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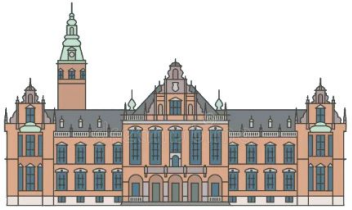
CIT

From Pen to Digital: Transforming Student Responses in Digital Assessment

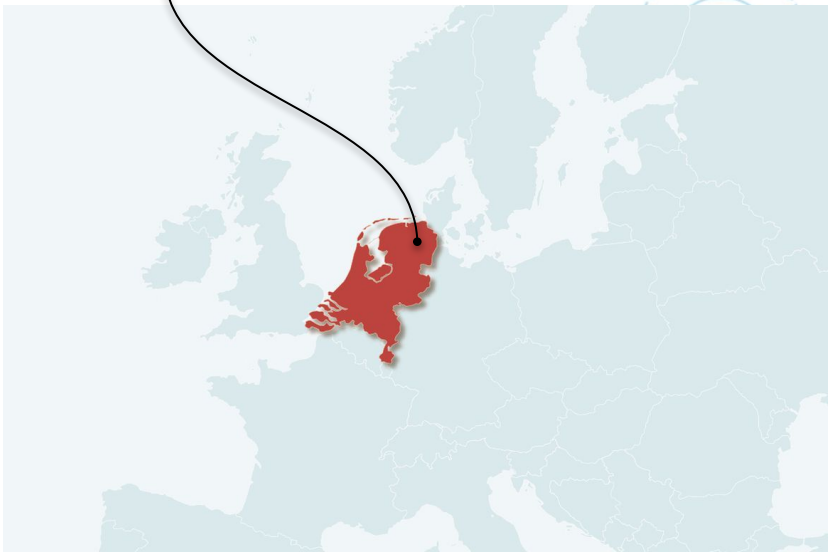
Josien de Boer
Coordinator Educational Applications



University of Groningen



- Located in the north of the Netherlands
- Founded in 1614
- 11 faculties
- > 120 Master's degree programmes
- > 45 Bachelor's degree programmes
- 34,000 students (28% international)
- 7,150 fte staff (including Medical department)



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Content

Backstory

The journey

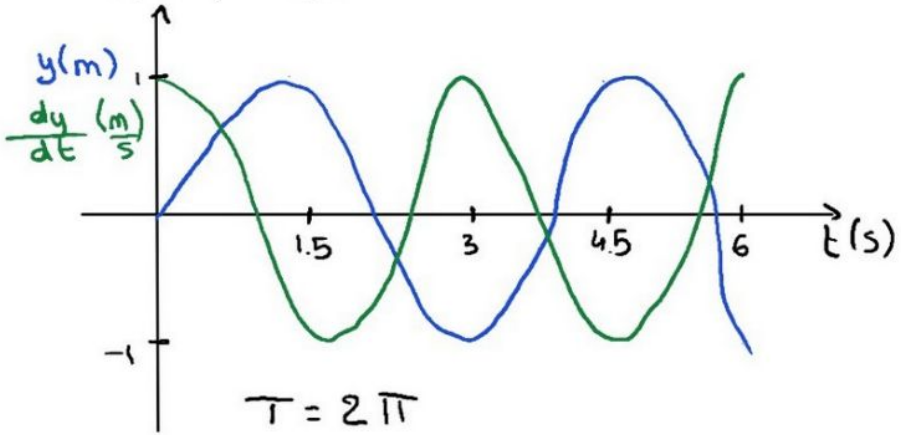
Lessons learnt

Next steps

A1 . 1 - a2 : $y(t) = A \cos \omega t$

$y(t) = A \cos(\omega t + \phi)$

A1 . 1 - b1



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Background

Backstory: Growth exam halls

University goal: to conduct exams digitally in the LMS



2013
AJH 3: 288 computers



2015
AJH 2: +312 computers

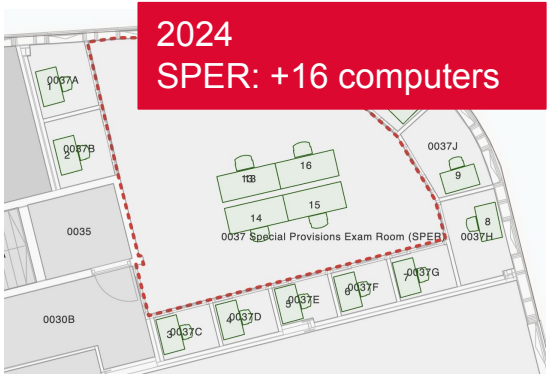
Total: **1802**



2021
AJH 4: +586 computers



2024
AJH 1: +600 computers

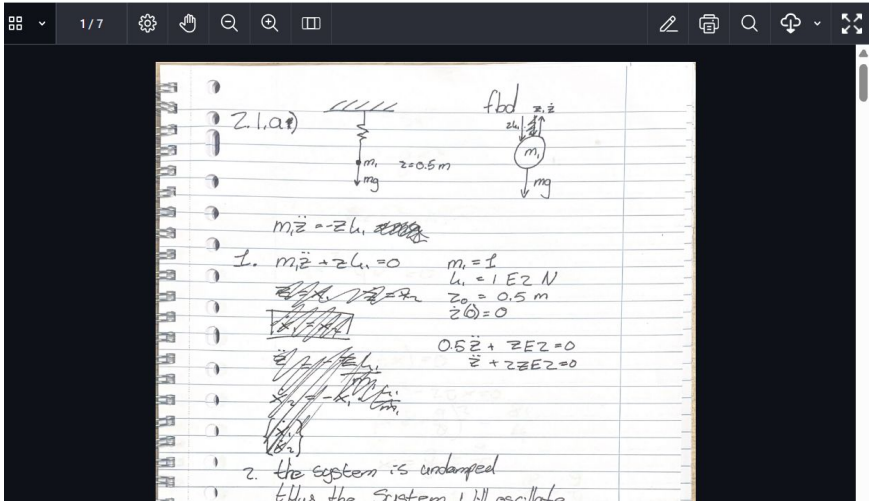


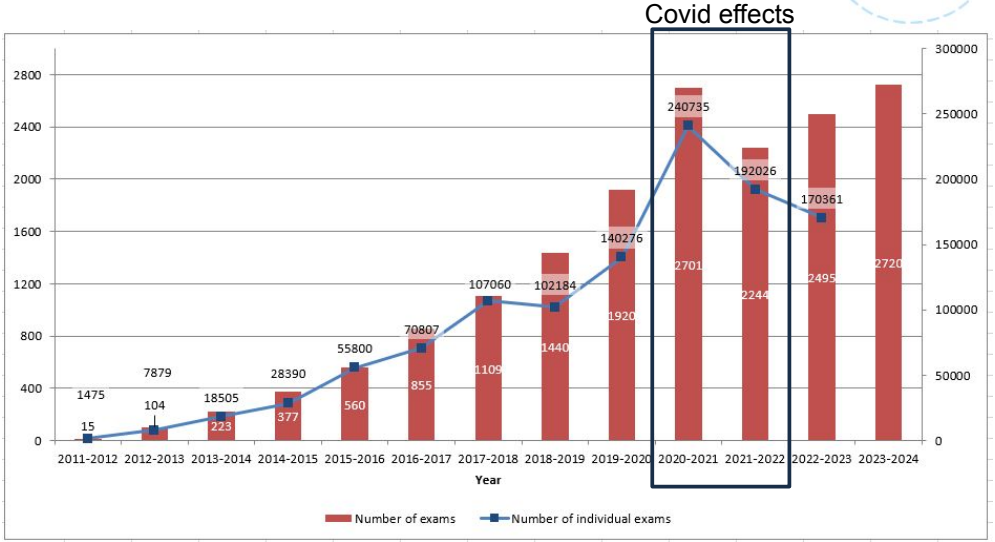
2024
SPER: +16 computers

Backstory: Disadvantages of digital exams

Faculties, due to restrictions on the use of keyboards and mouse

- are still taking some exams on paper
- during tutorials students are taking photos of the answer





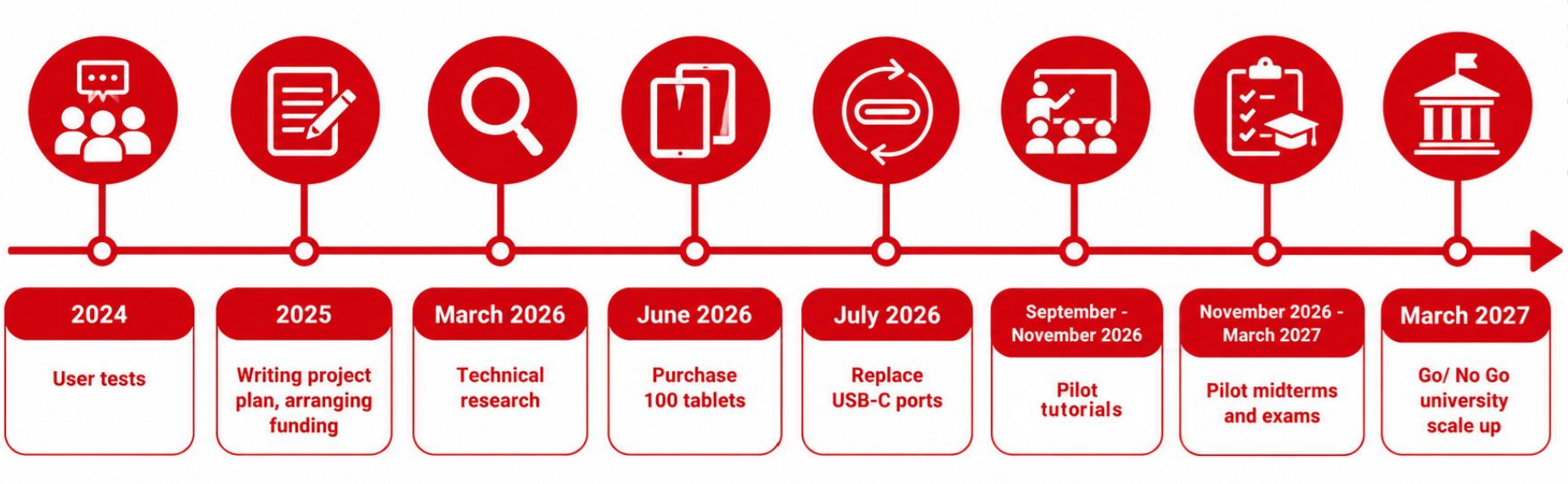
Backstory: Goals to achieve

- Being able to make and submit handwritten answers digitally
- New possibilities for exams
- To hold exams with less administrative work, such as printing and archiving
- To streamline the grading process by grading online together
- To organise tutorials using these tablets
- Converting digitally written work into text/formulas



The Journey

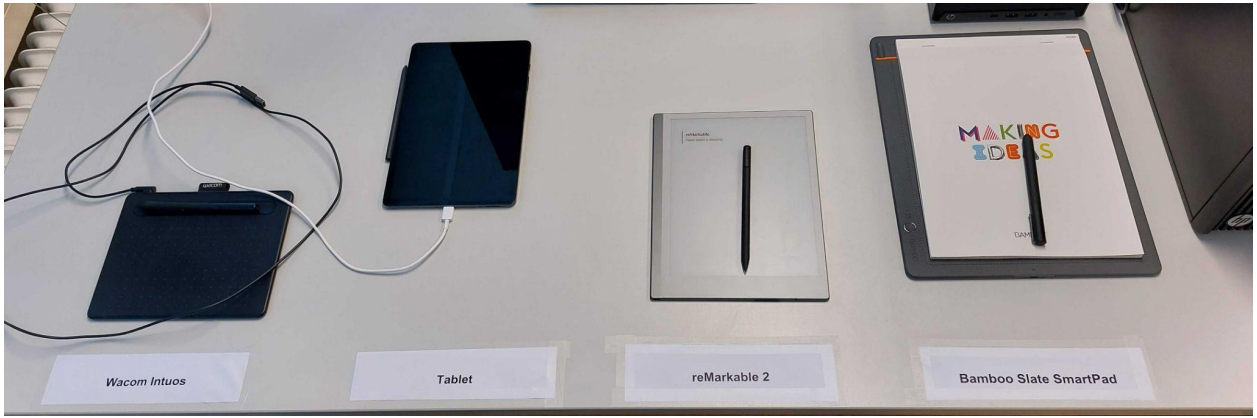
The journey: Timeline



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The journey: User test

- Devices used in user test: Drawing tablet (without a screen), Tablet + stylus pen, E-reader + stylus pen, Smart pad with paper
- User test carried out with student and lecturers
- User test results: Acceptance criteria for the device



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The journey: Acceptance criteria for the device

Selection criteria:

- Writing experience: feel and accuracy
- Learning curve students
- Ease of use: cable, charging
- Technical possibilities: updates, connecting to PC
- Cost per workspace

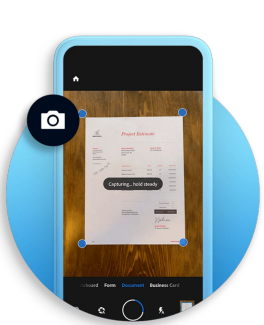
The journey: Preliminary testing of devices

Options investigated:

- Scanning/photography applications
- Webcam
- Graphics tablet (with or without a screen)
- Smart pad with paper
- Tablet + stylus pen
- E-pen
- Software















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The journey: User criteria for the device

- Functions:
  - possibility to keep your hand on the screen while writing
  - possibility to erase your work
  - a writing sensation similar to writing on paper
  - ability to zoom in and out
  - support colour

- Usability:
  - screen is non-reflective and easy to read
  - device must be A4 size or larger
  - not too many buttons or options on the device

The journey: Technical criteria for the device

Technical requirements:

- device can be connected to a PC via a cable, both for uploading answers and for charging the device.
- a pen that does not need to be charged.
- the device must have a long service life and not rely on updates that may cease at some point, thereby compromising security.
- an advantage if no separate software or apps are required to use the device. This saves on updates and costs.



Graphics tablet with a screen

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The journey: Technical options in Brightspace

Exploring options for taking input during exams:

- Virtual testing environment with applications such as Word (Draw tab), Visio and Paint
  - \+ Already in place and ready to go
  - \- Student must insert an image or PDF
- Custom Question (via: Add Existing)
  - \+ To be integrated into an existing quiz
  - \- Self build or purchase a new application
- Offering a drawing tool via Insert Stuff
  - \+ The result is in the written response question
  - \- Vulnerable integration, not advisable for high-stakes exams



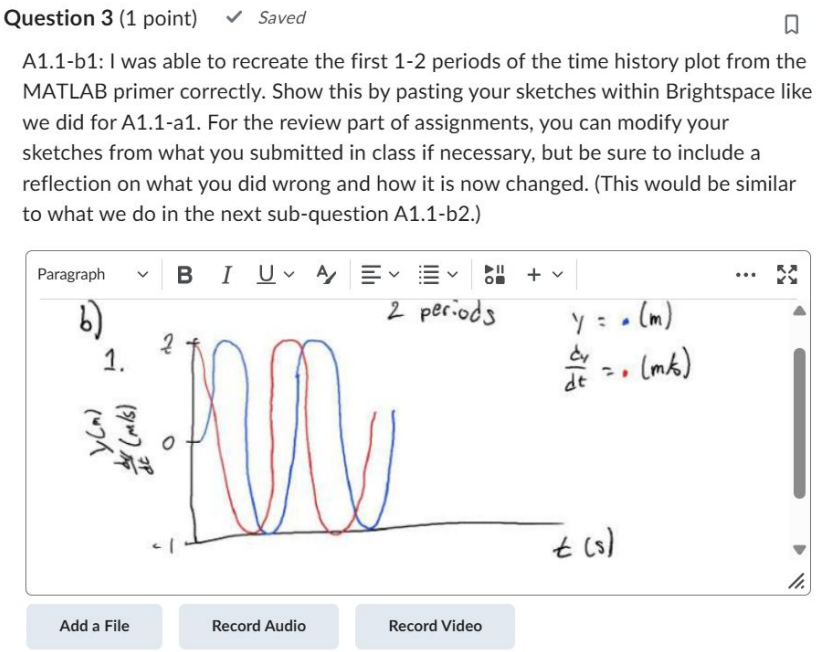
Lessons learnt



Video

Lessons learnt: Student experience

- Students found the use of colour to be a major advantage compared with paper
- Delete and reorder answers
- Students prefer to use their own laptops during tutorials. This is a challenge because a mix of settings, Windows /Apple.

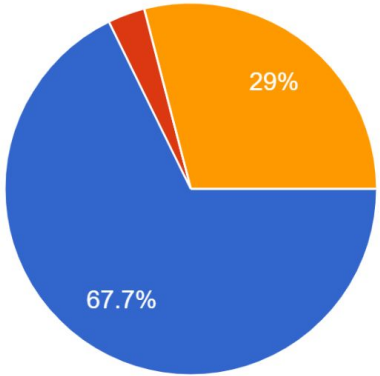


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Lessons learnt: Student experience

Did you switch between the Wacom tablet and paper during the session?

31 responses

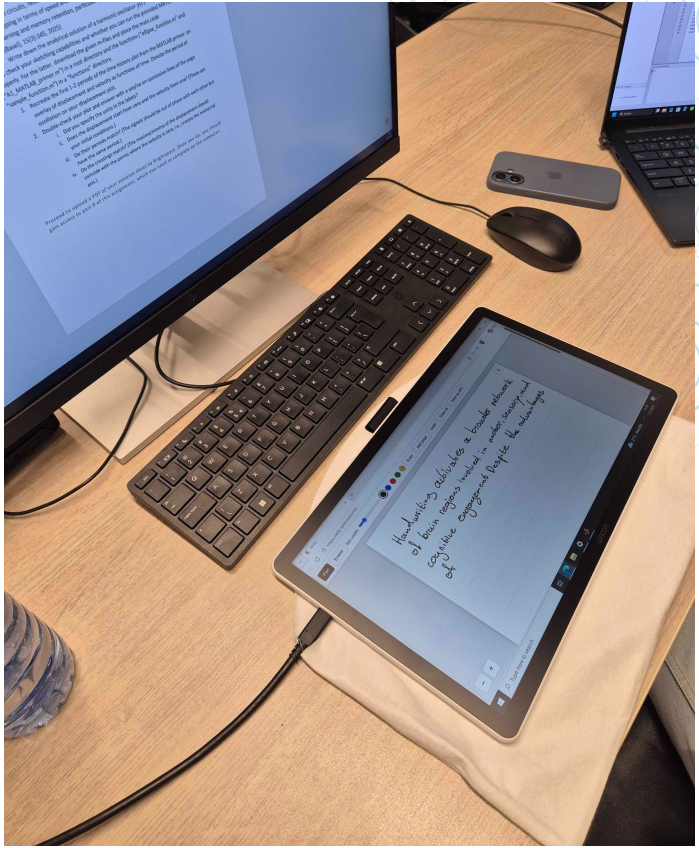


- I used the tablet throughout: I did not feel a need to switch to paper.
- I used both methods about equally: I found myself switching between the two regularly.
- I used paper throughout: I did not find the tablet suitable for my needs.

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Lessons learnt: our experiences

- Best tablet option: Graphics tablet with a screen (Wacom One 14)
- Not all USB-C ports are compatible
- Use a application that allows you to enable grid lines and create shapes



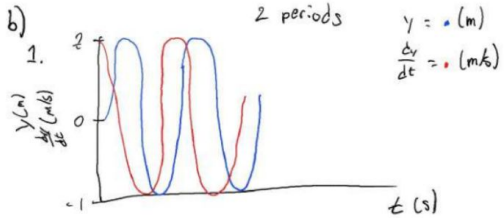
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Lessons learnt: Brightspace

- A part of a exam written; use a quiz
- Full exam on tablet; use an assignment
- Grading experience Quiz: Select ‘Insert Image’ rather than ‘Add as attachment’

Question 3

A1.1-b1: I was able to recreate the first 1-2 periods of the time history plot from the MATLAB primer correctly. Show this by pasting your sketches within Brightspace like we did for A1.1-a1. For the review part of assignments, you can modify your sketches from what you submitted in class if necessary, but be sure to include a reflection on what you did wrong and how it is now changed. (This would be similar to what we do in the next sub-question A1.1-b2.)



Question 3

A1.1-b1: I was able to recreate the first 1-2 periods of the time history plot from the MATLAB primer correctly. Show this by pasting your sketches within Brightspace like we did for A1.1-a1. For the review part of assignments, you can modify your sketches from what you submitted in class if necessary, but be sure to include a reflection on what you did wrong and how it is now changed. (This would be similar to what we do in the next sub-question A1.1-b2.)

- No text entered -

graph for b part.png (33.3 KB)

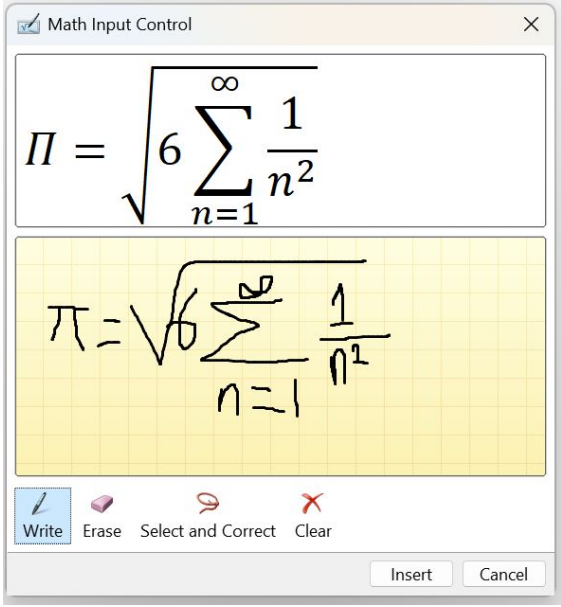
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Next steps

Next steps

- Looking into the possibility of including a drawing question in a quiz
- Researching options for converting written text and formulas
- The use of AI to assist with the grading of students' work



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Thank you

Time for questions!

