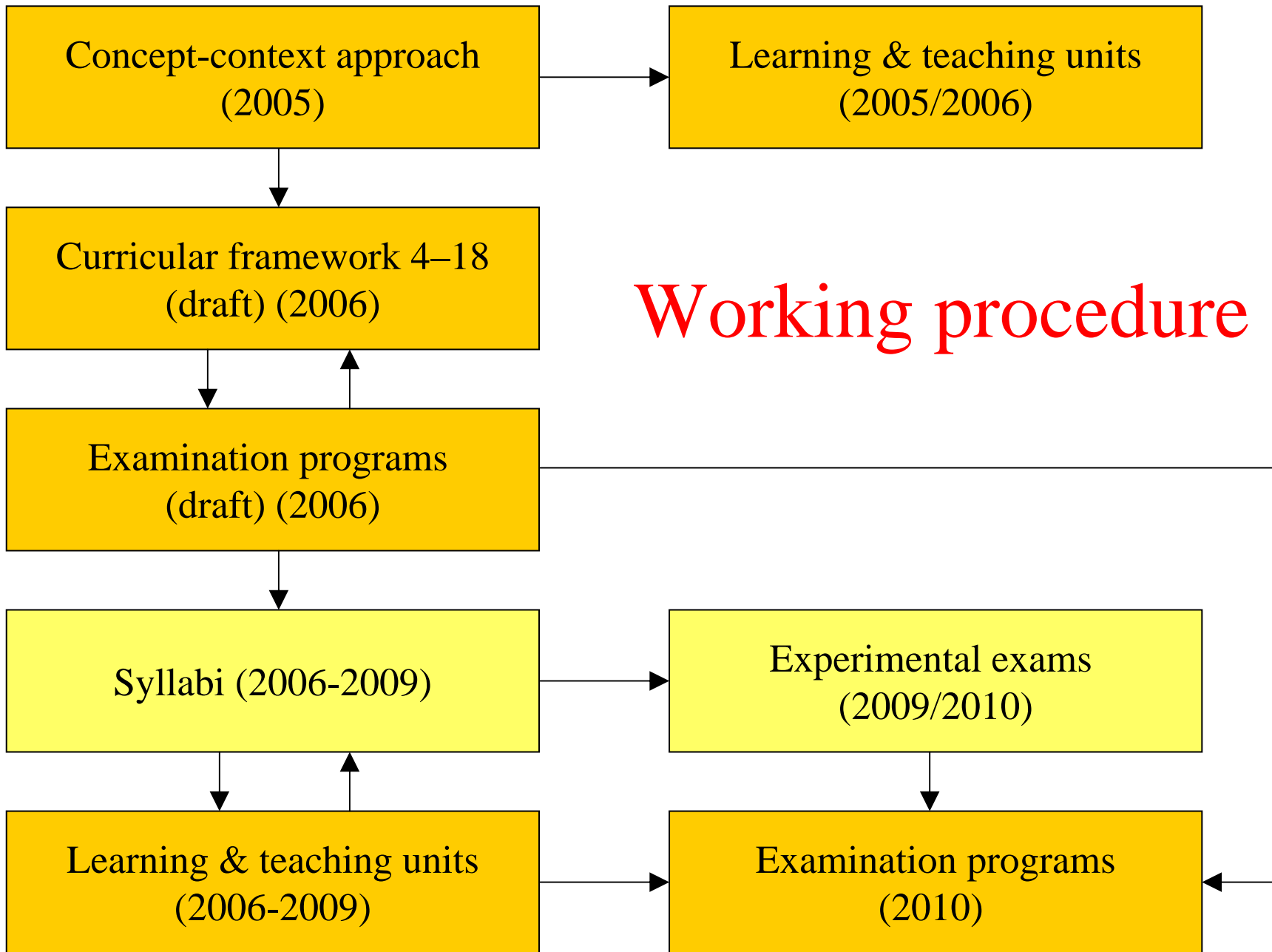
existing situation

future situation

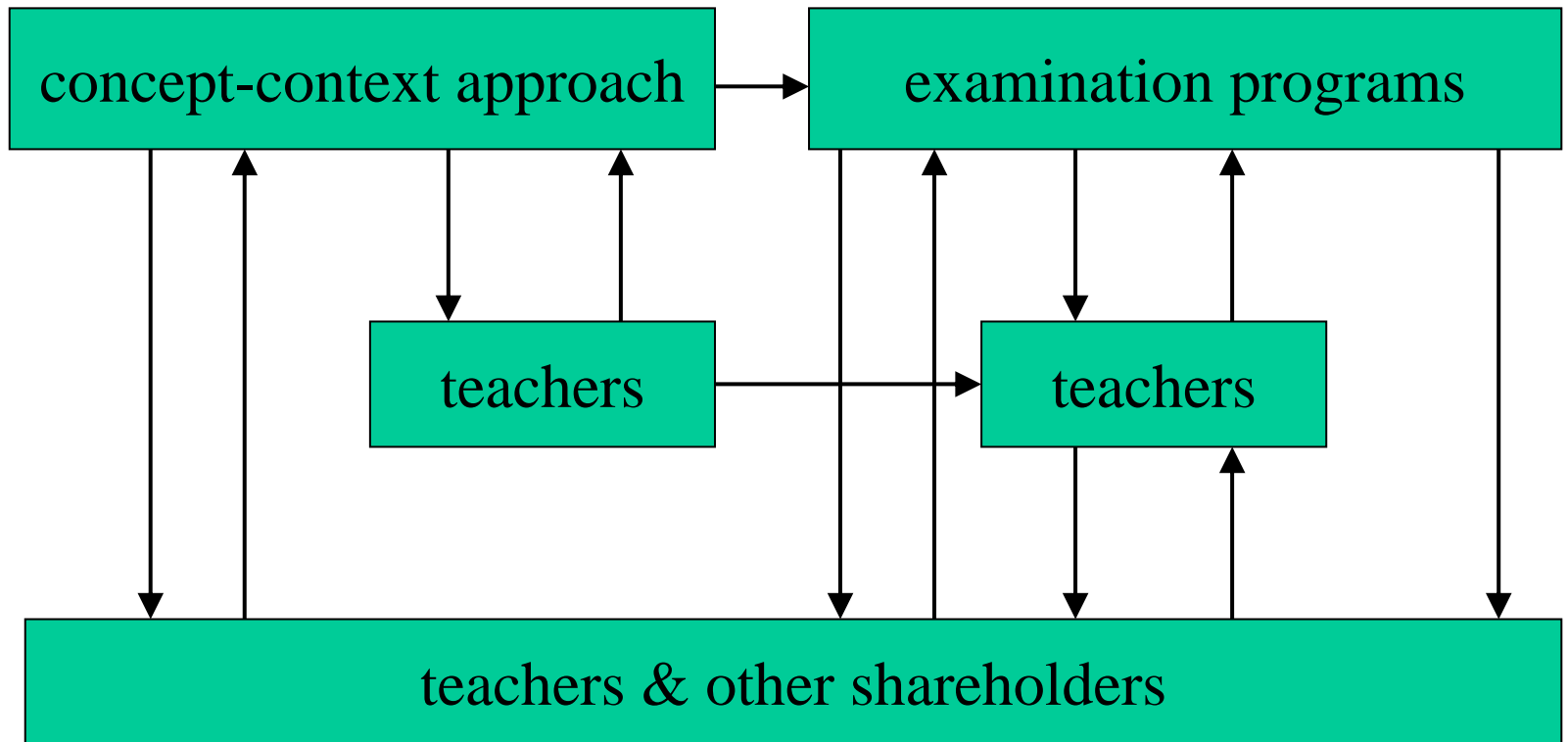


Concepts, activities and contexts in examination programs

Concept-context approach	Examination program (1 st draft)	Examination program (2 nd draft)
Concepts	Specifications of systems concepts	Specifications of systems concepts
Activities	Activities Thinking and working methods	Skills
Contexts	Categories of contexts	Categories of contexts



Top-down and bottom-up procedures



Thank you for your attention !