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Online tests and self-assessment tests in Information systems course

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Presentation outline

- Introduction
- ICT in education
- Design of online tests
- Formative assessment
- Information systems course structure
- Activities of the course
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Introduction

- Results of a research on implementation of online tests and self-assessment tests in e-course
- Effort of improvement of online tests -> basis for formative and summative students' assessment
- Information Systems course, Department of Informatics, UNIRI
- 335 students, 2nd year of undergraduate study
- Mandatory course, Single major program of informatics

ICT in education

- ICT – an important element of modern education and teaching
- Environment for transition: traditional -> e-learning classroom
- LMS – a tool that supports the e-learning process (assessment, forums, wiki, quiz, distribution of learning materials, etc.)
- Higher education – benefits from implementation of ICT and CBA tools in teaching process
- Assessment of more students in less time
- Computer program reviews and evaluates tests - teacher's effort needed for knowledge assessment is smaller
- But: big effort is needed to prepare (design) online tests

Design of online tests

- Effort teachers need to invest into design of online tests
- Ongoing research on implementing and improving online tests for formative and summative assessment

- Design of different question types
- Revision of question bank after each test
- Analysis of test results - identification of too easy (guess the answer) and too hard questions (potentially unclearly stated, students do not understand them, ..)
- Creative process, time-consuming for the teacher
- But: reuse of questions and tests

Formative assessment

- Important for students and teachers
- Students improve their performance
- Recognize students' difficulties
- Measure improvement over time
- Inform students how to improve their learning
- Self-assessment test – list of (in)correct answers -> important for further learning
- Teacher can shape the teaching process in the future

Information systems course

- Offers fundamental knowledge in the field of IS development
- Important for future practicioners
- Motivates students for further work in the field of IS development
- Blended (hybrid) e-learning course
- Managed by 2 teachers

- Mudri – customized Moodle solution, adapted to the needs of UniRi
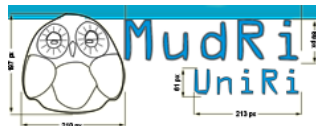
Information systems course structure
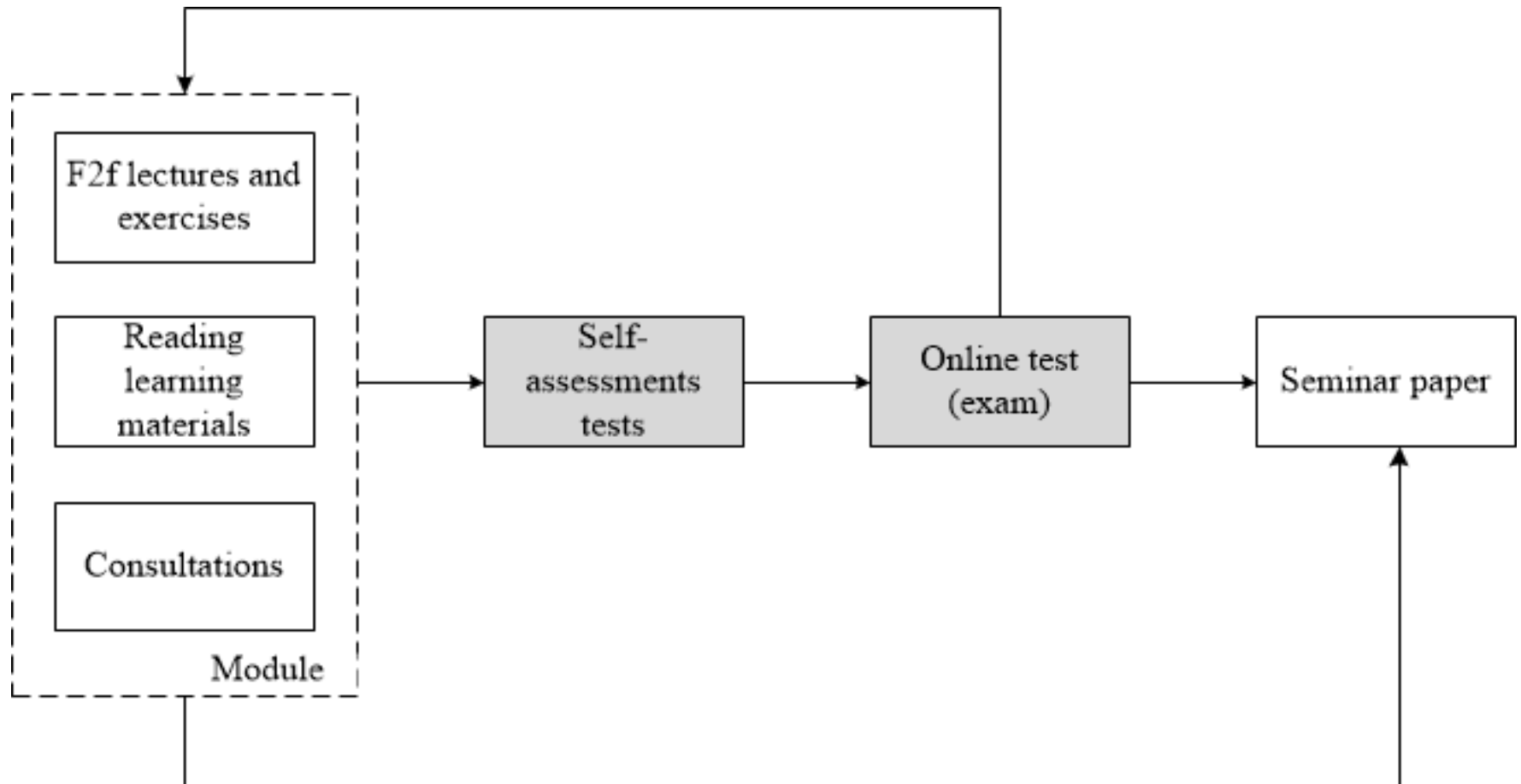
Activities of the course

Type of activity	Description	Points
Class attendance and activity	The presence and activity of students during f2f lectures and usage of the LMS system is evaluated. Students can collect 0-5 points depending on the activity level.	5
Seminar paper	Students should write a seminar paper. They can collect 0-20 points depending on the degree of accuracy and completeness	20
Online tests (exams)	Three online tests (exams) are performed. On each online test student can collect 0-20 points depending on the degree of accuracy and completeness	60
Self-assessment tests	During the semester a total of five self-assessment tests are performed. Students can collect 0-3 points per test, depending on the degree of accuracy and completeness.	15
Total		100

Two transition phases

First phase:

- Online test results > traditional paper-based test results

Second phase:

- Objective question types + subjective question types
- True/false, Multiple choices, Connections, Essay, Short answer

- Nr of OQT : Nr of SQT = 70 : 30
- Total points for OQT : total points for SQT = 50 : 50

- Online tests were modified
- New question in the question bank (>120)

Second transition phase and test results

H: there is no significant difference in results achieved during MudRi online tests and traditional paper-based tests

- The Mann-Whitney U test revealed that the difference between arithmetic means of the results is not statistically significant obtaining p=0.093 of significance.

H is accepted!

Survey results

- Anonymous online survey
- The Likert scale of attitudes
- N=94, out of 109 students, 86%

How many self-assessment tests did you solve during this e-course?

Two 2%
Three 9%
Four 21%
Five 68%
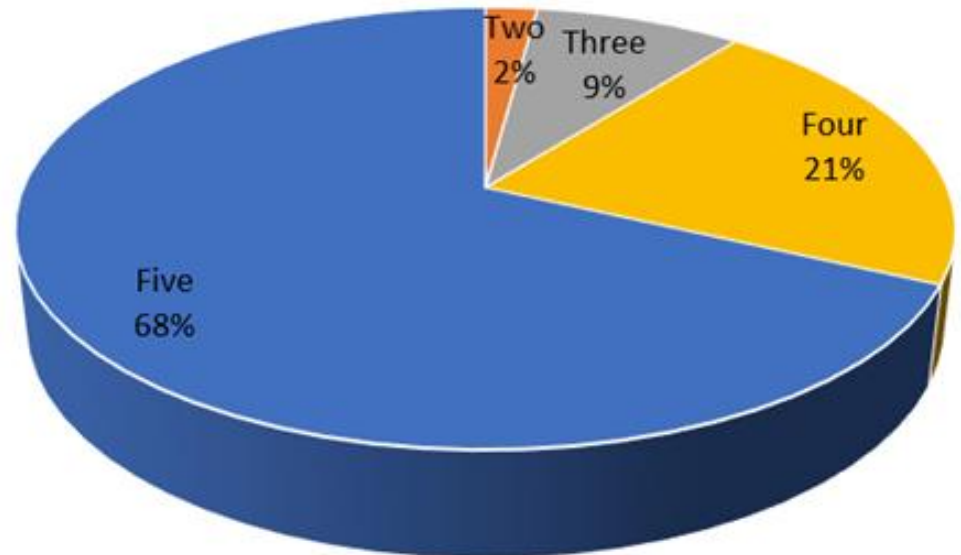
Survey results

No.		AVG	SD
1	You are satisfied that the e-course besides online tests includes a seminar paper and self-assessment tests.	4,22	0,81
2	Applied educational model is effective for learning.	3,84	0,90
3	Teaching materials and activities are well organised.	3,83	0,92
4	Instructions for activities are clear.	4,35	0,85
5	You are satisfied with the way teachers managed activities during the course and communicated with students (forum and/or email).	4,17	0,94
6	You were motivated to execute self-assessment tests during the course.	3,99	1,13
7	Self-assessment tests are useful for learning in general.	4,03	0,98
8	Self-assessment tests are useful for repetition of theoretical terms.	4,16	0,85
9	Self-assessment tests are useful for repetition of practical procedures.	3,66	1,07
10	You believe that self-assessment tests had positive influence on your knowledge level for this e-course (better results on online tests).	3,90	1,00
11	You believe that seminar paper writing had positive influence on your knowledge level for this e-course (better results on online tests).	3,48	1,11

Questions analysis results

- Online tests (exams): 306; self-online tests: 491
- 1 question with 100 % correctness
- 0 questions with 0% correctness
- True/false: correctness > 75 %
- Multiple choice with several correct answer: correctness <30 % (students do not know the exact number of correct answers)
- Connection questions: correctness <30 % (require precise knowledge)
- Essay and short answer – lower results if they require specific and precise answer (What is the name ...; List the phases/ elements/....)

- To combine questions that examine different levels of knowledge!

Conclusion

- Research on implementing and improving online tests used in the blended e-learning course
- Advantages of online tests:
  - automated correction,
  - easy to use (after forming the question bank)
  - immediate test results for the students
  - students prefer to use the keyboard
  - comparative overview of test results (for the teacher)
- Advantages of formative assessment

- Positive opinion regarding applied blended learning model and activities used for formative assessment.
- Positive opinion on online tests for self assessments

Future work

- Efforts to further improve methods for online assessment
- Plan to revise the question bank
- Analysis of students' answers

- Groups of questions with which students have difficulties are identified
- Self-assessment tests might not be sufficient to ensure formative assessment for all concepts
- Future plans – to introduce other activities for formative assessment: online discussions, mind mapping and concept mapping, meetings with experts
- A chance to practice the usage of certain terms, relate course concepts and get deeper understanding of subject matter

- Thank you for your attention!

- Questions?