Digital testing in the History Department of Leiden University

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Universiteit Leiden

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1 WHY?

- Increase performance and graduation rates
  - Long term commitments by the University and Department of Education imply that the student success rate at the History Department should rise substantially
- Decrease workload involved in paper-based testing
  - Student numbers are large (200-220 p.a.) and rising (International Studies expects 350 in its first year, 2012-2013)
  - Interim testing (in whatever form) has been made obligatory: two or more tests per course

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1 WHY?

- Transparency

  - Minimize subjectivity in marking tests
  - Enable easy analysis of tests and individual items in tests
  - Facilitate 'the testing of tests' by the Examination Boards – which have the duty, by law, but not necessarily the tools, to safeguard and endorse the whole testing process

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2 WHAT?

- Replace paper-based testing with open questions by digital testing with mostly closed questions (of different types)
- Create a system that will provide for both interim formative tests and final summative tests
- Create an item bank for that purpose
  - Re-use of questions
  - Generate different tests
  - Error-free data

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3 HOW?

- Choose a subject:
    - 1st year course Ancient History, consisting of study of a text book supported by lectures in large groups (200+)
- Create an assessment environment within Blackboard (BB) and an item bank
    - An assistant, Mr Adriaan van Heteren, undertook both tasks, with the support of the ICT Department, ICLON and the Ancient History staff

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4 FOUR SPECIFIC QUESTIONS THAT THE PILOT WANTED TO ANSWER

- Does it work? Is BB to be manipulated into a congenial assessment tool?
- How much input is required to set up a working test environment with an adequate item bank?
- Will the workload around assessments indeed decrease?
- Will interim formative digital testing activate students and will this increase their success rate?

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5 SOME ANSWERS – and the problems encountered on the way

-   It works. BUT:

    BB has its limits – partly to be circumvented, but not completely; remaining problems:

    - 1) partial credit of multiple answer questions
    - 2) assigned credits are not copied together with the data
    - 3) random generation of a test is as yet impossible
    - 4) lay-out of Word docs will only be preserved (in part) when copying by way of Notepad

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5 SOME ANSWERS: continued

- The required input is large: there are no precise figures as yet, but the creation of an item bank is cost intensive. The assistant worked for 9 months, one day per week. About 50% of input went into design and 50% into creating 200+ items
- Workloads will decrease significantly, but the specific character of studying History will probably be best served by retaining some open questions
- Whether the student success rates will increase, can only be judged after implementation, and in the longer run

VRC* of the outlay required to produce an item bank

- 150 hours → 200 questions
- A bank of 400-500 items → 300 hours
- 75 hours for design etc → 375 hours
- Double the figure for support of different kinds → 750 hours

- 20 weeks of 38 hours
- 12.500-17.500 euros

*Very Rough Calculation

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6 IMPORTANT THINGS LEARNED

- Take time to design everything into the smallest detail
- Especially spend time on the labelling of questions. Keywords do NOT work, use the logical structure of the learning material

Question types
- ⦿ All Pool Questions
- ☐ Either/Or
- ☐ Essay
- ☐ Jumbled Sentence
- ☐ Matching
- ☐ Multiple Choice
- ☐ Ordering

Categories
- ☐ H1
- ☐ H2
- ☐ H3
- ☐ H4
- ☐ H5
- ☐ H6
- ☐ H7

Topics
- ☐ P1
- ☐ P2
- ☐ P3

Levels of Difficulty
- ☐ S1
- ☐ S2
- ☐ S3
- ☐ S4

Keywords
- ☐ K1

Delete | Points [   ] Update | Question Display ⌄

Question Text

- Wat was de belangrijkste drijfveer achter de Griekse kolonisatie? ⌄
- Solon voerde in Athene een viertal vermogensklassen in, verbind de juiste ver... ⌄
- Stelling: Solon kreeg rond het jaar 590 v. Chr. buitengewone volmachten om de... ⌄
- Zet de volgende keizers in chronologische volgorde. ⌄
- In de periode [A] begon Athene onder leiding van [B] met de opbouw van een [C... ⌄
- Stelling: Een latifundum is hetzelfde als een villa. ⌄
- Stelling: Het dominaat is principieel anders dan het principaat ⌄
- Stelling: Een oikos moet je vertalen met gezin ⌄
- In de oudheid pastten staten verschillende strategieën/technieken toe om hun ... ⌄
- In 449 eindigde de directe militaire confrontatie tussen Athene en Sparta. D... ⌄
- De bevolking was in de Romeinse keizertijd in verschillende groepen te verdel... ⌄
- Waardoor kon Sparta in de zesde en de vijfde eeuw militair superieur zijn? ⌄
- Wat waren latifundia? ⌄
- Op welke wijze probeerde Tiberius Gracchus in 133 v. Chr. Het probleem van de... ⌄
- De klērouchia waren bedoeld om: ⌄
- De Minoïsche beschaving kende in tegenstelling tot de Myceense beschaving: ⌄
- Onder een polis verstonden de Grieken in de eerste plaats een: ⌄
- De hervormingen van Kleisthenēs betekenden in essentie: ⌄
- In de slag bij Chaeronea ⌄
- Het spijkerschrift uit Mesopotamië was oorspronkelijk ontwikkeld: ⌄
- De door Aristotales gestichte filosofenschool heette: ⌄

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6 IMPORTANT THINGS LEARNED: continued

- Take time to design everything into the smallest detail
- Especially spend time on the labelling of questions. Keywords do NOT work, use the logical structure of the learning material
- Consider carefully what type of questions you want to use and what percentage for every type selected. A maximum of 5-6 different types seems advisable

> Calculated Formula
> Calculated Numeric
> Either/Or
> Essay
> File Response
> Fill in Multiple Blanks
> Fill in the Blank
> Hot Spot
> Jumbled Sentence
> Matching
> Multiple Answer
> Multiple Choice
> Opinion Scale/Likert
> Ordering
> Quiz Bowl
> Short Answer
> True/False

We use the following:
Multiple choice [42%]
Either/or [26%]
Essay [16%]
Matching [6%]
Jumbled sentence [5%]
Ordening [5%]

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6 IMPORTANT THINGS LEARNED: continued

- Take time to design everything into the smallest detail
- Especially spend time on the labelling of questions. Keywords do NOT work, use the logical structure of the learning material
- Consider carefully what type of questions you want to use and what percentage for every type selected. A maximum of 5-6 different types seems advisable
- Produce questions in Word, Excel or another easily convertible format OUTSIDE BB

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6 IMPORTANT THINGS LEARNED: continued

- Students appreciate the possibility for self-diagnosis, and that 24/7
- Students appreciate the possibility of immediate feedback

Het spijkerschrift uit Mesopotamië was oorspronkelijk ontwikkeld:

Selected Answer: ✗ a.
Om religieuze voorschriften te noteren.

Correct Answer: ☑ b.
Als boekhoudkundig notatiesysteem.

Response Feedback:
Helaas dit was niet het juiste antwoord. Het schrift werd gebruikt om religieuze voorschriften vast te leggen, om wetten vast te leggen en om veroveringen te noteren. Echter daar is het niet in eerste instantie voor ontwikkeld.
(Handboek pagina 73)

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6 IMPORTANT THINGS LEARNED: continued

- Students appreciate the possibility for self-diagnosis, and that 24/7
- Students appreciate the possibility of immediate feedback
- Students appreciate the type of questioning
- Students underrate the difficulty of the questions
- Both teachers and students gain insight into the learning process

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7 WHERE TO GO FROM HERE?

- Disseminate the know-how acquired, and stimulate acceptance of digital testing
- Go on producing questions for the item bank
- Begin by producing interim, formative tests AND make these part of the instructional process (adjustment of teaching and learning) → Blended Learning
- Organize support, including statistical analysis, and safeguards against data loss

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7 WHERE TO GO FROM HERE: continued

- Try to find ways to use the material available for digital full exams DESPITE THE LACK OF AN ADEQUATE INFRASTRUCTURE, i.e. the availability of a dedicated examinations room

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8 THINGS TO WISH FOR

- A proper infrastructure
- Dedicated assessment software, especially software packages that enable adaptive testing
- More flexibility in design: (competitive) games