

# Demonstration of innovative tools



Media & Learning conference - Back to the Future?  
Provinciehuis Leuven  
**Tula Verhalle**  
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# Project Consortium – 5 different partners universities

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# Challenges

- Creating more activating videos
- Maximize remote preparation of students and improve learning
- Experimental thinking also for students without lab access
- Encourage active participation by demystifying practical manipulations
- Coping with the continuously increasing student numbers and costs
- Methods to evaluate student progress in this environment

# Objectives of the project



To develop educational solutions for students with limited access to laboratory infrastructure

To promote transfer of knowledge using digitally enhanced strategies

To create standardized educational materials

To facilitate educational innovation

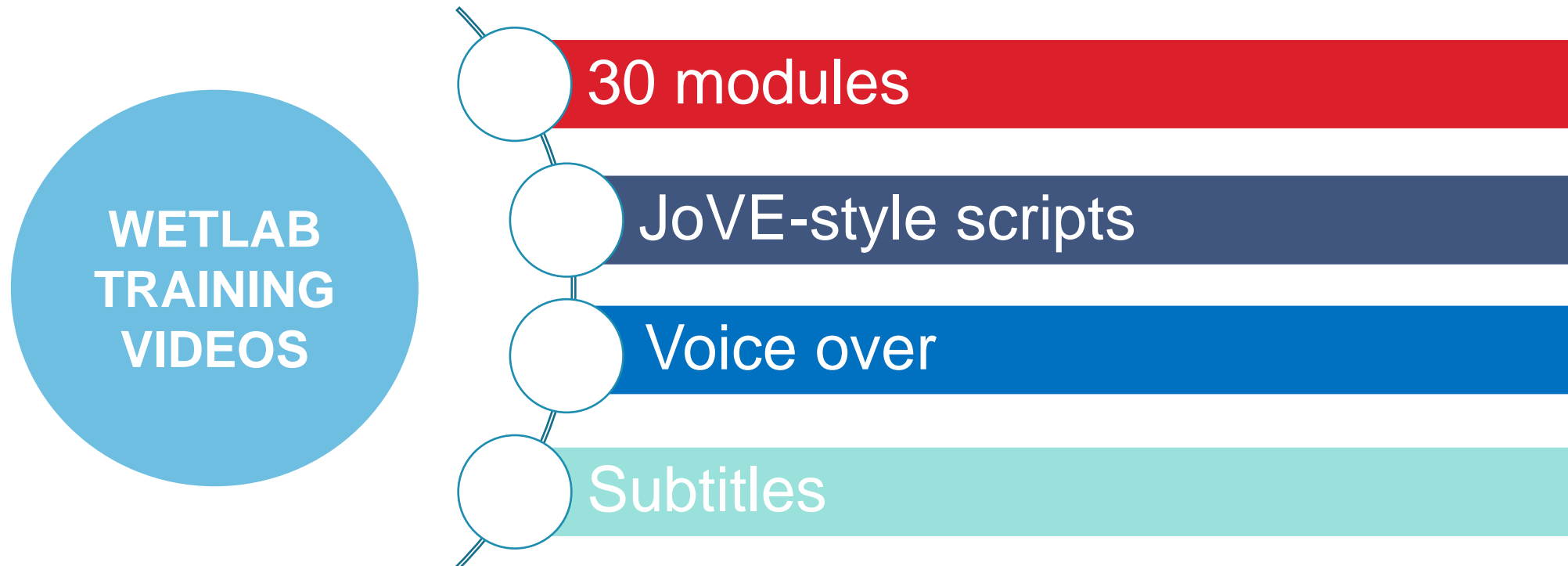
To reach out to external stakeholders

# What is it all about?

- Virtual lab training for Biomedical science students
- Using an e-learning platform
- Developing a workshop training program
  - Encouraging active thinking and brainstorming
  - Developing a scientific mindset
  - Including self assessment
- Creating
  - A glossary of biomedical terms
  - Student protocols (SOPs)
  - Teacher's guides

Consortium → Harmonize the quality and format across 5 partners

# Virtual lab training for biomedical science students



# 30 Different modules

## MUL

- M1**-Zebrafish staging (with UiO)
- M2**-Zebrafish injecting Tol2
- M3**-Zebrafish injecting CRISPR-Cas9, Morpholino
- M4**-Zebrafish small compound screen (with UiO)
- M5**-Zebrafish behavioral studies (with UiO)
- M6**-Zebrafish human cancer cells injection

## KU LEUVEN

- M1**-Chicken embryo staging
- M2**-Chicken embryo "inking"
- M3**-Chicken embryo "lifting"
- M4**- Mouse gastrulation (dissection, staging, EMT process)
- M5**-Chicken embryo "beading" (gain-of-function study)
- M6**-Concepts of phenotypic analysis of mouse embryos
- M7**- Chorio-allantoic membrane (CAM) assay
- M8**-Concepts of gene activity using reporter mouse lines

## UiO

- M1**- Zebrafish husbandry & developmental staging (with MUL)
- M2**- Zebrafish whole-mount in situ hybridization (with KU Leuven)
- M3**- Toxicological assessment of drugs and compounds
- M4**- Zebrafish behavioral studies (with MUL)
- M5**-Human tumor cell xenografting in larval zebrafish
- M6**- Zebrafish small compound screen (with MUL)

## RU

- M1**- Lypholyzed platelet lysate manufacturing for MSC differentiation
- M2**- Osteogenic differentiation from MSC and Alizarin red staining
- M3**- Chondrogenic differentiation from MSC and GAG staining

## UNIFG

- M1**- polarographic methods part 1
- M2**- polarographic methods part 2
- M3**- extracellular flux analysis techniques part 1
- M4**- extracellular flux analysis techniques part 2
- M5**- mitochondrial morphofunctional analysis by confocal microscopy
- M6**- preanalytical mass spectrometry
- M7**- mass spectrometry in metabolomics

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PREVIEW

# Explantation of a chicken embryo “Lifting”

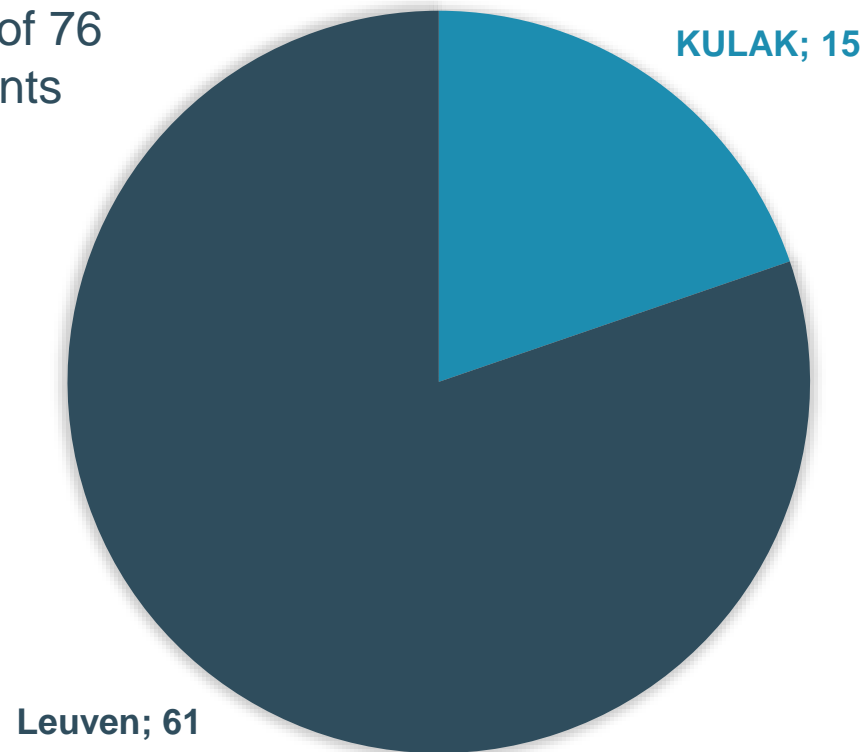
**KU LEUVEN**



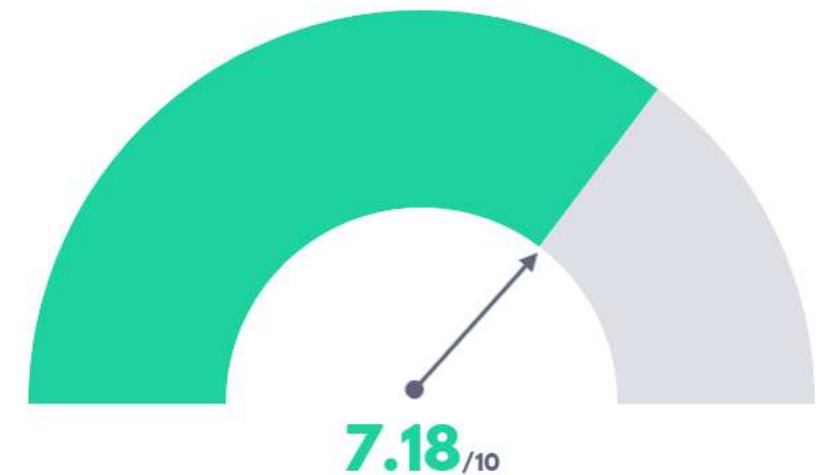
**Co-funded by  
the European Union**

# Bèta testers – students 3<sup>rd</sup> bachelor BMS

Total of 76  
students



Preparedness felt by the students



# Some feedback from the students

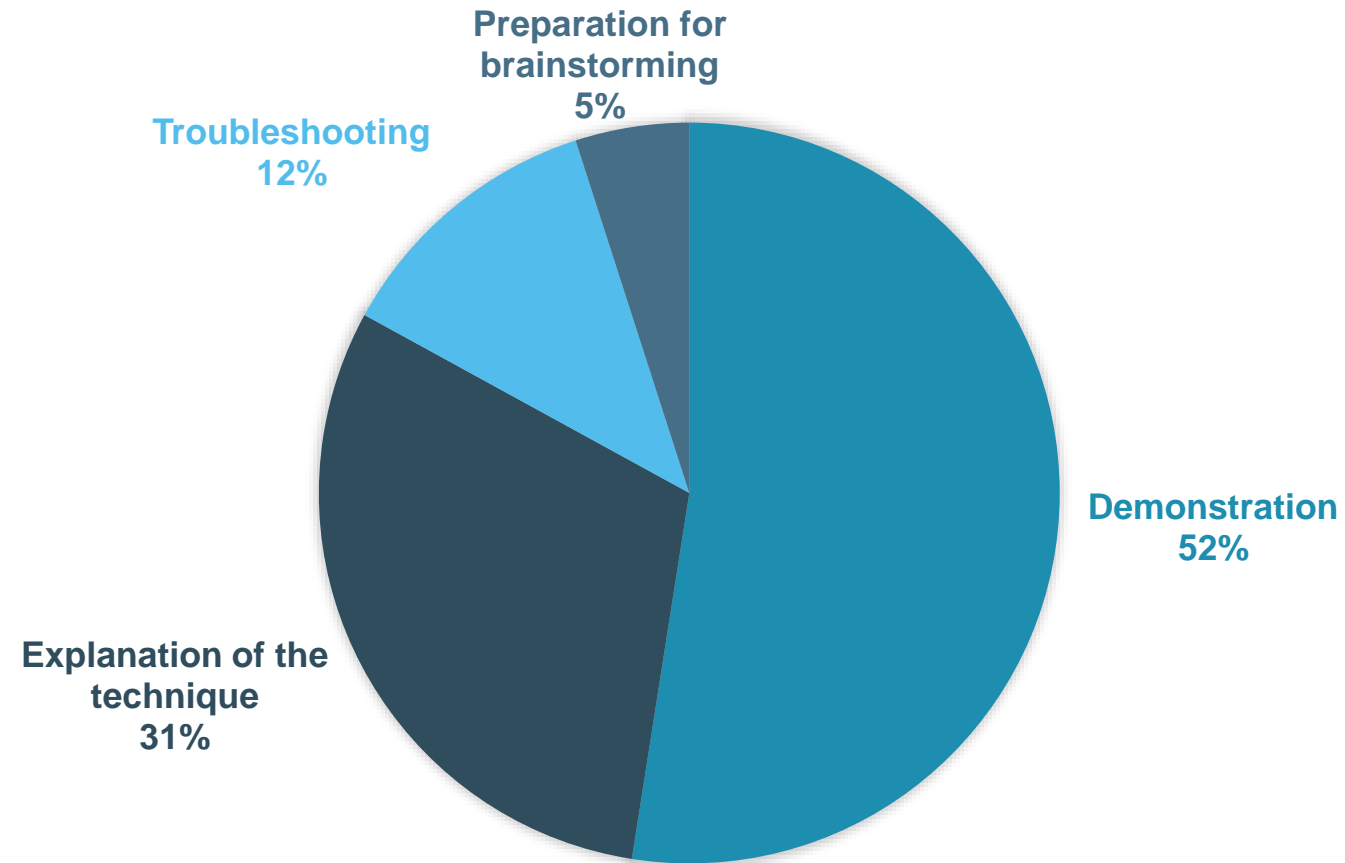
“A visual guide is more useful than just written instructions to learn how to perform techniques and manipulations.”

“Written instructions are often complex and can be a bit ambiguous, but a **demonstration video is clear.**”

“The added troubleshooting is also useful especially when these problems occur often in the practical course.”

“**I felt more prepared and more capable going into the practical course.**”

# What exactly in the video was helpful?



# Glossary

Vibes | Data | Automations | Interfaces | Help | Contact sales | Share | Extensions | Tools

Tags | Glossary | Video changes | Add or import

Views | Grid view | Hide fields | Filter | Group | Sort | Color | Share and sync

Term	Explanation	Tags	Verklaring NL	Review	review the explanation	notes	Abbrevi...	Field S
1 area pellucida	A thick area in the center of the avian blastoder...	K3	Een dik gebied in het midd...					
Artery	A blood vessel that carries oxygenated blood a...	K7	Een bloedvat dat zuurstofri...	<input type="checkbox"/>	<input checked="" type="checkbox"/>	chatgpt		
3 Axial mesoderm	The mesoderm in the embryo that lies along th...	K4	het mesoderm in het embr...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	chatgpt		
4 Axis	A defined line							
5 Basement membrane	A thin, pliable							
6 birth defects	A physical or							
7 bone morphogenetic protein	Bone morpho							
8 brain vesicles	Brain vesicles							
9 branchial arches	Paired arches							
10 Cellular movements	Dynamic and							
11 Cerberus1	A secreted pro							
12 Chordin	A secreted pro							
13 Chorioallantoic membrane	A highly vascularized extraembryonic membran...	K7	Een sterk gevasculariseerd ...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	chatgpt		
14 Chorion	An extraembryonic tissue essential for gas exh...	K7	Een extra-embryonaal weef...					
15 Conjoined twin	Monozygotic twins that share some part of thei...	K1	Monozygote tweelingen di...					
	The modified endometrial tissue that forms the ...	K4	Het gemodificeerde endo...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	chatgpt		

+ Add...

103 records

## Disclaimer about Translations

Glossary text was originally written in English and translated into Dutch, French, German, Icelandic, Italian, Norwegian, Polish, and Spanish using Microsoft Translator. VIBES does not endorse or guarantee the accuracy or quality of these translations. Please note that in the event of any differences in meaning or interpretation between the original English version of this content and a translation, the original English version takes precedence.

# Student protocols (SOP)

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### Disclaimer:

The educational material provided herein is intended solely for teaching purposes, in the context of higher education in biomedical science and related disciplines. Any hands-on activities related to this material should be done only under the supervision of qualified educational staff. It is the responsibility of the user to perform experiments in an appropriate laboratory context and to take into account local safety, health, and environmental legislation.

# Teacher's guide

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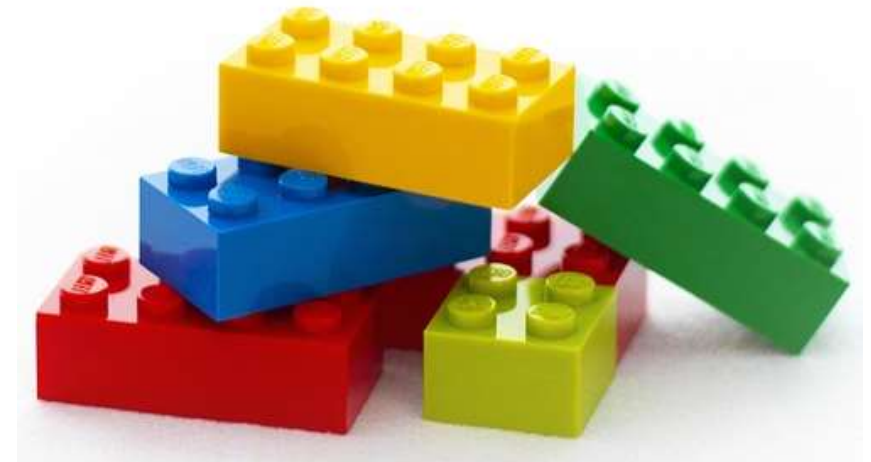


# How to share materials?

VIBES provide all the lego parts on their website  
→ Accessible for teachers and students only

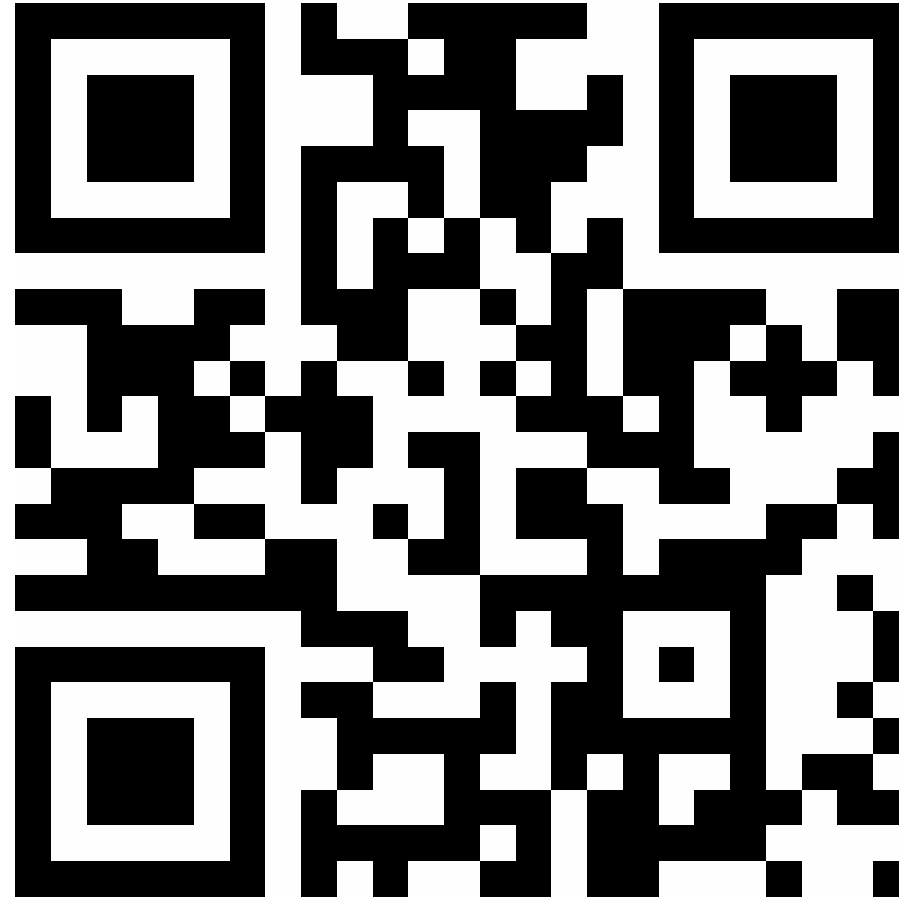
H5P?

- Incompatible
- Licence issues



Solution: interactive powerpoint used by all partner universities on their own learning platforms

# More info and conference data & venue



[Home \(vibes-edu.eu\)](http://vibes-edu.eu)

# Acknowledgements KU Leuven team

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**LIMEL**

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