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Fostering Adaptivity in E-Learning Platforms: A Meta-Model Supporting Adaptive Courses

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- E-learning platforms are often used in e-education but they provide the same course for all learners
- Learners have different needs
- Adaptivity increase the learning progress

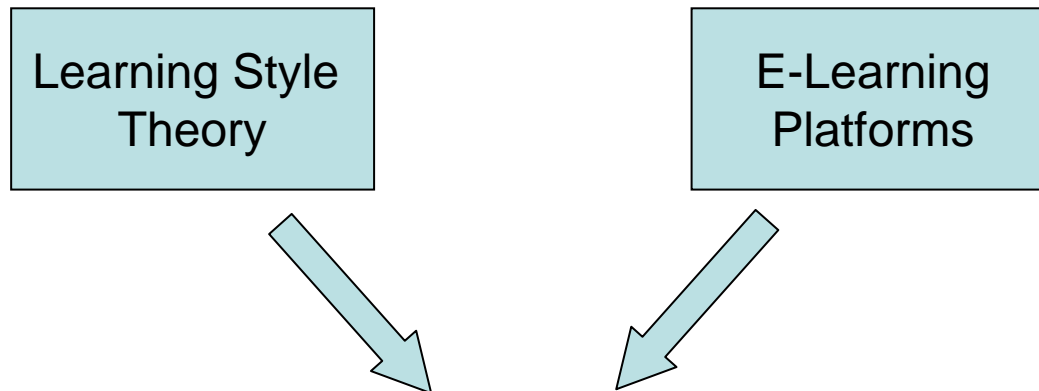
How to bring more adaptivity in e-learning platforms focusing on learning styles?

Basic concept:

- Author creates individual learning objects
 - System composes the learning objects to different courses
- Description saying how courses need to be designed to provide adaptivity (= meta-model)
- Easy applicable for all platforms
 - Platforms should not lose their simplicity

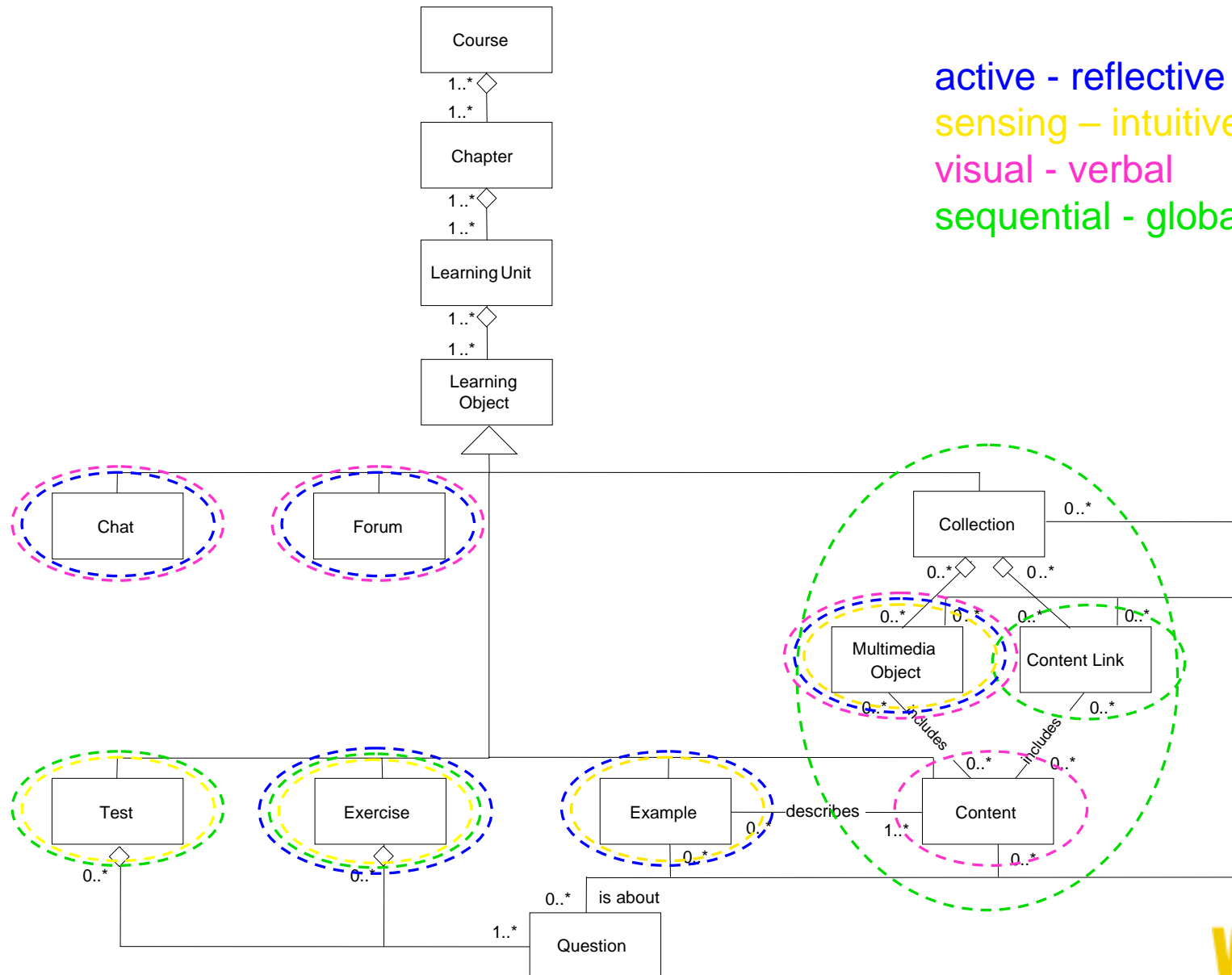
- Richard M. Felder and Linda K. Silverman, 1988
- Each learner has a preference on each of the four dimensions
- Dimensions:
 - Active – Reflective
learning by doing – learning by thinking things through
group work – work alone
 - Sensing – Intuitive
concrete material – abstract material
more practical – more innovative
patient / not patient with details
 - Visual – Verbal
learning from pictures – learning from words
 - Sequential – Global
learn in linear steps – learn in large leaps
good in using partial knowledge – need „big picture“
- Strong preference but no support → problems

Supporting Learning Styles in E-Learning Platforms



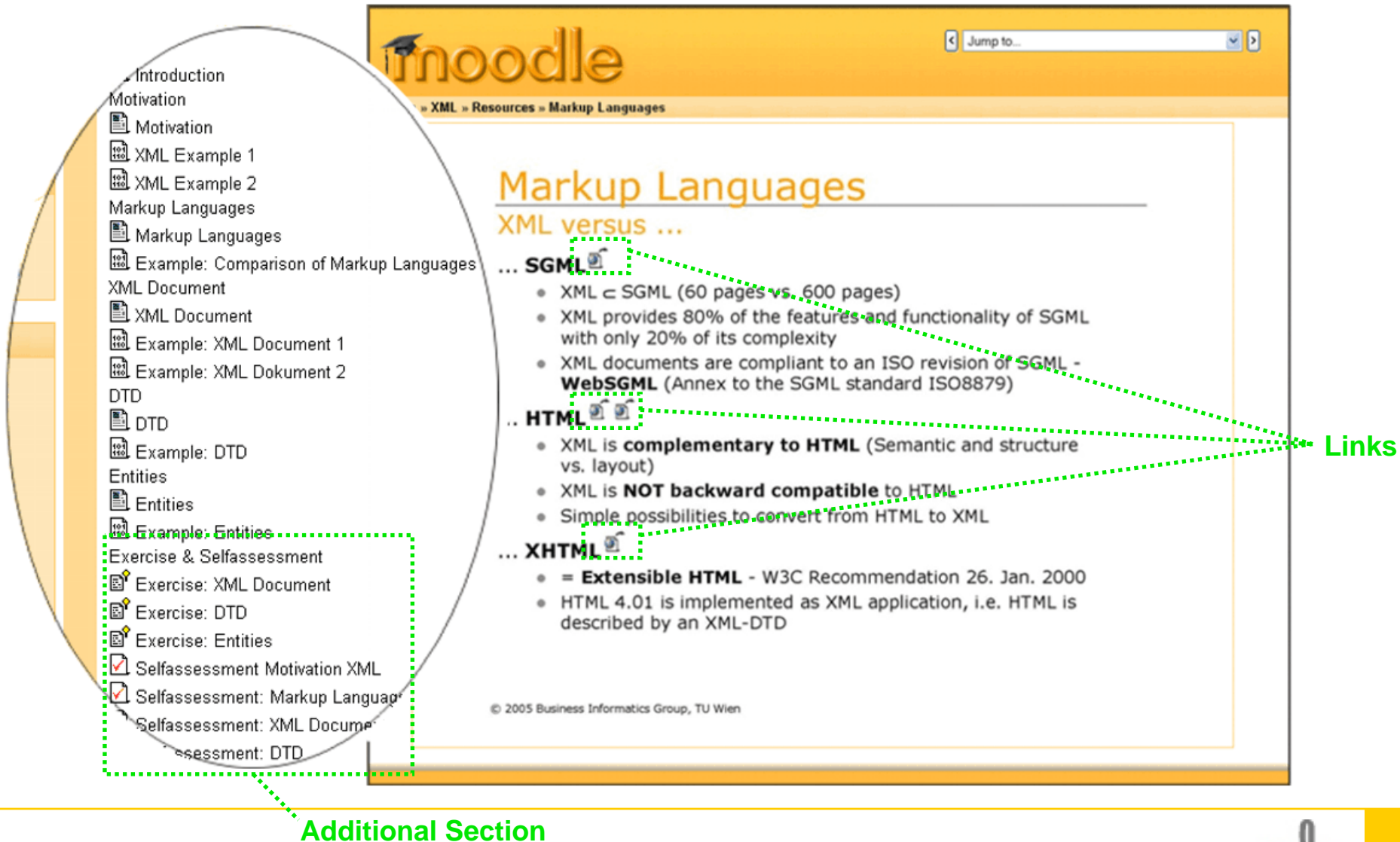
- Which kinds of learning objects/activities can be used to adapt to the learning style?
- Which kinds of learning objects/activities are commonly used?

Meta-Model



active - reflective
sensing – intuitive
visual - verbal
sequential - global

A course for a global learner



The image shows a Moodle course interface. On the left is a navigation menu, and on the right is the main content area. A large green dashed circle highlights a section of the menu, and a green dashed box highlights a section of the main content. Green dotted lines with arrows point from these highlights to the word 'Links' on the right. The main content area has several sub-sections: 'SGML', 'HTML', and 'XHTML', each with a list of bullet points. The 'HTML' section contains the text 'XML is complementary to HTML (Semantic and structure vs. layout)', 'XML is NOT backward compatible to HTML', and 'Simple possibilities to convert from HTML to XML'. The 'XHTML' section contains the text '= Extensible HTML - W3C Recommendation 26. Jan. 2000' and 'HTML 4.01 is implemented as XML application, i.e. HTML is described by an XML-DTD'. The footer of the page reads '© 2005 Business Informatics Group, TU Wien'.

Additional Section

Links

Links

A course for a sequential learner

Links

- Introduction
- Motivation
- Motivation
- XML Example 1
- XML Example 2
- Additional Links about XML
- Selfassessment Motivation XML
- Markup Languages
- Markup Languages
- Example: Comparison of Markup Languages
- Links to Markup Languages
- Selfassessment: Markup Languages
- Application Areas
- Application Areas
- Example: Intelligent Search
- Example: Multi-Delivery
- Related Links to Application Areas
- Selfassessment: Application Areas
- XML Document
- XML Document
- Example: XML Document 1
- Example: XML Dokument 2
- Exercise: XML Document
- Selfassessment: XML Document
- DTD
- DTD
- Example: DTD
- Exercise: DTD
- Selfassessment: DTD
- Entities

Exercises & Tests

The screenshot shows a Moodle course page with a yellow header. The breadcrumb trail is 'XML » Resources » Markup Languages'. The main heading is 'Markup Languages' with a subtitle 'XML versus ...'. The content is organized into sections: '.. SGML', '. HTML', and '... XHTML'. Each section contains a list of bullet points. The page footer includes the copyright notice '© 2005 Business Informatics Group, TU Wien'. Navigation buttons '< BACK' and 'NEXT >' are visible in the top right corner.

XML » Resources » Markup Languages

Markup Languages

XML versus ...

.. **SGML**

- XML \subset SGML (60 pages vs. 600 pages)
- XML provides 80% of the features and functionality of SGML with only 20% of its complexity
- XML documents are compliant to an ISO revision of SGML - **WebSGML** (Annex to the SGML standard ISO8879)

. **HTML**

- XML is **complementary to HTML** (Semantic and structure vs. layout)
- XML is **NOT backward compatible** to HTML
- Simple possibilities to convert from HTML to XML

... **XHTML**

- = **Extensible HTML** - W3C Recommendation 26. Jan. 2000
- HTML 4.01 is implemented as XML application, i.e. HTML is described by an XML-DTD

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- Meta-model for supporting adaptive courses
- Describes how courses should be designed to provide adaptivity
- Easy to integrate in e-learning platforms without losing their simplicity
- generate different course instances out of one course
- generate a suitable course for each learner

- We have implemented the meta-model in Moodle
- Future Work:
 - Implementing a tool that generates different course instances
 - Implementing a tool that identifies the learning style of a learner
 - Extending the meta-model by including also not commonly used features