How to use ICT to help students to gain in confidence and efficiency in an Algorithmic and computer programming course?

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Content of the presentation

→ Previous situation

→ New organization of the course

→ Analysis of the blended process

→ Conclusions
Algorithmic and computer programming course

Large variety of tasks:

* Analyze the problem
* Structure the information
* Design reliable algorithms
* Translate those algorithms into a programming environment

Previous organization

Course

Ex cathedra courses (Theory) 6 X 2 h

Face-to-face practical session 2 h X 6

(Groups of 2 students)
Blended course

Course
(6 units planned during 15 days)

Face to Face
Ex cathedra courses (2h)

Concepts
Theory related to algorithms

Collegial resolutions of exercises

Online activities

Blended course

Course
(6 units planned during 15 days)

Face to Face
Ex cathedra courses (2h)

Pedagogical resources
Q & A specific to the course
Collection of corrected exercises
Online external resources
Videos recorded by the teacher himself

**Blended course**

Course

(6 units planned during 15 days)

**Face to Face** ∨ **Online activities**

If the homework is submitted before the deadline set by the teacher

Q & A (2h)

**Evaluation of the blended course**

* Class of 147 of 3th Year bioengineering students

* Online questionnaire developed to assess students' perception of the new blended course

* Answers are measured on 4-point Likert Scale: 1: highest degree of interest; 4: Lowest degree of interest

* 107 fulfilled questionnaires but only 87 are complete (59%)
  - 69 freshmen
  - 7 repeating students
  - 11 external students

Impact on motivation

The alternation between face-to-face and virtual sessions punctuated by required homework leads students to engage themselves in learning (much more than in a classical ex cathedra course)

Impact on motivation

The blended course encourages them to work more conscientiously
Submitted homeworks

Homework required?

If the homeworks were not required, would you have made them?

Achieve homeworks ensures success?

Relevancy of the Q&A sessions

Q&A sessions are relevant and effective

BUT 29% of repeating students and 3% of freshmen suggest amending those Q&A sessions
Effectiveness of the blended learning

Does this blended course prepare you better to the final examination?

Are you confident about the final examination?

- Freshmen (n = 69)
  - Strongly Agree: 14%
  - Agree: 43%
  - Disagree: 29%
  - Strongly Disagree: 14%

- Repeating students (n = 7)
  - Strongly Agree: 27%
  - Agree: 55%
  - Disagree: 9%
  - Strongly Disagree: 9%

- External students (n = 11)
  - Strongly Agree: 72%
  - Agree: 67%
  - Disagree: 22%
  - Strongly Disagree: 6%

Effectiveness of the blended learning

<table>
<thead>
<tr>
<th>Year</th>
<th>Success</th>
<th>Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-2015</td>
<td>66.9</td>
<td>33.1</td>
</tr>
<tr>
<td>2013-2014</td>
<td>75.2</td>
<td>24.8</td>
</tr>
<tr>
<td>2012-2013</td>
<td>53.5</td>
<td>46.5</td>
</tr>
</tbody>
</table>
Conclusions

→ Blended learning leads to positive attitude towards the learning

→ The teacher’s role is modified

→ Importance of the relation between the students and their teacher

→ Helps students to plan their own learning

→ Apparent heavy workload (point of view of students)


References


