

Credibility in digital exams

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Background

Increasing digitalization in the public sector, such as the universities, has been an objective of the Danish government since 2011. In this context, the University of Southern Denmark (USD) decided early on to make the written exam subject to a full digitalization of both the exam itself as well as the administrative procedures surrounding the exam.

Technology is an essential part of student life and most students bring their computer or other devices to class for note taking, active classroom participation a.s.o. In order for exams to proceed as a legitimate continuation of, and in alignment with, the teaching students partake in, USD aims for exams to be conducted in contemporary and familiar settings. This is why USD has decided on a 'Bring Your Own Device (BYOD)' approach to the implementation of digital exams.

At the Faculty of Health Sciences (FHS) only a very small percentage of exams allows for aids such as students' notes, books a.s.o. Not only are exams to be conducted digitally on the student's own device but as a predominant part of ensuring the continued credibility, FHS needs to make sure that no aids are accessed where not allowed.

Methods

The implementation of digital exams, while ensuring credibility, was an extensive process that took place on several levels across the organization. The five faculties at USD as well as the IT Department and the department for teaching and learning were represented in a large number of centralized and decentralized task groups. Some groups were tasked with finding the best available software, others were tasked with ensuring that learning objectives were still tested validly a.s.o.

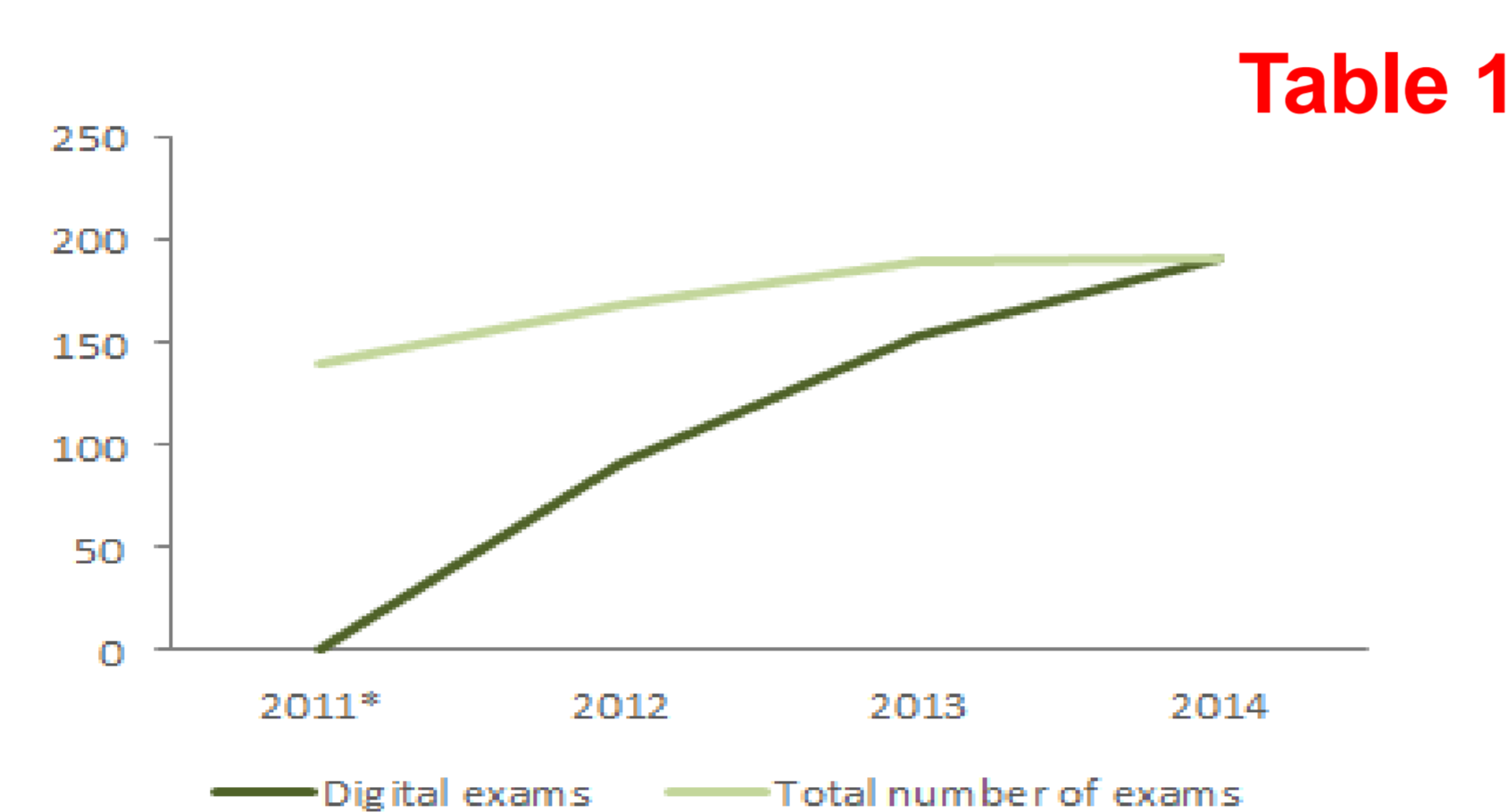
Table 2

Method of assessment	Exam software	Software functionality
Tests made solely of MCQ/MAQ with no aids	LMS Blackboard Learn by Blackboard Inc. with the integrated Respondus LockDown Browser by Respondus Inc.	Technical prevention from accessing internet pages + Technical prevention from accessing computer pathfinder
Examinations made of essay questions and/or short answer questions with no or few aids (student notes)	Exam 4 by Extegrity Inc.	Technical prevention from accessing internet pages + Optional technical prevention from accessing computer pathfinder if student notes are not allowed
Examinations made of essay questions and/or short answer questions with few or more aids (student notes, digital calculators and/or aids for digitalization of drawings, tables a.s.o.)	Exam Monitor by University of Southern Denmark with word processing software by student choice	Monitoring computer processes + Short interval screendumps of computer screen throughout

Table 2: Categorization of method of assessment and corresponding exam software

FHS decided on a broad approach to ensuring the credibility in digital exams, ensuring transparency and consistency in the administrative processes and thus the practicalities of the exam focus areas and equally important factors.

As such the implementation process was a constant matter of balancing quality in administration, validity in assessment and selection and usage of technology all in cooperation with relevant partners at FHS.



Type	2011*	2012	2013	2014
Digital exams	0	91	154	192
Written on paper	140	78	36	0
Total number of exams	140	169	190	192

Table 1: Comparison between written digital exams and paper exams from 2012- 2014. From January to August 2015 we have so far conducted 121 digital exams out of a total number of 121 written exams

Results

Between January 2012 and August 2015, FHS have conducted 558 digital exams out of a total of 672 written exams (table 1)

FHS have divided the methods of assessment into 3 three overall categories matching each method of assessment with the best available software, either acquired externally or developed in-house (table 2).

The administration and practicalities of the exams at FHS are now based in a project unit managed by a project coordinator at the central secretariat at FHS. Explicit descriptions of the various methods of assessment along with their administrative demands are available on an online platform accessible to all administrators. Two administrators as well as a number of IT supporters are allocated to every digital exam at FHS to ensure that each exam is conducted according to approved standards and regulations.

Conclusion

The work achieved over the past 3,5 years has shown that a successful digitalization of exams, including maintaining their credibility, demands initiatives on several levels, ensuring both technical as well as administrative progress.

As such four criteria need to be fulfilled:

1. Academic objectives are tested validly and reliably
2. The organization is prepared administratively for conducting exams digitally. Elements such as guidelines, instructions, staff members with enhanced qualifications a.s.o. are essential.
3. Students have none or limited access to aids, according to the different regulations that apply to each exam
4. Selected software is fully functional on a variety of operating systems since the exams are conducted according to a BYOD concept. This means that at one single exam as many different combinations of computers and operation systems, as there are students participating in the exam, may be present.

Take home message

In implementing digital exams, the selection of high quality software to support learning objectives and methods of assessment, as well as establishment of a high quality administration, has ensured that FHS continues to maintain both credibility and contemporary settings for the written exams

Facts about USD and FHS

Number of students

- Pr. 31.12.2014 a total number of 24.326 fulltime students are enrolled at USD
- 4257/17,5 % of these are enrolled at FHS

Programmes

- FHS counts a total of 5 bachelor programmes and 11 master programmes

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