Adaptation & Standards in aLFANet

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SAGE, UNED, OUNL, ACE-CASE, KLETT, EDP
Introduction

1a. Adaptation: a definition
1b. Adaptation - a full life cycle
1c. Adaptation supported by standards
2. A close up look at the adaptation cycle
3. The demonstrations: LD-editor + LMS
4. Conclusions
1a. Adaptation: a definition

Adaptation is about creating a learner experience that purposely adjusts to various conditions (personal characteristics, pedagogical knowledge, the learner interactions, the outcome of the actual learning processes) over a period of time with the intention to increase pre-defined success criteria (effectiveness of e-learning: score, time, economical costs, user satisfaction)
Adaptation & Standards - introduction

1b. Adaptation: a full life cycle

Adaptation is a complex interaction between design time logic and knowledge & run time observations. The results appear as:

- direct changes,
- recommendations or
- advices.

ALFanet supports this complex process in a 4 step life cycle.
Adaptation & Standards - introduction

1c. Adaptation supported by standards

Adaptation in aLFanet deliberately builds on a combination of e-learning standards - *increased initial investment but higher potential*:
- open architecture
- re-usable components

**IMS LD:** the instructional design
**IMS Metadata:** the contents
**IMS LIP:** the user
**IMS QTI:** the progress

All delivered in **IMS CP**

*Note: 1st integrated application with these 5 standards*
Design

Pedagogical models:
- Concept learning
- .................
- .................

Publication

Use

Inductive presentation (guidelines)
- Inductive presentation requires presenting first a number of possible examples and then giving a definition of the concept.
- The examples should be as diverse as possible to allow learner to generalize. They should represent the full range of cases that the learner will encounter after the instruction.
- Begin with easy examples so learners can master the activity and build confidence.
- End with .......................

KLETT Lesson 1
Design

Adaptation - a full life cycle

Publication

Pedagogical models templates:
- Concept learning
- ...
- ...

Audit & Adaptation
- norms (audit)
- metadata
- learner info

Adaptation – a full life cycle

Example template

- pre-assessment tests
- set properties LS, Beg/Adv, Vis/Verb
- ...

Publication

Active Learning For Adaptive Internet

Use

Auditing

Alfanet LMS
- Create dynamic & adaptive tests based on QTI test items and their metadata

- Create the course (example of a tree view of a course in the authoring tool)
Publication includes the storage and management of all data in a way that it can be retrieved by all components. It takes into account the required interoperability of the applied standards.

The user management includes enrolment and role management and the group and user profiles and rights of students and tutors.
Examples of adaptation:

- **Presentation layer:**
  Personalised interface

- **Dynamic adaptive assessment:**
  Rule based selection from the relevant item banks

- **Pedagogical model: inductive – deductive**
  
  if "KnowledgeLevel" = Beginner &
  "StudentLearningStyle" = Inductive
  Then Show ..........

- **Adaptation module: advice example**
  “John, you did already study 3 tasks of Lesson 1. We suggest you to take a self-assessment before .......”
Auditing relates the original design with the actual usage.

Audit questions:
- are the norms realized?
- use of the sequence defined by the template?
- use of the learning objects?

Adaptation – a full life cycle

Examples auditing:
- Present a list of all students who have followed or follow a certain course
- Overview of the difference between:
  - the anticipated study-time of activities (norm)
  - the actual study time

Alfanet LMS:
- Presentation Layer
- LD-engine (CopperCore)
- Adaptation agents
- Dynamic adaptive assessments (QTI)
aLFanet demonstration

1. Design and development phase
2. LMS (Administration, use and audit)
aLFanet design and development

- Create Content (external tools)
- Create Questions (external tools)
- Creating Adaptive Test (QTI-tool > QTI player)
- Creating the course model and the required additional data (LD authoring tool > CopperCore)

Questions in Canvas > CP with QTI items + metadata

QTI tool: Adaptive, rule based test

LD authoring tool

Other content: e.g. Dreamweaver, Adobe
Example

Pre-assessment
Learning style / cognitive mode

Pre-assessment to define knowledge level

Score lower than 20%
Score between 20% and 60%
Score higher than 60%
Score higher than 60%

Select Lesson

Lesson 1
Concept learning
Practice

Lesson 2
Concept learning
Practice
Components and flow within lesson 1

Learning Style Property value?

Inductive/visual    Deductive/verbal

Practice

Mastered QTI test?

Yes

Remediation

QTI re-test

Mastered Re-test?

Yes

No

Contact Tutor

QTI test

‘Take-self-assessment’
Adaptation agents:
- progress info LD

Adaptive test history & selection rules
- properties LD results
- metadata test items

‘This-LO’
Adaptation agents
- user info LIP
- metadata LO

Components and flow
Demonstration
Conclusions

Designed & developed an adaptive, standards-based LMS-prototype including developers tool:

+ functionality:
  + overall impression
  - adaptation requires alternatives

- usability:
  - developers' knowhow do not match system requirements (need for tools directly operating on the templates)
  - user interface
  - performance