KU LEUVEN

LEARNING LAB

# The Virtual Skills Laboratory app

Media & Learning

Virtual tours of advanced learning spaces – ViSkiLab app

Faculty of Medicine, KU Leuven

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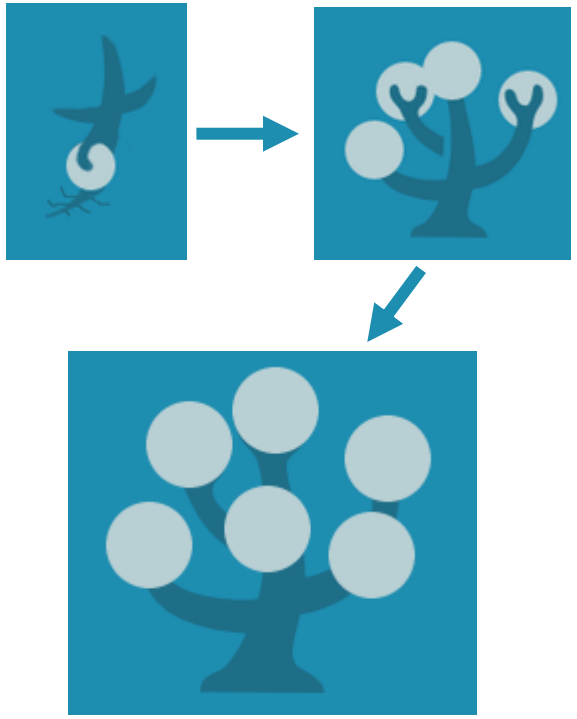
# How was the startup possible?

Thanks to an IDL project in 2018

**I**nnovative **D**igital **L**earning project



- Project-based innovation
- Focused on:
  - optimal use of educational technology
  - innovative forms of education
- Opportunity to submit an educational innovation project

ViSkiLab was selected → so we got started. ☺

**Funded by KU Leuven Learning Lab**

# 1. Startup in 2018

What do we want/need:

- Innovative educational tool
- **Large** and **heterogeneous** group of **starters**
- Authentic biomedical L1 lab
- Formative evaluation and feedback

# 1. Startup

Learning objectives:

- Good Laboratory Practice including lab safety
- Execute experiments properly
- Other skills:
  - correct waste management
  - perform different biomedical laboratory techniques
  - use different biomedical equipment

- **Equal start level**

# 1. Startup

How to do this:

- Looked at other tools
- Collaboration with other Universities
- Video? Computer application?
  Virtual Reality 3D? …?

→ **360° video in VR**

# 1. Startup

Storyline – make it interesting:

- Murder Mystery
- Different characters
- Who is guilty?
- Tests to find out

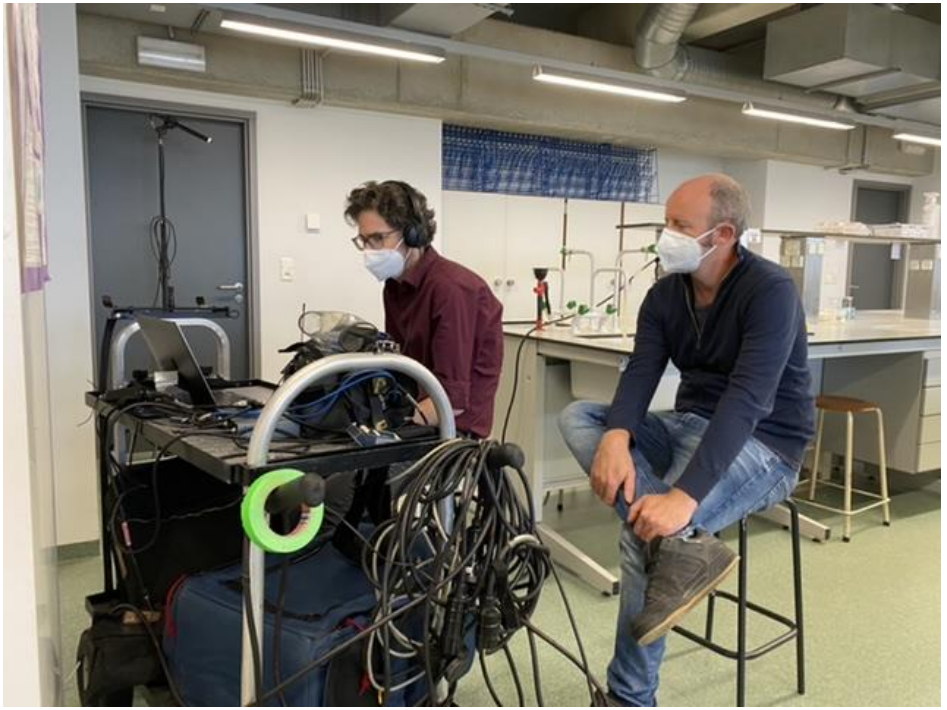

Why?
To engage and motivate our students

# 360° video

- Advantages
  - Immersive
  - Interactive
  - Recordings made in L1 Lab
  - *‘Quick’* to make
  - Easy in use

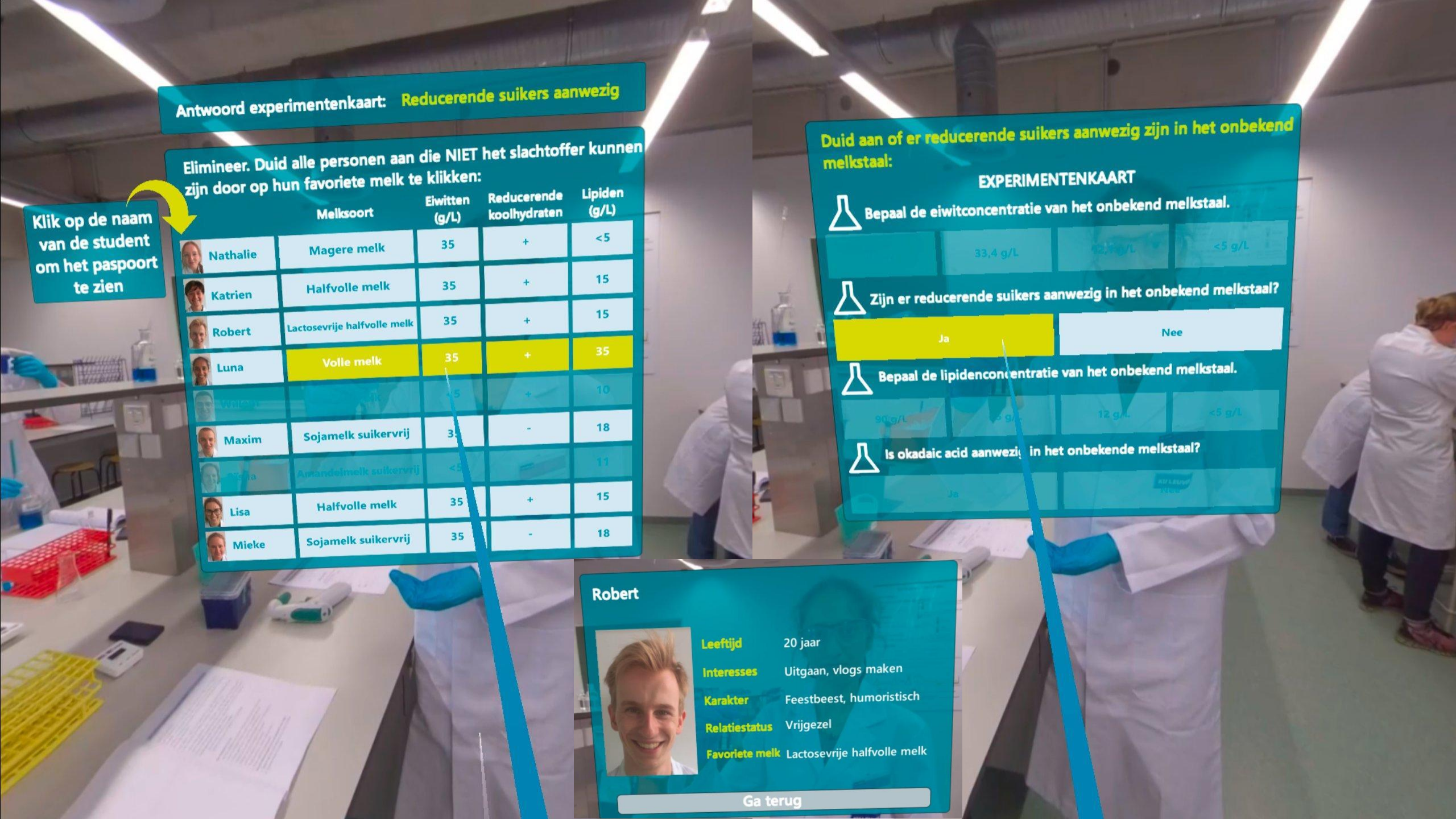
# ViSkiLab app – techical aspects

- 360° recordings by expert videographers (Insta360 pro 2 camera)
- In-house developed in Unity
- All elements integrated in a complex interactive
- scenario
- Experienced on Oculus Quest 2



# ViSkiLab app – interactive elements

- Multiple Choice Question + feedback
- 2D instruction videos
- Posters & images
- Hotspots to be found in the 360° environment


Antwoord experimentenkaart: Reducerende suikers aanwezig
Elimineer. Duid alle personen aan die NIET het slachtoffer kunnen zijn door op hun favoriete melk te klikken:
Klik op de naam van de student om het paspoort te zien
Melksoort
Eiwitten (g/L)
Reducerende koolhydraten
Lipiden (g/L)
Nathalie
Magere melk
35
+
<5
Katrien
Halfvolle melk
35
+
15
Robert
Lactosevrije halfvolle melk
35
+
15
Luna
Volle melk
35
+
35
Maxim
Sojamelk suikervrij
-
18
Lisa
Halfvolle melk
35
+
15
Mieke
Sojamelk suikervrij
35
-
18
Duid aan of er reducerende suikers aanwezig zijn in het onbekend melkstaal:
EXPERIMENTENKAART
Bepaal de eiwitconcentratie van het onbekend melkstaal.
33,4 g/L
<5 g/L
Zijn er reducerende suikers aanwezig in het onbekend melkstaal?
Ja
Nee
Bepaal de lipidenconcentratie van het onbekend melkstaal.
12 g/L
<5 g/L
Is okadaic acid aanwezig in het onbekende melkstaal?
Ja
Robert
Leeftijd
20 jaar
Interesses
Uitgaan, vlogs maken
Karakter
Feestbeest, humoristisch
Relatiestatus
Vrijgezel
Favoriete melk
Lactosevrije halfvolle melk
Ga terug

FOUT

Dit is wel degelijk een warmwaterbad maar niet op de juiste temperatuur.

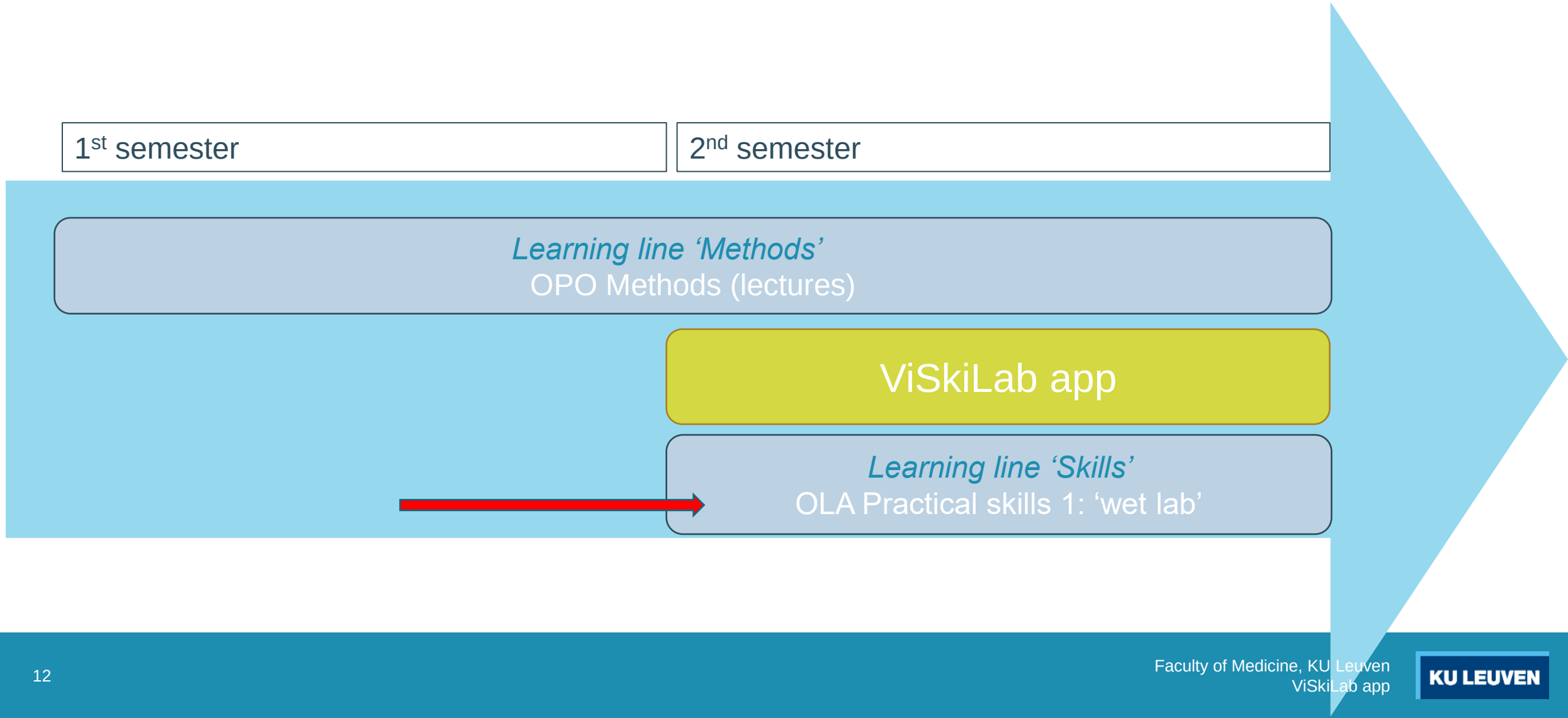
Probeer opnieuw

JUIST

Proficiat, dit is het waterbad waar we benedict reagens in moeten voorverwarmen.

Ga verder

# ViSkiLab app is integrated in curriculum of 1st bachelor Biomedical Sciences (> 400 students)

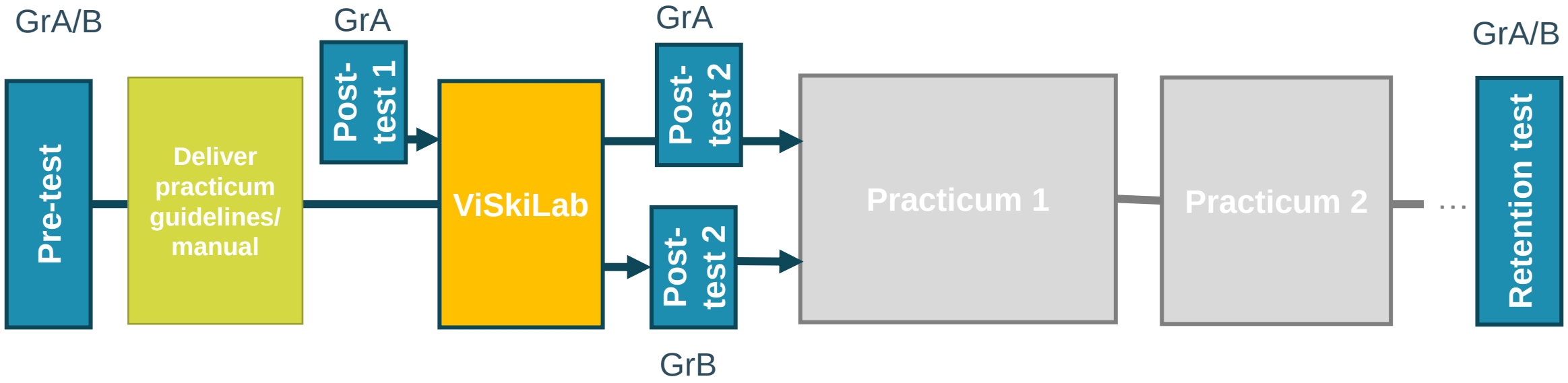


# ViSkiLab – Educational integration

- Instructional video available “how to work with a VR headset?”
- Each student has an individual VR headset
- Always before their ‘real-life’ practica
- In small groups ± 30 students

# Evaluation ViSkiLab app

374 students in the 1st bach BMS
- Group A: 181 students
- Group B: 177 students




Pretest → Initial knowledge + motivation and expectations
Posttest → Acquired knowledge + experiences
Retention test → Retaining knowledge + how did the app help during the practicals in the lab?

# Tests

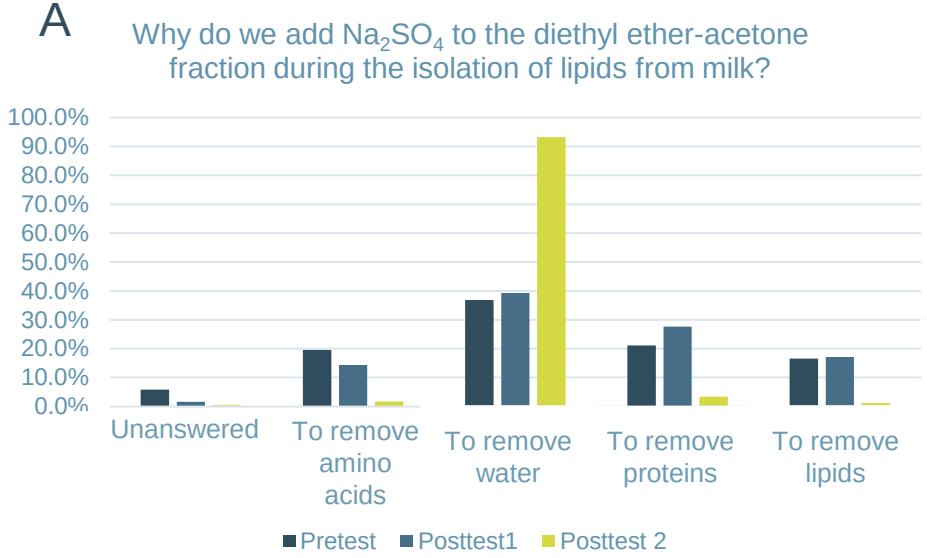
Testing for knowledge, attitudes, motivation and experience

Testing in LMS environment Toledo

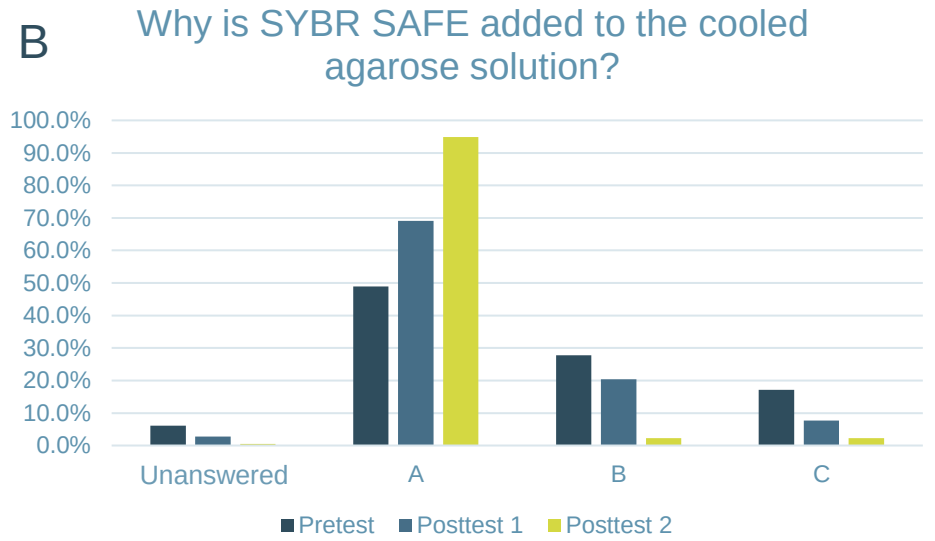
- Pretest
  → Initial knowledge + motivation and expectations
- Posttest
  → Acquired knowledge + experiences
- Retention test
  → Retaining knowledge + how had the app helped during the practical sessions in the lab?

# Content questions

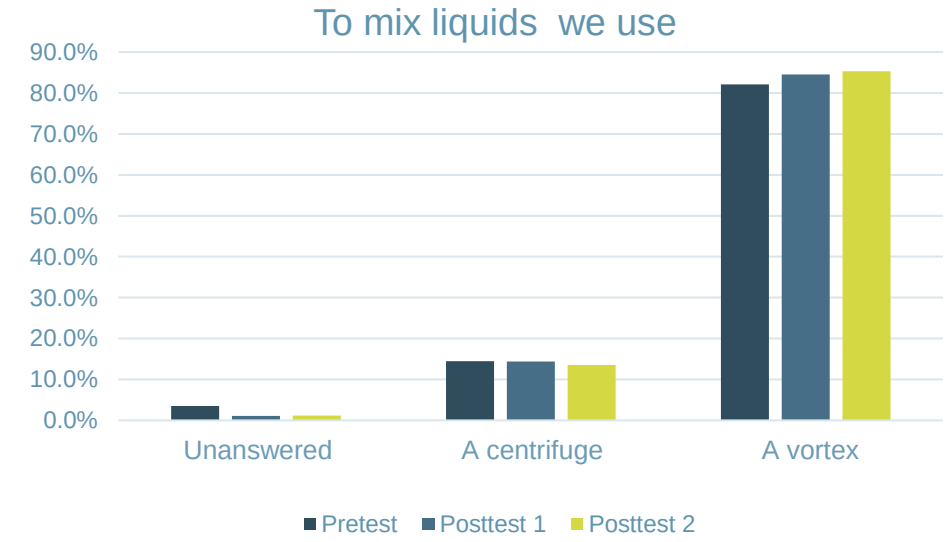
A




B

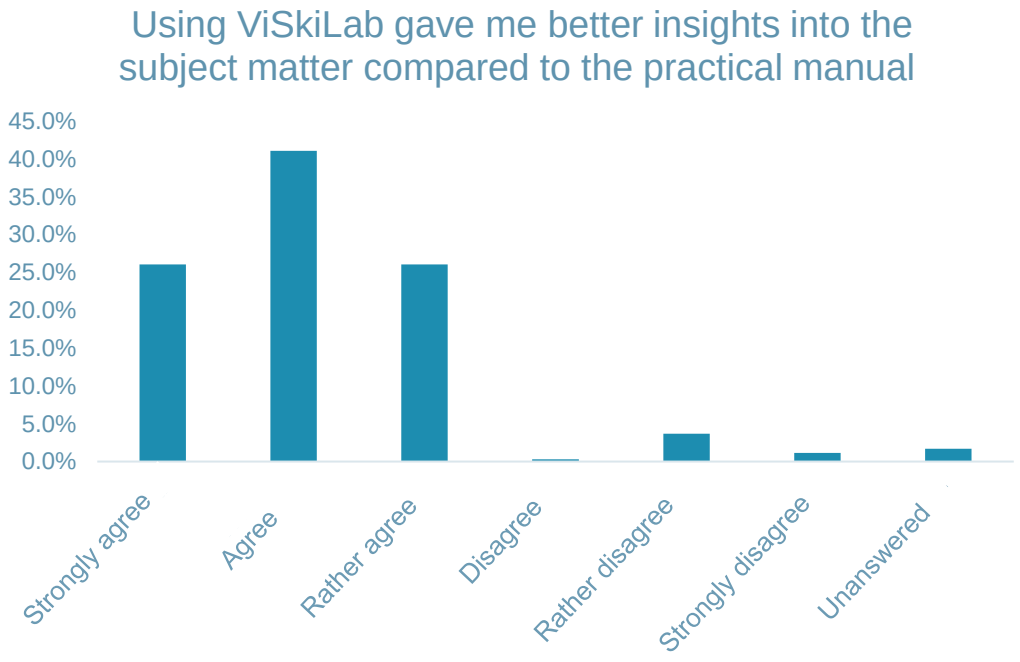


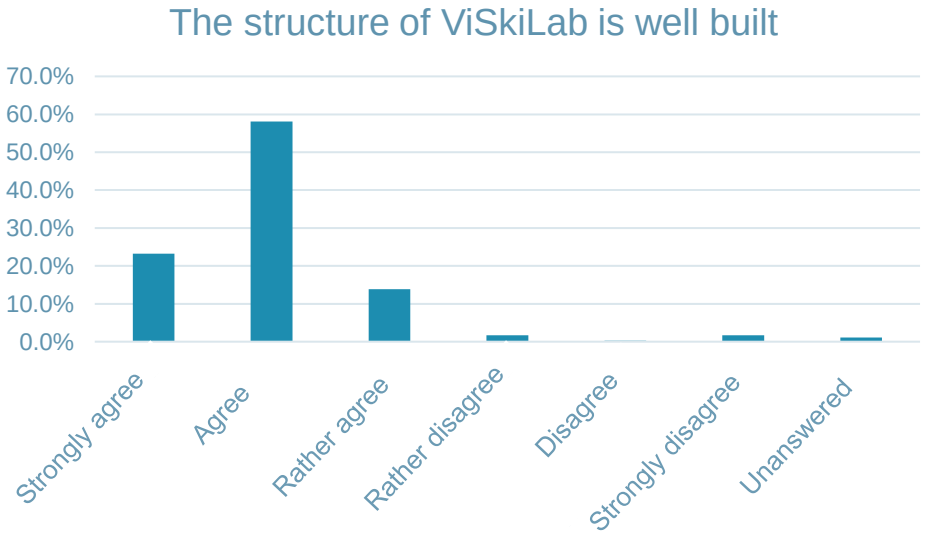

C

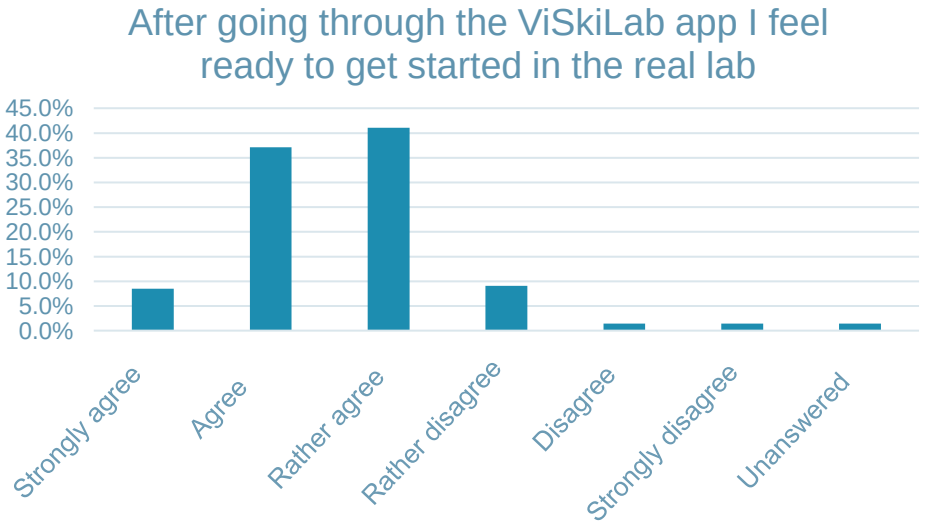



All students got access to the practical manual. The students that followed ViSkiLab in addition (green bar) however, scored often better on knowledge questions (A,B). If the knowledge was already there at the beginning, no difference was observed between the groups (C).

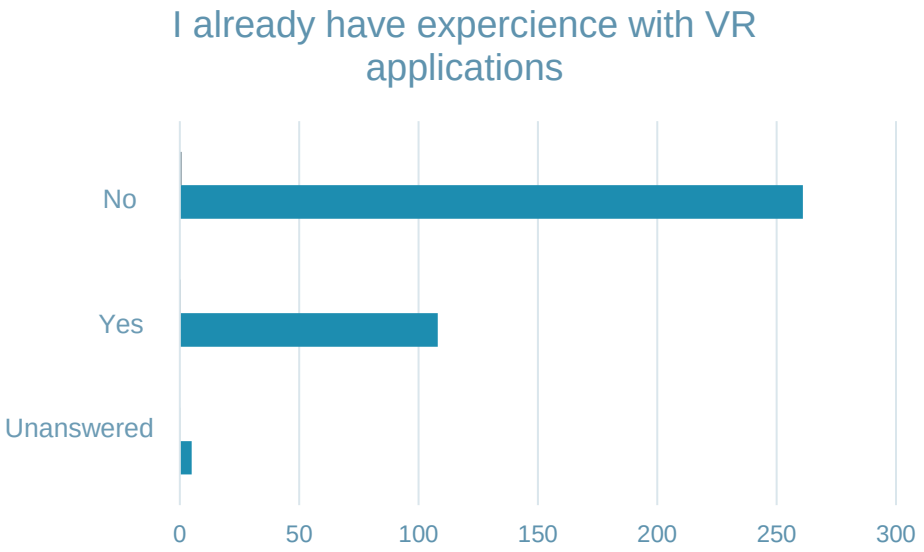
# Questions regarding the ViSkiLab app

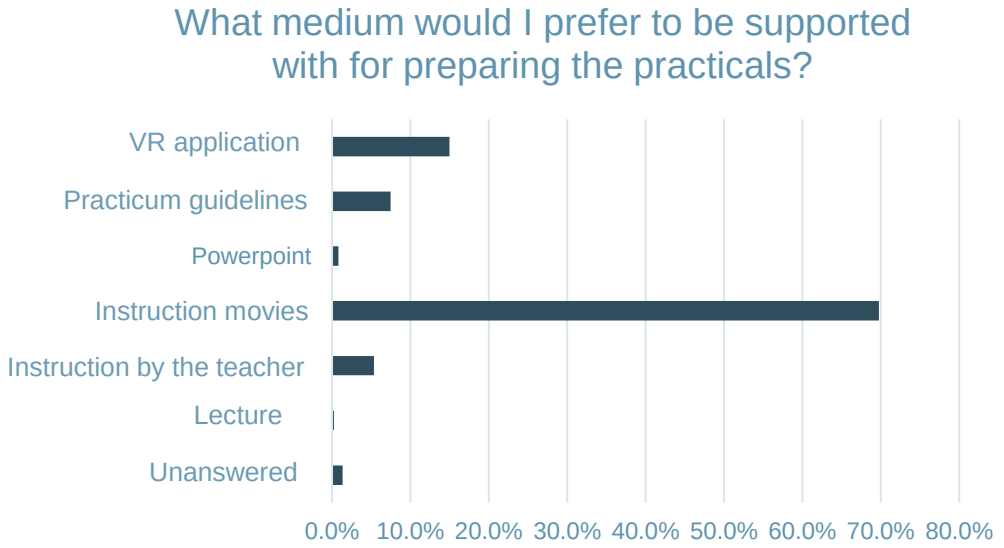


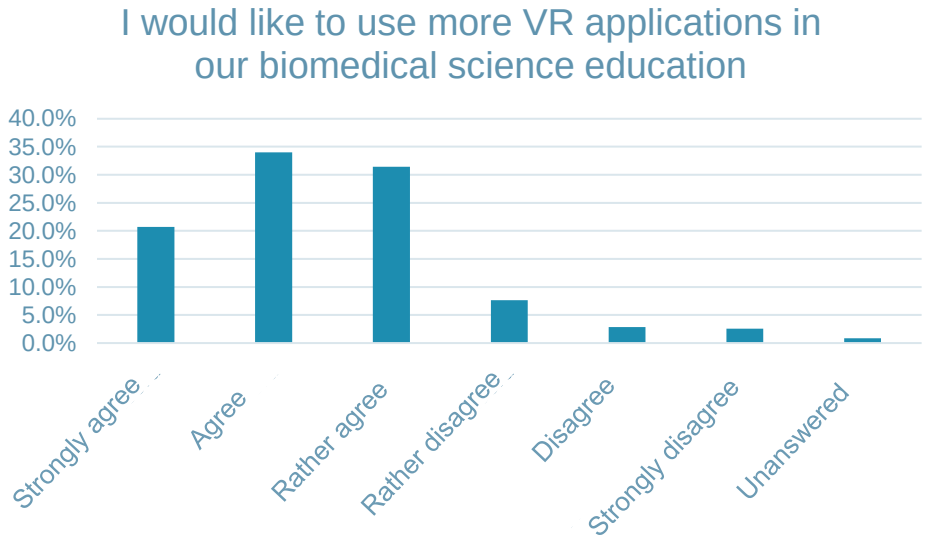



# VR related questions

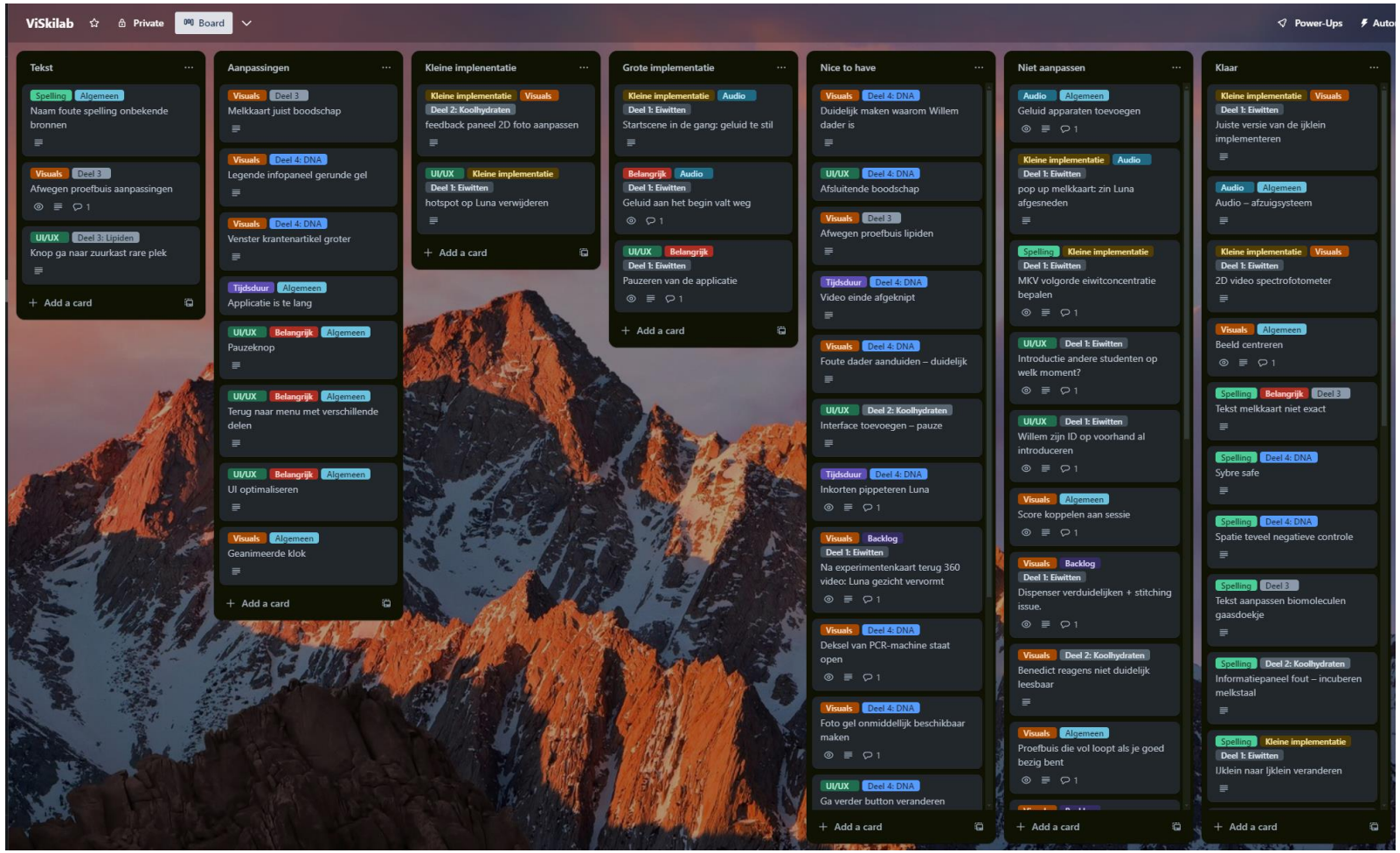


# From ViSkiLab to ViSkiLab 2.0 - optimization

- Finetuning
  - Writing mistakes
  - Sounds mistakes
  - Color changes
  - Seperated in:
    - Writing
    - Visuals
    - UI/UX
    - Audio
    - …



# Next steps

<u>Startup English Bachelor Biomedical Sciences:</u>

- All material available
  - videos
  - scrips
  - MCQ
  - inhouse knowledge and experts
- Easy to translate
- New 360° recordings should be made with other actors
- Scientific content = future proof

**Should be feasible to make a ViSkiLab 3.0 in English**

# Take home messages

1. Time consuming project ➔ added value of VR?
   necessary?
   other equivalent options with same learning goals?

2. We believe in the advantage of in house knowledge and development
   “Easy” to adapt
   Independent of others

3. Technology should be implementable + easy access for every student

# The ViSkiLab Team

The multidisciplinary ViSkiLab team

- Teachers practical skills in the education of BMS Prof. Rita Derua, Dr. Els Melis and Prof. Aleyde Van Eynde
- Teaching and Learning Office, Faculty of Medicine (EcO) Stijn Van Laer, Simon Vangoidtsenhoven and Katrien Alen
- Practical assistant in the education of BMS Els Lariviére
- Practical assistant Virtual Reality Ir. Anne-Astrid Agten and Robbe Vanden Brande
- Projectcoordinator and practical assistant in the education of BMS Tula Verhalle
- Students BMS Firoz Taïbi, Tom Verbraeken, Najdat Tracy, Michiel Genar, Jolien Van Dijck, Amber De Koning, Emilia Laura Bialek, Baukje Bijnens and Hannah De Buck

*In cooperation with*

- BioMedical Technology Lab Sven Graindor and Benjamin Van Iseghem
- Leuven Institute for MEdia and Learning (LIMEL) Jo Mannaerts, Ian Swerts, Raf Lehaen and Dr. Remco Van Schadewijk

*Thanks to*

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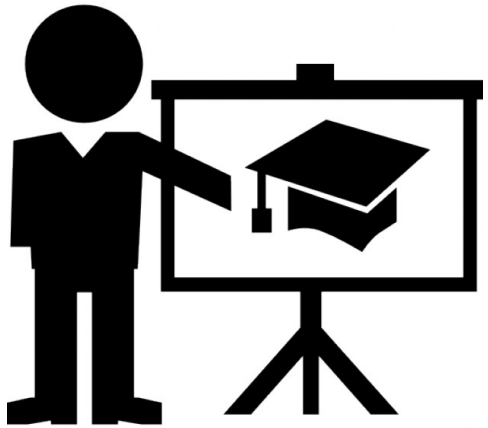


THANK YOU :)
QUESTIONS?