A Blended Learning Approach to Course Design and Implementation

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Introduction

- Blended e-learning approach for the course "*Teaching Methods in Information Science*"

- Mixture of collaborative learning, problem-based learning (PBL) and independent learning

- Model is realized as a combination of a face-to-face environment and online learning using a proprietary learning management system (LMS) named AHyCo

Academic context

- Course "*Teaching Methods in Information Science*"
- 15-25 senior students of undergraduate program in Mathematics and Informatics at the Department of Informatics, University of Rijeka
- Low student-instructor ratio
- Students are future elementary and high-school teachers
- Implementing various teaching and learning approaches and ICT to Information Science lessons
- New blended learning model since 2004/2005

Learning objectives

- Students will be able to do the following:
  - identify various types of ICT and approaches to using them in education
  - explain what e-learning is and distinguish between different types of e-learning
  - identify various types of CMC and online tests in education and implement some basic types
  - plan, prepare, develop and use WWW courseware
  - apply the principles of Web design and instructional design when developing the Web courseware

Content

- The course consists of the following topics:
  1. Hypermedia and adaptive hypermedia
  2. ICT in education (Internet, WWW in education, Computer-mediated communication (CMC) in education, online testing)
  3. E-learning (blended learning, distance learning)
  4. Web design
  5. Web-based courseware (planning, designing, developing, and evaluating courseware) and instructional design

Approach to blended learning

- Program flow (sequential) model
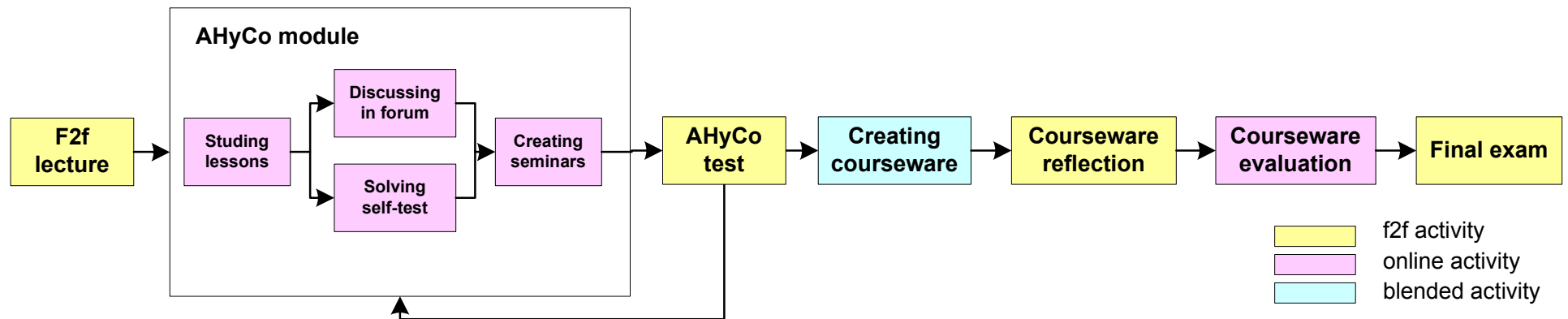
Learning activities 1/2

1. ## Online presentation and testing using AHyCo LMS
   - Modules composed of several lectures and online tests for self evaluation
   - Module ends with a test which results are counted for the final grade
2. ## Students' seminar papers
   - Individual short papers (essays) on module content
3. ## Online discussions in forum
   - Topics are linked with the concepts in the modules
   - Public and private discussions moderated by instructors
   - Obligatory (graded) contribution of students

Learning activities 2/2

4. ## Development of WWW courseware

   - Hypermedia web application with multimedia elements, online tests and communication tools
   - PBL group project: of 3-5 students

5. ## Courseware reflection

   - Presenting courseware and the development process
   - Individual and group reports

Grading

- Points from the several mandatory elements:

Web CW and reflection	40
Online tests	20
Seminar papers	15
Forum discussions	15
Oral exam	10
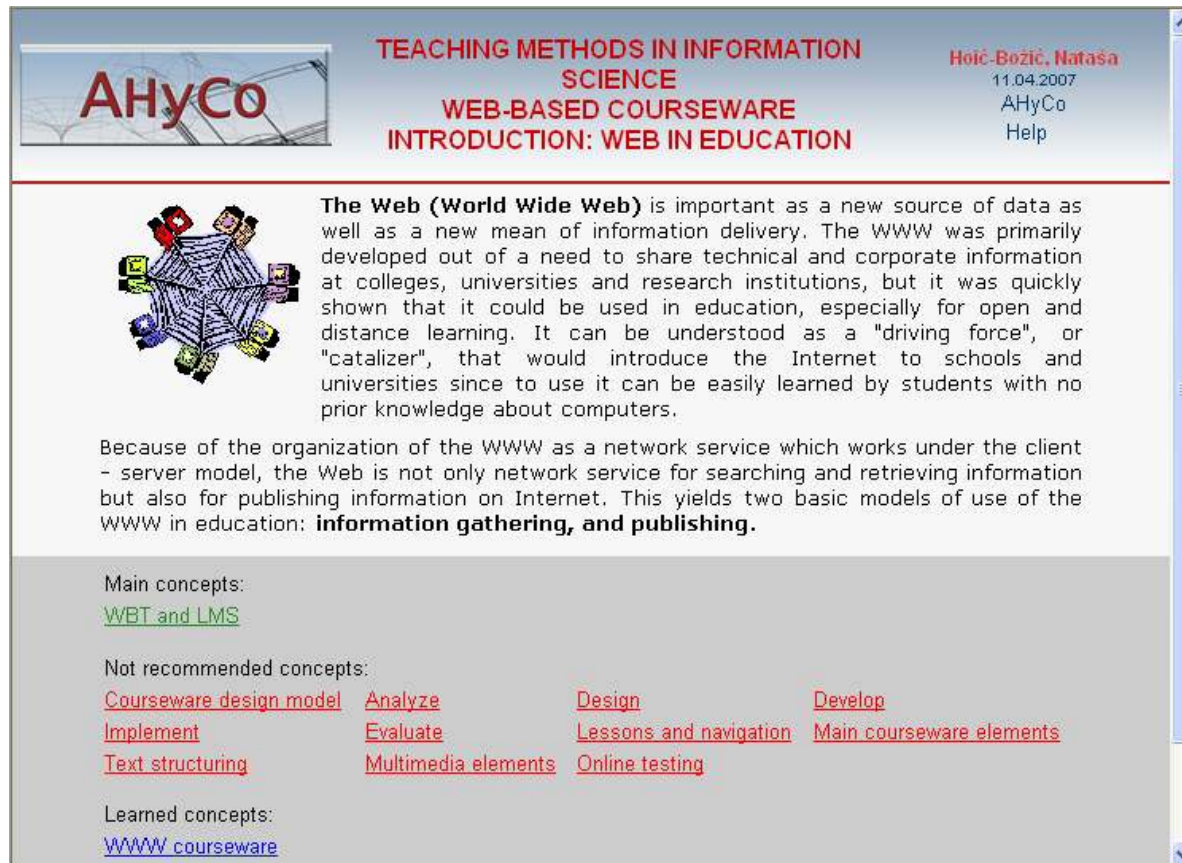
- Final grades:

failed (1)	0-60
satisfactory (2)	61-70
good (3)	71-80
very good (4)	81-90
excellent (5)	91-100

Selection of technology: AHyCo LMS

- AHyCo – **A**daptive **Hy**permedia **Co**rseware
- Standard LMS tools:
  1. Content authoring
  2. Delivering learning content – AHyCo learning environment
  3. Student assessment
  4. Collaboration support and communication
  5. Class management and other tools

A page with a lesson

Assessment – AHyCo questions

A multiple choice/single answer questions
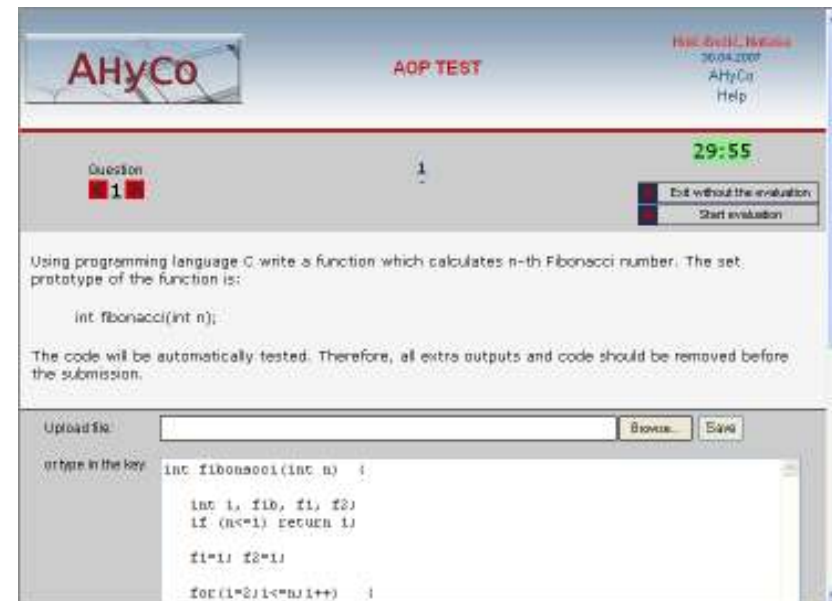
Problem based questions: essay-type assignments and programming assignments

Multi threaded forum

File sharing module

		Nova datoteka		

Grupa: MI 2007 Grupa2

Datoteka: [ ] Browse... Objavi

Datoteka	Veličina (KB)	Objavio	Datum objavljivanja	Brisanje
Obrazac_za_LaTeX.doc	44	Sanda Bujačić	18.3.2007 22:56	Briši
Obrazac_za_LaTeX_ispravak.doc	43	Sanda Bujačić	20.3.2007 12:02	Briši
mapa.vsd	146	Loredana Simčić	1.4.2007 18:21	Briši
LATEX_STORYBOARD.doc	156	Sanja Vranić	1.4.2007 21:34	Briši
tjedni_izvjestaj_MI4_grupa2_16042007.pdf	117	Sanda Bujačić	16.4.2007 18:05	Briši
tjedni_izvjestaj_MI4_grupa2_14052007.doc	29	Sanja Vranić	14.5.2007 11:44	Briši
tjedni_izvjestaj_MI4_grupa2_28052007.doc	27	Loredana Simčić	28.5.2007 13:00	Briši
grupni_izvjestaj_MI4_grupa2_03062007.doc	37	Loredana Simčić	7.6.2007 22:33	Briši
obrazac_CW_MI_2007_Grupa2.doc	63	Nataša Hoić-Božić	11.6.2007 11:39	Briši

Courseware evaluation

Academic results and evaluation

- **Academic results in 2006/2007:**
  - Average mark 4,05
  - High pass rate: all students passed the exam in July

- **Anonymous questionnaire about the students' attitude concerning blended learning model and AHyCo LMS**

- **Number of respondents in questionnaire 17 of 23 students**

Questionnaire results 1/2

	Avg	StDev.	Min	Max
AHyCo is easy to use	3,82	0,80	2	5
I like the AHyCo's design	3,41	1,40	1	5
Adaptive hyperlinks concept is usable	3,82	0,56	3	5
Online forum discussions help me to learn more efficiently	2,65	1,29	1	4
Online tests help me to learn more efficiently	4,06	0,85	2	5
I am satisfied with collaborative work	4,41	0,74	3	5
I prefer to work alone	2,00	1,10	1	4
I am satisfied with new presentation methods	4,06	0,88	3	5
New presentation methods helps learning more efficiently	4,00	0,70	3	5
Compared to traditional teaching, AHyCo requires more time to learn	2,47	1,06	1	5
Compared to traditional teaching, AHyCo helps me to learn more	3,47	1,06	2	5

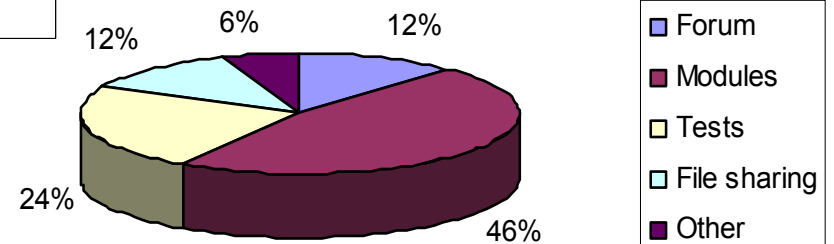*N* = 17, Avg = average, StDev = standard deviation

Questionnaire results 2/2

The most usable learning activities

13%   6%
0%

81%

- Learning and testing
- Seminar papers
- Online discussions
- Courseware
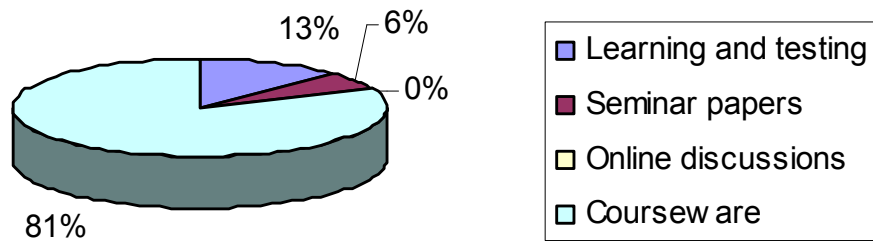
The most usable components of AHyCo

12%   6%   12%

24%

46%

- Forum
- Modules
- Tests
- File sharing
- Other

Student's comments - Advantages

- Practical work on the courseware
- Participation in the group work as completely new experience
- Freedom to access tasks, subject matter and forum at any time
- Opportunity to learn at own pace and will
- Opportunity to communicate with the instructor in a more efficient manner
- Opportunity to self-evaluate the knowledge before the official test
- …

Conclusion

- Most of the students accepted the new blended learning model quite well

- Academic achievements very good and drop-out rate diminished

- Future plan: improving pedagogical model and adapting it for other courses from a range of disciplines

Thank you for your attention!

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Additional information:

http://AHyCo.ffri.hr/