

# 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

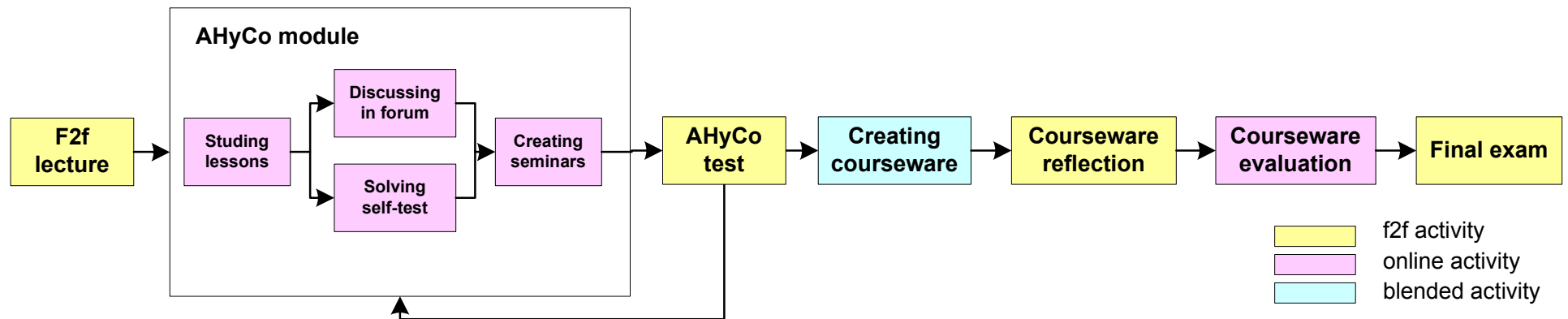
- Students will be able to do the following:
  - identify various types of ICT and approaches to using them in education
  - explain what e-learning is and distinguish between different types of e-learning
  - identify various types of CMC and online tests in education and implement some basic types
  - 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

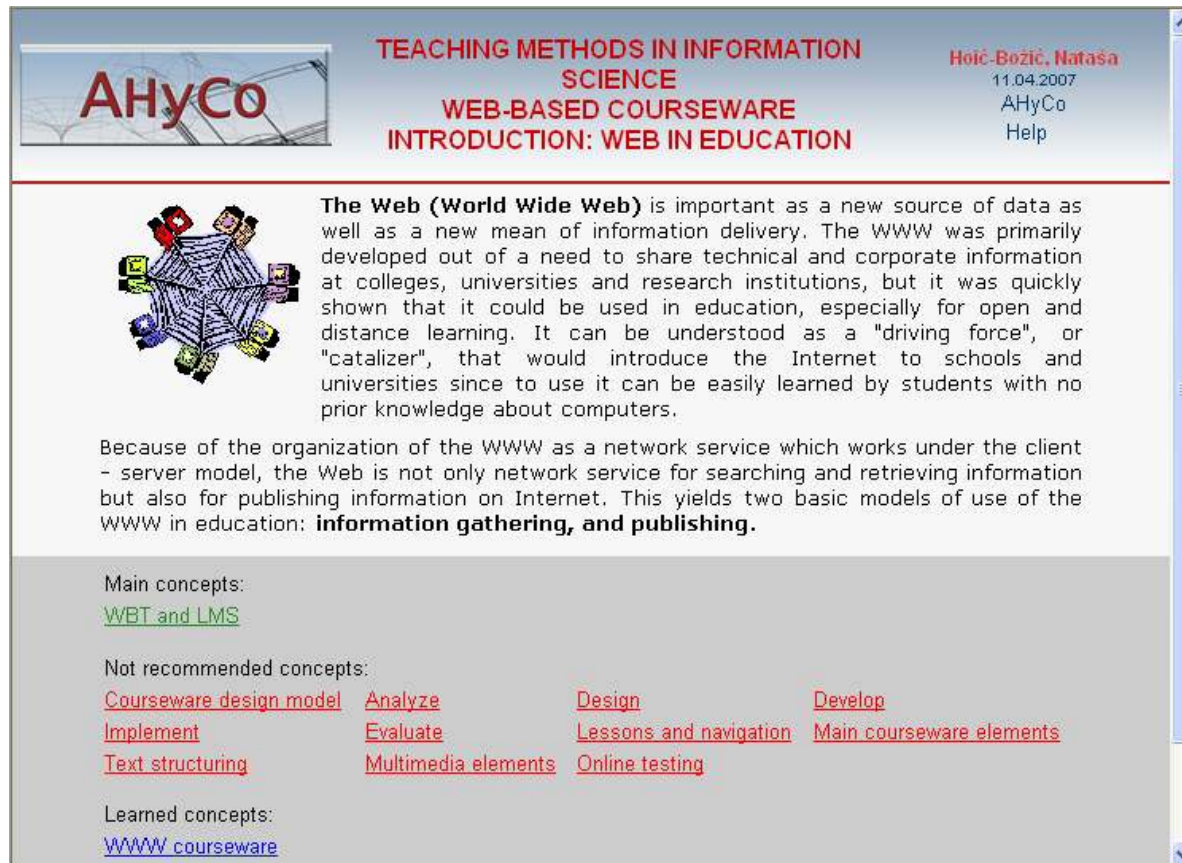
- Final grades:

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 – Adaptive Hypermedia Courseware
- 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



The screenshot shows a web-based courseware interface. At the top left is the 'AHyCo' logo. The main title is 'TEACHING METHODS IN INFORMATION SCIENCE WEB-BASED COURSEWARE INTRODUCTION: WEB IN EDUCATION'. The author is 'Hoic-Bozic, Nafasa', dated '11.04.2007'. There are links for 'AHyCo' and 'Help'. The main content area features a diagram of a network of people connected by lines, representing the World Wide Web. The text explains that the Web is important as a new source of data and a new mean of information delivery, developed out of a need to share technical and corporate information at colleges, universities, and research institutions. It was quickly shown that it could be used in education, especially for open and distance learning. It can be understood as a "driving force", or "catalizer", that would introduce the Internet to schools and universities since to use it can be easily learned by students with no prior knowledge about computers. Below this, it states that because of the organization of the WWW as a network service which works under the client-server model, the Web is not only network service for searching and retrieving information but also for publishing information on Internet. This yields two basic models of use of the WWW in education: **information gathering, and publishing.**

Main concepts:  
[WBT and LMS](#)

Not recommended concepts:

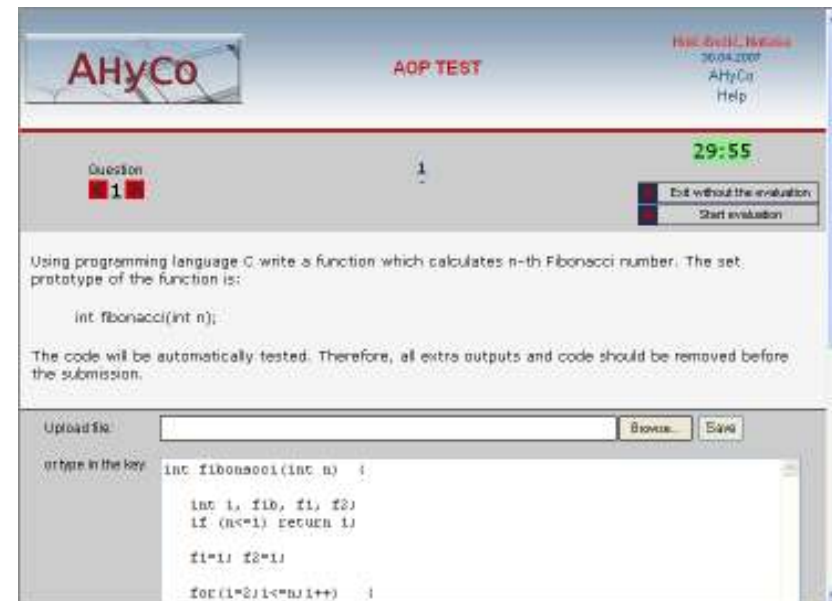
<a href="#">Courseware design model</a>	<a href="#">Analyze</a>	<a href="#">Design</a>	<a href="#">Develop</a>
<a href="#">Implement</a>	<a href="#">Evaluate</a>	<a href="#">Lessons and navigation</a>	<a href="#">Main courseware elements</a>
<a href="#">Text structuring</a>	<a href="#">Multimedia elements</a>	<a href="#">Online testing</a>	

Learned concepts:  
[WWW courseware](#)

# Assessment – AHyCo questions



A multiple choice/single answer questions



Problem based questions:  
essay-type assignments and  
programming assignments

# Multi threaded forum

**AHyCo**  
AHyCoRI

**PRIKAZANE SU PORUKE TEME:  
E-LEARNING**

**Hoić-Božić, Nataša**  
23.08.2007  
AHyCoRI  
Upute za trenutnu stranicu

[Povratak u glavni izbornik](#)  
[Teme foruma](#)  
[Dodaj novu poruku u temi](#)

	Sažetak diskusije o temi "E-learning"	7.1.2007 11:56:47 Nataša Hoić-Božić
	Još o nedostacima e-learninga	17.12.2006 9:44:41 Nataša Hoić-Božić
	f2f-online?!?	9.12.2006 13:19:14 Lana Kumpare
	Uloga nastavnika kod e-obrazovanja	29.11.2006 19:31:54 Nataša Hoić-Božić
	-uloga nastavnika u obrazovanju	9.12.2006 10:38:10 Ana Lovrin
	RE: Uloga nastavnika kod e-obrazovanja	7.12.2006 12:58:30 Silvija Blašković
	RE: RE: Uloga nastavnika kod e-obrazovanja	12.12.2006 12:58:12 Karmen Morsi
	RE: RE: RE: Uloga nastavnika kod e-obrazovanja	14.12.2006 12:26:00 Silvija Blašković
	RE: RE: RE: RE: Uloga nastavnika kod e-obrazovanja	17.12.2006 20:04:43 Ana Lovrin

# File sharing module

**Nova datoteka**

Grupa:

Datoteka:

Datoteka	Veličina (KB)	Objavio	Datum objavljivanja	Brisanje
<a href="#">Obrazac za LaTeX.doc</a>	44	Sanda Bujačić	18.3.2007 22:56	<a href="#">Briši</a>
<a href="#">Obrazac za LaTeX ispravak.doc</a>	43	Sanda Bujačić	20.3.2007 12:02	<a href="#">Briši</a>
<a href="#">mapa.vsd</a>	146	Loredana Simčić	1.4.2007 18:21	<a href="#">Briši</a>
<a href="#">LATEX STORYBOARD.doc</a>	156	Sanja Vranić	1.4.2007 21:34	<a href="#">Briši</a>
<a href="#">tjedni izvjestaj MI4 grupa2 16042007.pdf</a>	117	Sanda Bujačić	16.4.2007 18:05	<a href="#">Briši</a>
<a href="#">tjedni izvjestaj MI4 grupa2 14052007.doc</a>	29	Sanja Vranić	14.5.2007 11:44	<a href="#">Briši</a>
<a href="#">tjedni izvjestaj MI4 grupa2 28052007.doc</a>	27	Loredana Simčić	28.5.2007 13:00	<a href="#">Briši</a>
<a href="#">grupni izvjestaj MI4 grupa2 03062007.doc</a>	37	Loredana Simčić	7.6.2007 22:33	<a href="#">Briši</a>
<a href="#">obrazac CW MI 2007 Grupa2.doc</a>	63	Nataša Hoić-Božić	11.6.2007 11:39	<a href="#">Briši</a>

# Courseware evaluation

**AHyCo** GROUP PROJECT EVALUATION Hoić-Božić, Nataša  
11.04.2007  
AHyCoRI  
Help

Group: MI 2007 Group3 Project: Fractals  
Total: 0,00

Grading Criteria	Grade	Average
Analysis and storyboard	Choose a grade 0 out 5	0,00 out 5
Implementation and quality of required elements	Choose a grade 0 out 5	0,00 out 5
General coverage of the theme	Choose a grade 0 out 4	0,00 out 4
Graphic design	Choose a grade 0 out 4	0,00 out 4
Interface design	Choose a grade 0 out 4	0,00 out 4
Navigation design	Choose a grade 0 out 4	0,00 out 4
Additional elements	Choose a grade 0 out 4	0,00 out 4

# 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



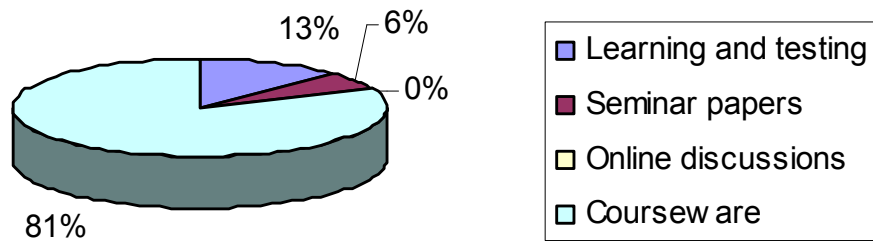
# Questionnaire results 1/2

	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

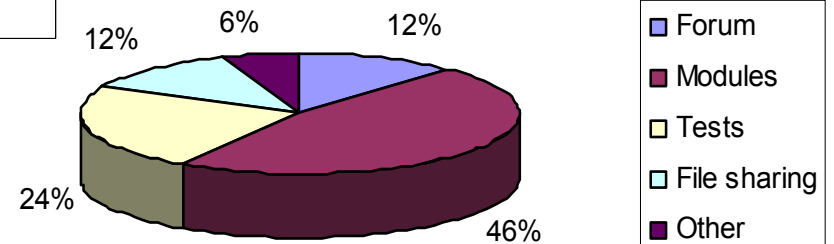
N = 17, Avg = average, StDev = standard deviation

# Questionnaire results 2/2

The most usable learning activities



The most usable components of AHyCo



# 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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Contact:

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Additional information:

<http://AHyCo.ffri.hr/>