Collaborative E-learning in AHyCo Online Learning System

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Agenda

- Introduction: E-learning
- Collaborative online learning
- E-learning with AHyCo
- Online collaboration support and communication in AHyCo
- Using AHyCo system for learning
- Results

What is e-learning?

- Different definitions of e-learning:
  - "**Techno-oriented**": emphasis is on "e-" (electronic):

"E-learning is any kind of learning, training or education that is enhanced by the use of information and communication technologies (ICT).

  - "**Pedagogical-oriented**": emphasis is on learning

"E-learning is an interactive process between teacher and the learner through the electronic media."

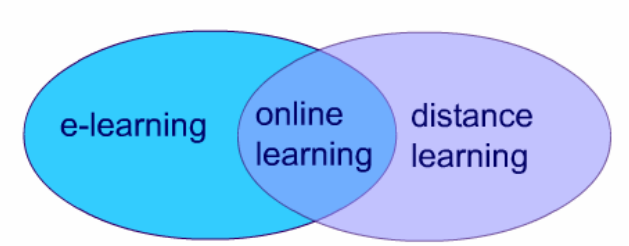
E-learning continuum

- E-learning as a continuum of teaching:

Source: CARNet E-Learning Academy - ELA learning materials

E-learning vs. distance learning

- E-learning is not the same as distance learning:



Basic e-learning approaches

- **Blended** (**mix-mode**) learning: some face-to-face (f2f) elements are replaced by technology mediated teaching
- **Pure** e-learning
  - asynchronous (e.g. web courseware. e-mail)
  - synchronous (e.g. videoconferences)

E–learning today

- Interactive learning and teaching using WWW
  - WWW - primary delivery mode of **presentation** and **communication** (Computer mediated communication – CMC)
- **Problems**
  - Providing information on WWW not the same as teaching
  - Focus set on content delivery, not on the learning process
  - High drop out rate (up to 35%)

Solving some of the problems

- Increase social interaction
  - Nowadays, communication is limited to:
    - Interaction between students and content
    - Interaction between student and tutor
  - Interaction between students should be increased as well
    - Involve well prepared both students and tutors
- CMC and collaborative activities

Collaborative online learning

- **Definition**: *"Students of different abilities work together in small groups to solve a problem or complete a project"*
- It includes:
  - Group activities
  - Active participation
  - Interaction and communication
- Interaction and work through well established "ground rules"

Group work

- Group work is organized into several stages:
  - Initial stage – group forming
  - Distribution of group tasks
  - Autonomous group work
  - Presentation of results
  - Evaluation of group work
- Teachers should pay special attention to students when working online
  - Physical and psychological separation

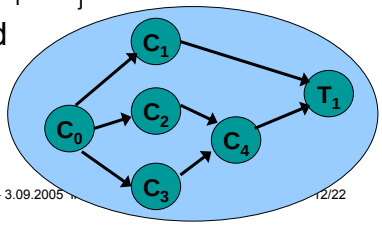
E-learning with AHyCo

- **A**daptive **Hy**permedia **Co**urseware
- Adaptive hypermedia learning management system
- Main features
  - Based on hypermedia
  - **domain model** - describes the structure of the learning domain as a set of concepts linked together with prerequisite relationships
  - **student model** - encompasses student's knowledge of learning concepts
  - **adaptive model** - contains rules for adaptation

Domain model in AHyCo

- describes the structure of the learning domain
- Two-level structure:
  - Graph of concepts (lessons C_i and tests T_j)
  - Graph of modules M_k → course
- Prerequisite relationship C_i « C_j

  "concept C_i should be learned before concept C_j"



Student and adaptation model

- Two-level **student model**:
  - 1st level estimates students' knowledge k_i about the lesson C_i
  - 2nd level estimates the knowledge km_k about the module M_k
- **Adaptation model**
  - Adaptation rules - define how are the domain model and the student model combined together to support students' adaptive navigation through the course

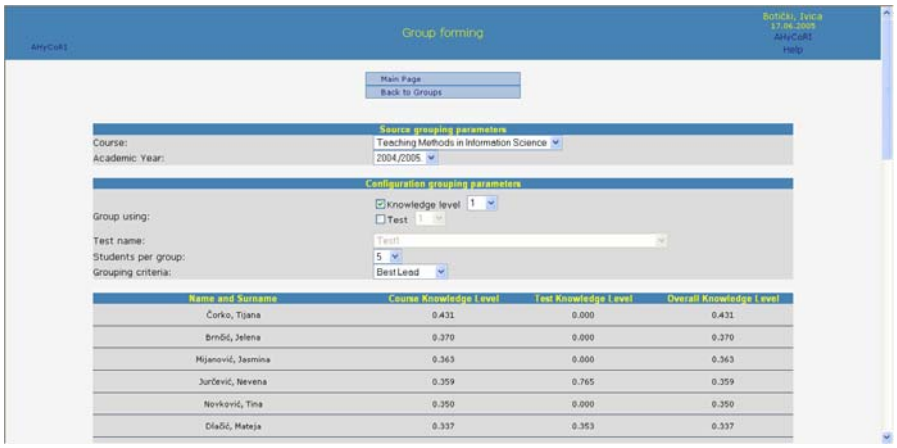
Collaboration support and communication in AHyCo

- Adaptive group formation
- Asynchronous communication using multi – threaded forum
- File sharing module
- Group to group grading and evaluation

Adaptive group formation

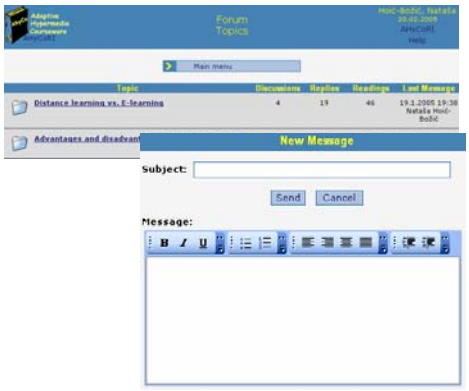
- Dividing students into groups depending on their **learning success**:
  - Knowledge levels k_i about the lesson C_i and km_k about the module
- Other group forming parameters:
  - Grades from previous courses
  - Group's size
  - Student's personal data
  - Teacher's preferences

Adaptive group formation



Asynchronous CMC in AhyCo

- Learning "anyplace and anytime“
- Forum
  - Each participant has enough time to think about conversations and to make thoughtful contributions
  - A record of the interaction is kept and can be reused



File sharing module

File sharing between group members

Group grading and evaluation

- Interface with the given set of criteria:

Grading Criteria	Grade	Average grade
Form & storyboard	Choose a grade 0 out of 5	0.00 out of 5
Implementation and quality of required elements	Choose a grade 0 out of 5	4.50 out of 5
General coverage and assigment coverage	Choose a grade 0 out of 4	4.00 out of 4
Design	Choose a grade 0 out of 4	3.50 out of 4
Interface design	Choose a grade 0 out of 4	4.00 out of 4
Navigation design	Choose a grade 0 out of 4	4.00 out of 4
Additional elements	Choose a grade 0 out of 4	4.00 out of 4

Using AHyCo for learning

- Blended e-learning approach for the course "*Teaching Methods in Information Science*"
- Course activities:
  1. **Presenting** course's **content** (f2f, AHyCo adaptive courseware)
  2. Students' **seminar papers** (f2f, AHyCo test)
  3. Online **discussion** (AHyCo forum)
  4. Development of **WWW courseware** (group work partly using AHyCo)
  5. Courseware **reflection** (f2f, AHyCo peer avaluation module)

Learning paradigms in AHyCo

- AHyCo combines three theories of learning:
  - Behaviourism
    - Online learning and testing
  - Cognistivistic paradigm
    - Forum discussions
    - Free choice of topic for the WWW courseware
    - Reflection on work
  - Constructivism
    - Online interaction with teachers, other students and the content
    - Collaborative learning - working in groups

Results

- All students passed the exam in July
  - Avarage mark 3,68 (the range is from 1-5)
  - Collaborative online learning requires continuous active participation during the academic year
- Questionnaire about the students' attitude concerning online collaborative learning
  - Some preliminary results: most of the students accepted the new way of learning with AHyCo system quite well