DIGITISING EXAMS AS PART OF A BROADER STRATEGI FOR ENHANCING TEACHING AND LEARNING

Conference on *Learning from Digital Examinations,*
Brunel University London, Thuesday April 26th 2018

TAKE HOME MESSAGES

1. Although there are economic and administrative benefits, digitising the exams is primarily about pedagogy
2. If an institution digitises its teaching it also needs, for several reasons, to digitise its exams
3. to achieve the full potential of digitising teaching and assessment these changes must be part of a comprehensive strategic initiative for enhancing teaching and learning.

DISPOSITION

1. Presentation of institutional setting
2. Research based teaching – the rationale behind
3. A model for didactical choices and educational development
4. Enhancing teaching and learning with technology
5. Reasons for digitising exams

PRESENTATION:
AARHUS UNIVERSITY,
AARHUS SCHOOL OF BUSSINES AND SOCIAL SCIENCES,
CENTER FOR TEACHING AND LEARNING

AARHUS UNIVERSITY (AU) HTTP://WWW.AU.DK/EN/

8.000 employés	4.300 int. students	12,000 publications
40.000 students	1.800 Ph.D. students	DKK 6.2 bill in turnover (0,9 bill $)
Ranking:	Times Higher Edu: 109	Shanghai Ranking: 65

1. Faculty of Science and Technology
2. Faculty of Health
3. Aarhus School of Business and Social Sciences
4. Faculty of Arts

AARHUS SCHOOL OF BUSINESS AND SOCIAL SCIENCES (BSS) HTTP://BSS.AU.DK/EN/

1,200 teachers at 6 departments spread out on the following categories:

- Student teachers: 280
- PhD students: 236
- Postdocs: 38
- Assistant professors: 90
- Part time teachers: 140
- Associate professors: 255
- Professors: 139

Aarhus BSS consists of the following departments:

1. Department of Management (including Business Communication)
2. Department of Economics and Business Economics
3. Department of Law
4. Department of Political Science
5. Department of Psychology
6. Department of Business Development and Technology

14,000 full-time- + approx. 3,000 part-time students

- **Research-heavy university**
- **Large number of students**

CENTER FOR TEACHING AND LEARNING (CTL)

HTTP://CUL.AU.DK/EN/

21 employees

1. Teaching

- Mandatory courses for teachers at all career levels from student teachers to full professors ----> adds up to 8-9 weeks of formal training

2. Development

- Development projects – **including the use of edu-it** - at different levels: teachers, courses, programs, departments, faculty

3. Research

- Practice-oriented research,

4. Digitising

- Runs the systems behind
- teaching, assessment and course evaluation

Unique mix of competences

DIGITISING TEACHING AND LEARNING, BSS, AU

2013: Learning Management System, *BlackBoard*

2014: Digitising written exams, *Wiseflow* (https://europe.wiseflow.net/)

- **Ca. 750 flows/written exams pr. semester**
- **Ca. 50.000 individual participants pr. semester**

2015: Digitising course evaluation, *Blue*

RESEARCH-BASED TEACHING

THE PURPOSE OF DANISH UNIVERSITIES:

To conduct research and offer research-based education at the highest international level within its academic fields

- DK: The University Act

The Master's degree programs must ensure that the students master the subject's theory, empirical knowledge, and method

- DK: The Qualifications Framework

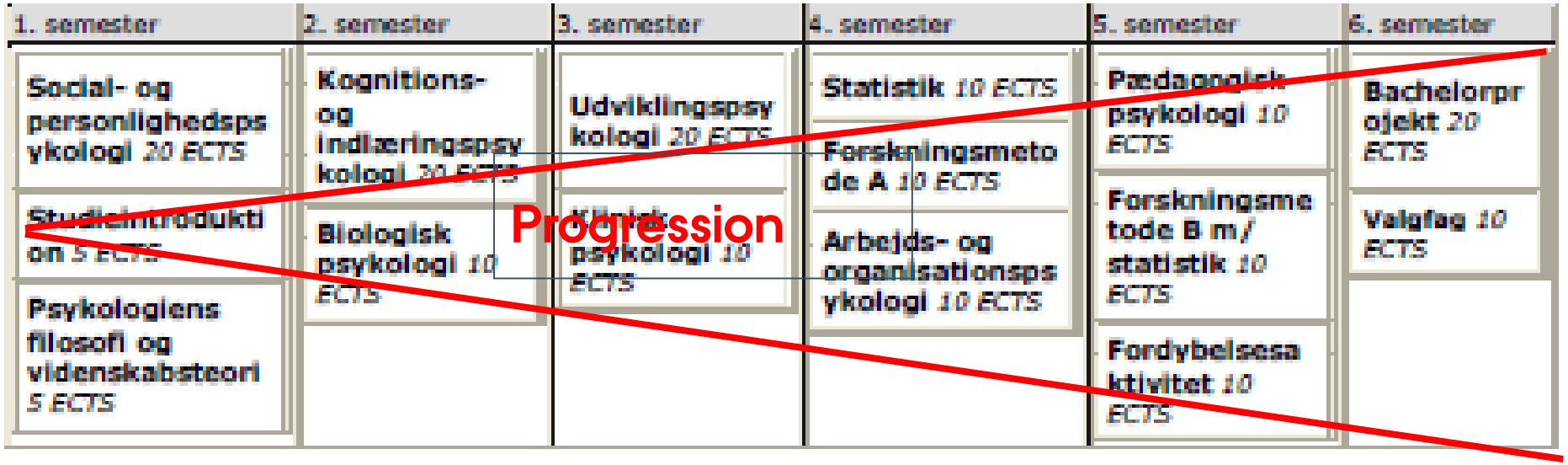
DIDACTIC IMPLICATIONS OF 'RESEARCH-BASED' TEACHING

What does 'research-based' teaching mean?

1. Researchers teach (or organize and coordinate teaching)
   - ➢ Researchers teach → lectures → passive students?
     - Lecturing as the teaching mode par excellence
2. Students work as researchers
   - ➢ Research-like teaching → activating teaching → working, exploring, arguing, communicating students?
     - Exercises, projects, supervision, feedback
     - Methodology, discipline, and thoroughness
       = in-depth learning

A SOCIALIZATION/TRAINING DURING FIVE YEARS, WHICH MUST SUCCEED

Progression: material, learning goals, material quantity, independence, research-type, academic competences



The overall purpose:
That the students increasingly through out the program work as a researcher

Free us from the “education market”

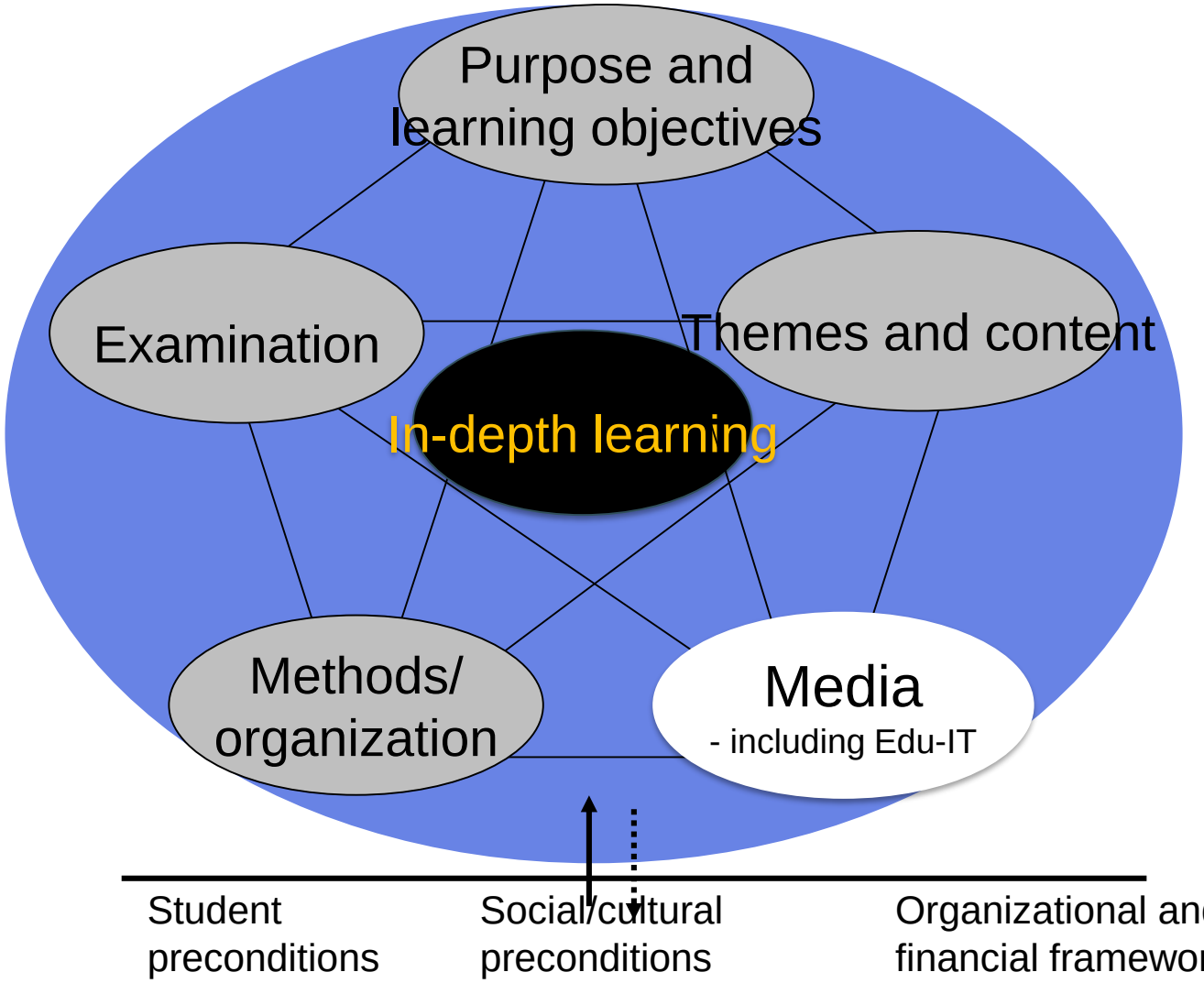
A MODEL FOR DIDACTICAL CHOICES AND EDUCATIONAL DEVELOPMENT

DIDACTIC CHOICES IN COURSE PLANNING - A MODEL

Course

Field of didactic decisions

Field of didactic framework



Systemic

Alignment, coherense

Planning more important than performance

Didactic: deliberate answers to series of questions

A language for pedagogical choices

… a range of learning goals

Abstract/extended

- apply (to unknown case), explore, criticize, test, argue, predict, assess, discuss
- reflect (scientific studies as basis for understanding)
- theorize, generalize, formulate hypotheses (support, nuance, modify, criticize known theory)

Relational/related

- analyze: compare, relate, explain (similarities-differences, strengths-weaknesses, causes-effects)

Multi structural/composed

- Summarize (in own words)
- describe

Structural/simple

- enumerate
- paraphrase, refer to
- identify, name
- memorize

Pre-structural: misunderstood

At what level of understanding should the student master the substance at the end of the course?

Biggs, 2003: SOLO taxonomi

... A RANGE OF TEACHING METHODS

Lectures:

- Classic lectures
- Activating lectures
- Video lectures

Classroom teaching

- Student presentations
- (Theoretical) exercises
- Cooperative learning
- Peer instruction/assessment
- Discussion-based
- Case teaching
- Laboratory teaching
- Excursions
- Internship
- Problem-based learning
- Project teaching
- Apprenticeship
- 'Consultant work'
- 'Research'

Supervision and feedback

- Take home assignments
- Bachelor task
- Master's thesis

Self-organized learning

- Study groups
- Stays abroad

- **Strengths and weaknesses**
- **A technical terminology and a huge toolbox**

… A RANGE OF EXAMINATION FORMS AND TEST STRATEGIES

Oral exam

- With or without preparation time, with or without aids, with or without written preparatory work, short or long duration

Written exam (on-site examinations)

- With or without preparation time, with or without aids, with or without appendix, few or many tasks, with or without options, short or long duration

Take-home assignments

- Defined or self-defined, 1 day to several months
- Research-paper type take-home assignments

Multiple choice

- [rare in Denmark]

Satisfactory attendance and activity

Embedded exam

- Mid-term, portefolio

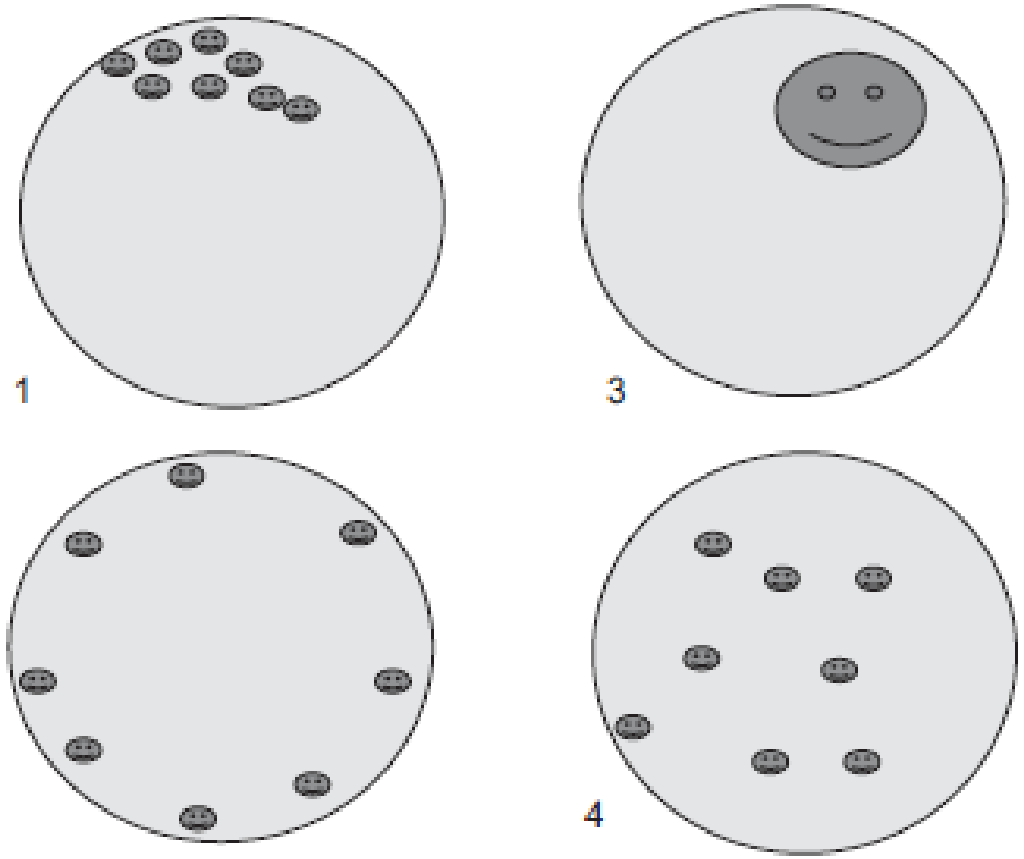
Many other possible products for assessment ….

pros and cons

'back wash' from what the students think they will be rewarded for

… A RANGE OF TEST STRATEGIES

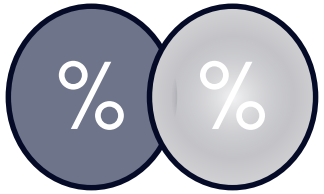
Course content vs. exam questions



width versus depth in assessments

… A RANGE OG MEDIA:
PHYSICAL OR DIGITAL OR BLENDED LEARNING

1. All courses have two classrooms:
   - The physical classroom
   - A digital classroom
     - All courses have their own website
     - Deliberate choices of the blend of learning

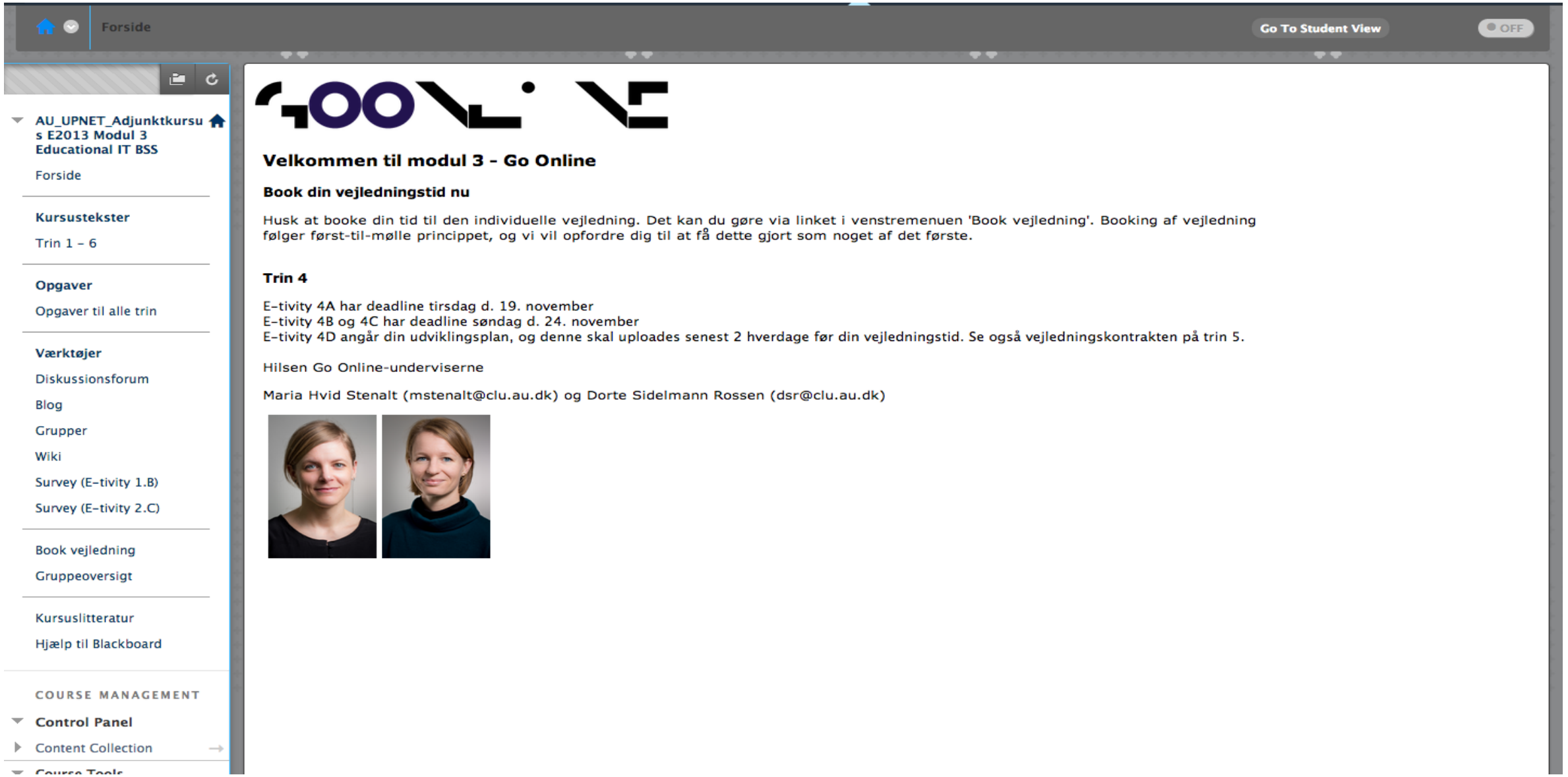


2. All (most) learning objectives are digital (or can be made digital)

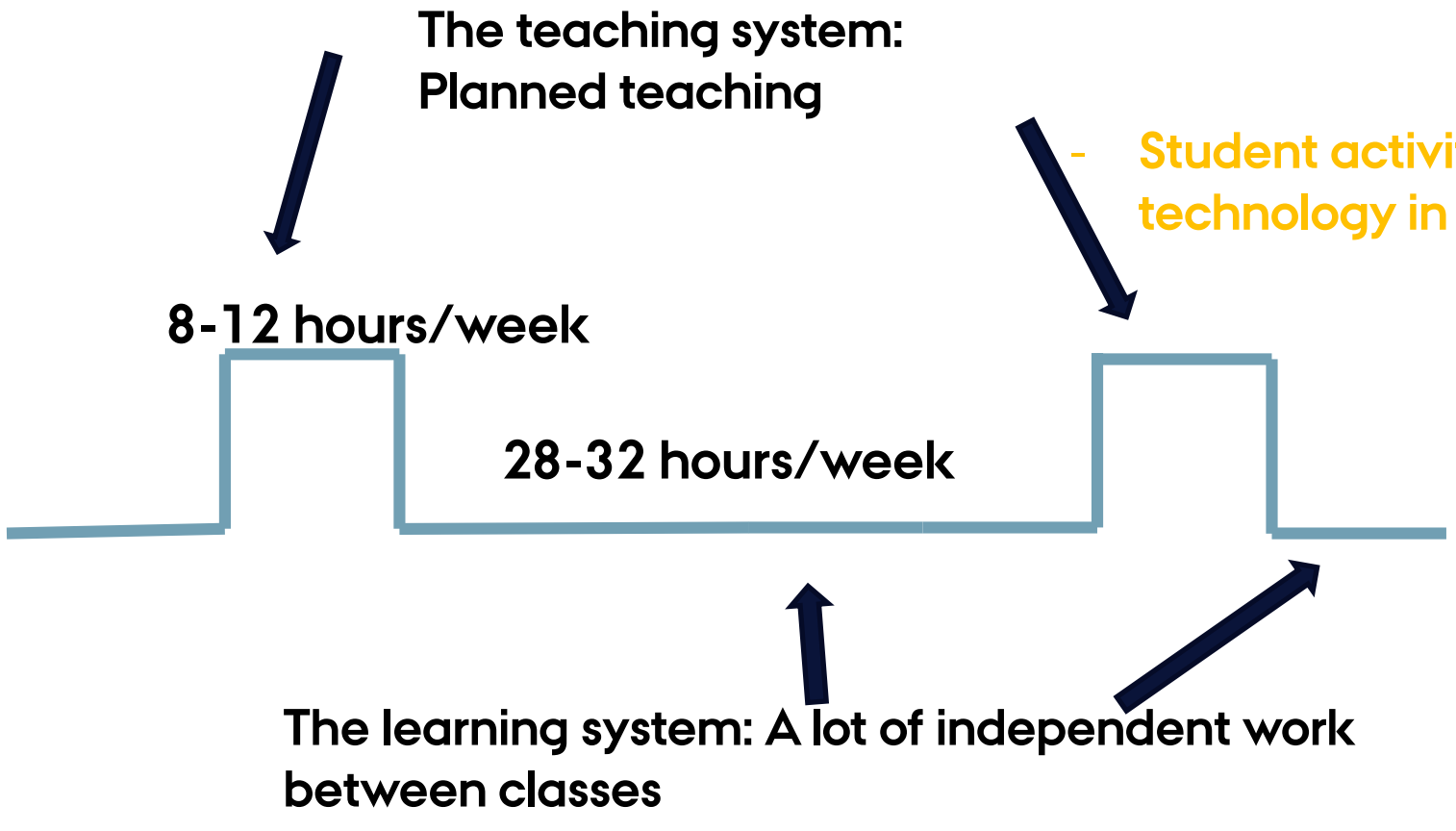
A historical new situation

PHYSICAL CLASSROOM

VIRTUAL CLASSROOM



THE TEACHING SYSTEM AND THE LEARNING SYSTEM (BSS)



Quality is about how long, how hard and how appropriate the students work with the substance between the f2f lessons

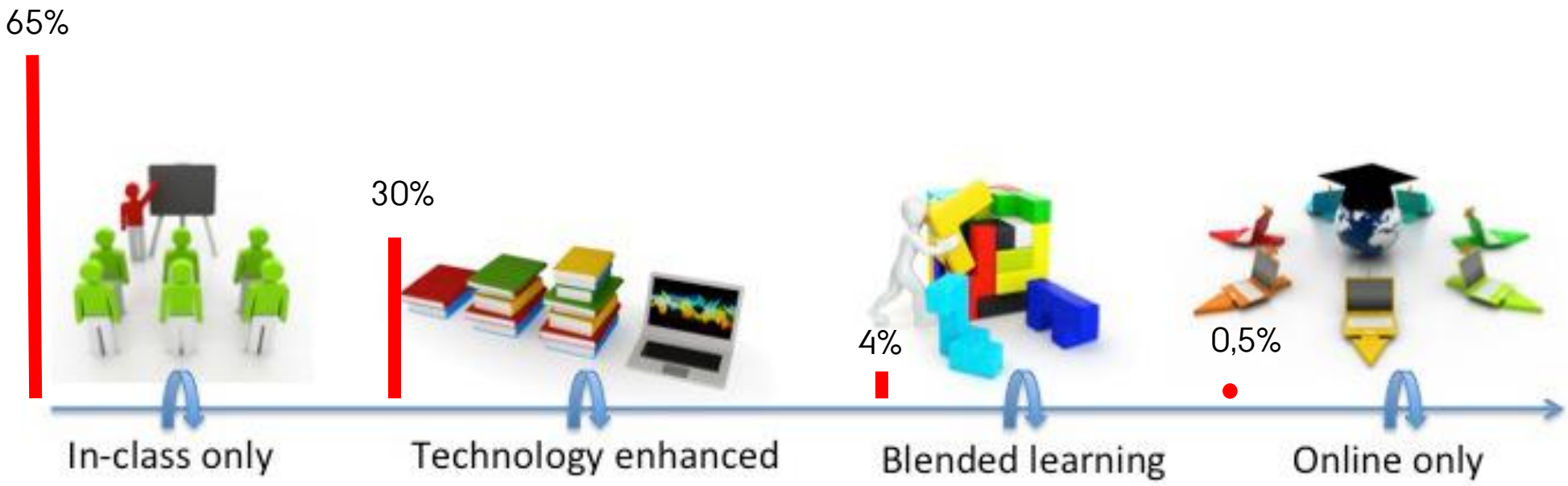
EDU IT STRATEGY AT BSS

Defining different course formats

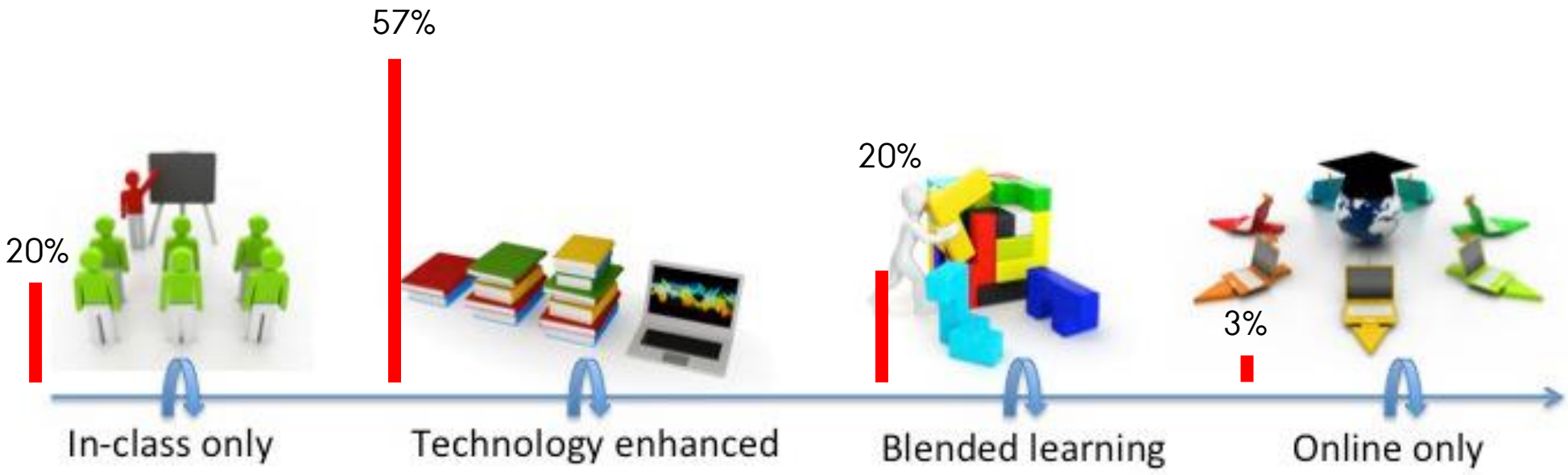
In-class only	Technology enhanced	Blended learning	Online only
Technologi destributed	Technologi supported	Technologi innovated	Technologi supported

CURRENT SITUATION AT BSS

Proportion of courses in different formats (rough estimate)



THE WANTED SITUATION AT BSS AT 2023



- Rapid evolution - cautious strategy
- It is not about 'sending-technology' (videocapturing etc.) it is about cooperation among students

EDU-IT STRATEGY, AU 2018-2023

Goals

- To provide research based teaching for large numbers of students

- To handle challenges described by university lectures:
    - How to increase the number of well prepared students
    - How to activate students in class
    - How to provide more feedback
    - How to handle differentiated previous knowledge

.... EDU-IT STRATEGY AU

60 mio Dkr (AU)+ 120 mio DKr (the four faculties)

1. Technology
2. **(Re)design of courses with technology**
3. Incentives and acknowledgement
4. Data-driven educational development and learning analytics

Introduction of technology without redesign does not work

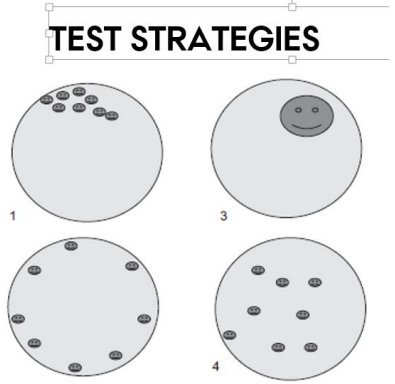
WHY DIGITISE THE EXAMS

REASONS FOR DIGITISING EXAMS

1. **Learning objectives**
   - **The increased use of digital learning objects in and out of the classroom:**
     - Texts ----> texts with links ----> hyper texts
     - Data sets, statistics, texts, analysis,
     - Sound,
     - Pictures
     - Video
     - Homepages

     Necessary to be able to use the same objects in the assessment activities

… REASONS FOR …



2. Better test strategies and more authentic exams

Example 1:

1. Read the newspaper article and identify one or more statement(s) about the Danish welfare state (Appendix)
2. Access the data-set from The Danish National Centre for Social Research and discuss the statistical evidence for the statement(s) (link)
3. Hand in your essay with your discussion plus tables, a description of the statistical analysis plus the syntax from your analysis

Example 2:

1. A Multiple choice text about basic theoretical concepts in pedagocial theory (20 minutes)
2. An analyses of the video clip (the first 6 minutes of a lesson in a class in a Danish primary school) based on theories of class management (3½ hour)

… REASONS FOR …

3. Handwriting and fairness

- generation argument – young people do not develop a handwriting
- discrepancy between everyday learning activities vs. assessment activities

4. Feedback to students

a. Rubrics, transparency, quality assurance

   - new possibilities as a consequence of annotating on-line

b. Learning analytics/student advice

   - New possibilities as a consequence of big-data

... REASONS FOR ...

5. Preventing exam cheating

- systematic plagiarism control at all written exams
- locked down environment in exams without additional help

6. Increased efficiency

- lower economic and administrative costs
- Business case: BSS saves - conservatively estimated - over DKK 1 million a year compared to paper exams

7. Meeting political expectations

WISEFLOW AT BSS

- implemented Wiseflow in full scale 2014
- 99% of all written exams digitised
- Ca. 750 flows/written exams pr. semester
- Ca. 50.000 individual participants pr. Semester

Administrative staff: Very satisfied

Students: very, very satisfied

Invigilators: Again calm about the situation and trust the system

The lectures: Devided and mixed feelings – very much about reading and marking on a screen vs. print

Co-examinors/sensor Corps: Mixed feelings

DIGITISING A VARIETY OF EXAM FORMS THROUGH WISEFLOW

FLOWassign

is a written test, either with or without a set assignment, where participants hand in a PDF and any appendix materials. FLOWassign is typically run as a home assignment or an on-site exam with additional aids permitted;

FLOWlock

is a locked on-site exam with a set assignment where participants answer the assignment in a locked down environment without additional aids;

FLOWmulti

is a locked on-site exam with a set assignment where participants answer the assignment in a multiple choice format in a locked down environment without additional aids;

FLOWcombine

makes it possible to set up an exam to consist of several exam flows combined in one series. Requirements can be set to determine whether a participant can continue to the next flow;

FLOWhandin

is a flow type where the primary hand-in is not a standard text document but instead an excel sheet, an audio file, video, etc.;

FLOWoral

makes it possible to support oral exams.

CONCLUSIONS

1. Although there are economic and administrative benefits, digitising of the exam is primarily about pedagogy
2. If an institution digitises its teaching it also needs, for several reasons, to digitise its exams
3. to achieve the full potential of digitising teaching and assessment these changes must be part of a comprehensive strategic initiative for enhancing teaching and learning.

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