Evaluation of Combined Collaborative and Problem-based Approach in a Web-based Distance Education Course

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Overview

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Introduction

- Technological Educational Institute (T.E.I.) of Lamia, Greece provides distance learning opportunities to adults.
- The curriculum contains 22 online computer science and interdisciplinary courses.
- The courses have been partitioned in three categories (Introductory, Intermediate and Advanced-Masters).
Introduction II

• **Blackboard** (basic edition) 4 semesters
• **LAMS** (last 2 semesters)
• Courses on LAMS are still on the run
• Methodology considering administrative, technical and pedagogical issues
• Assessment
The Distance Learning Environment I

- 20 Learners per course
- Units (theory, examples, self-rating tests, unit tests, mid-term and final tests)
- Learning Content (presentations, documents, animations, audio/video)
The Distance Learning Environment II

- Asynchronous and synchronous Communication/Learning- LMS’s collaboration tools and a media server (for webcasting/streaming):
  - e-mail
  - discussion forum
  - shared workspace,
  - virtual classroom,
  - chat, and
  - bulletin board
Learning Model

• Two models:
  – A learner-oriented model
  – A combined collaborative learning (CL) & problem-based learning (PBL)

• The former has been applied to the majority of courses whereas the latter to selected courses
• The derived results regarding the learner-oriented model have been presented in older works (e.g. in ICWL 07)
Combined Learning Model – I

• Instructional process:
  – an initial phase resembling (to a large degree) the learner-oriented method, and
  – a subsequent phase based on the integration of PBL and CL methods on groups created by the tutor

• Initial phase:
  – it introduces learners into the learning process and to group projects assigned
  – learners with collaboration - indications for group formation
Combined Learning Model – II

• Tutor assigns each group (part of) a specific problem
• Time to ponder over the posed problem
• Communication tools to discuss problem issues
• Tips or teaching material regarding process and problem
Applying the Combined Learning Model on E-COMMERCE COURSE
The E-Commerce Course

- Course aim: **basic concepts and technologies for creating an “electronic” business**
- **Nine (9) main Sequences Educational Activities in LAMS** addressing topics as
  - terminology,
  - models of e-commerce companies,
  - business organization issues (*payments, delivery of services and goods, client support*),
  - marketing for electronic companies,
  - functionality of an electronic shop, underlying technology and security
The E-Commerce Course II

- Example: the 4\textsuperscript{th} of the nine Sequences of Educational Activities (Models of electronic shops)
Applying the Combined Learning Model I/VI

- Groups of at most three - virtual “budget” for their Internet store
- A **budget at the beginning of the course** - students *no idea of the way should be exploited*
Applying the Combined Learning Model II/V

- Four modules (*stages*)

- Cause the students to reconsider their decisions e.g.:
  - in one module- technology of the store (e.g. J2EE, Microsoft, Open Source etc.) and cost
  - In the next module, the type of the installation (an in house data center, hosting in a provider, etc.)
Applying the Combined Learning Model III/V

Topics:

1. **feasibility study** for the planned electronic company
2. A study about the **business structure** of the company
3. A high level **design of their internet application** representing the store
4. The implementation of the “**data center**” and the **security** of their application
Applying the Combined Learning Model IV/V

• A module in LAMS as a separate sequence with independent tools:
  – a shared resources,
  – a forum,
  – a chat,
  – a submit files
  – a voting
Applying the Combined Learning Model V/V

- Voting during (about the underlying technology in module three) the progress of a combined learning model course
ASSESSMENT
Assessment Method I

- distance learning setting and the knowledge acquired by learners
- LMS tools and conventional methods (learner-oriented model)
- Both individual and group progress is assessed
Assessment Method II

• Learner’s portfolio is assessed:
  – personal contribution to projects assigned,
  – degree of interaction with the tutor, the other learners and the LMS, and,
  – his/her contribution in the LMS’s shared resources

• Results from the assessment process feedback the enhancement of the educational process
Assessment Method III

- Learners’ tests:
  - A pretest prior to the beginning of the course
  - Unit tests upon completion of a course unit
  - A midterm test or project
  - A final test

- Questionnaires (project coordinators, tutors and learners)
Assessment Results I
(Students view)

• 90% - course satisfied their initial expectations,
• 90% - LAMS friendly and easy to use
• 50% - the performance of the other members of the class affected their own performance
• 90% criticized positively the whole learning process, material and the communication with the teacher
• 75% of the students believe that they should use the collaboration tools more often
• very helpful - everything about their work was included in the same "logical" entity (LAMS activity)
• teacher - track the different versions of a group's deliverable and compare the differences from version to version
• The voting - a quick reference to other group's decisions
Assessment Results III
(Teachers view 2/2)

- Monitoring - respond quickly to the students’ questions and the deliverables
- Group - work independently from the others and keep privacy in their results
- The random criterion - group members not proved a good choice for all groups
Proposed Improvements

– Synchronous videoconference - whiteboard

– Upload files > 1.0 Mb (Submit files)

– Ability to change a vote during the activity and see the progress of the results (e.g. a "history" of the voting)
  • in our case - voting as a final component
  • students were able to see only the final results (after all reconsiderations) and not interim results
CONCLUSIONS
Conclusions 1/2

• Traditional LMS will not meet all needs in all contexts.
• Students have the same possibilities to act those instructors and other staff members have in regular, less student-centered educational approaches.
• This model does not exclusively replace traditional learning approaches, but provide greater alignment with the life long learning.
• Instead of learning housed in learning objects and content, learning is embedded in rich learning activities and social spaces.
Conclusions 2/2

• Distance students are very active with technology, but once in an LMS space they seldom do more than the minimum required.
• Universities and educational institutions need to explore broad applications of technology – beyond simple LMS implementations.
• LAMS were in general able to support an educational sequence representing the combined learning method.
• LAMS motivates tutors and students providing an easy to use and friendly learning environment.
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