



Program “Ukraine digital: ensuring academic success in times of crisis (2023)”

# Digital laboratories for Students at Risk (DigiLabStar II)



Deutscher Akademischer Austauschdienst  
German Academic Exchange Service



GEFÖRDERT VOM

Bundesministerium  
für Bildung  
und Forschung

# AUTHORS

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# Wartime challenges in education

Taras Shevchenko National University of Kyiv was bombed several times:

October, 10<sup>th</sup>, 2022

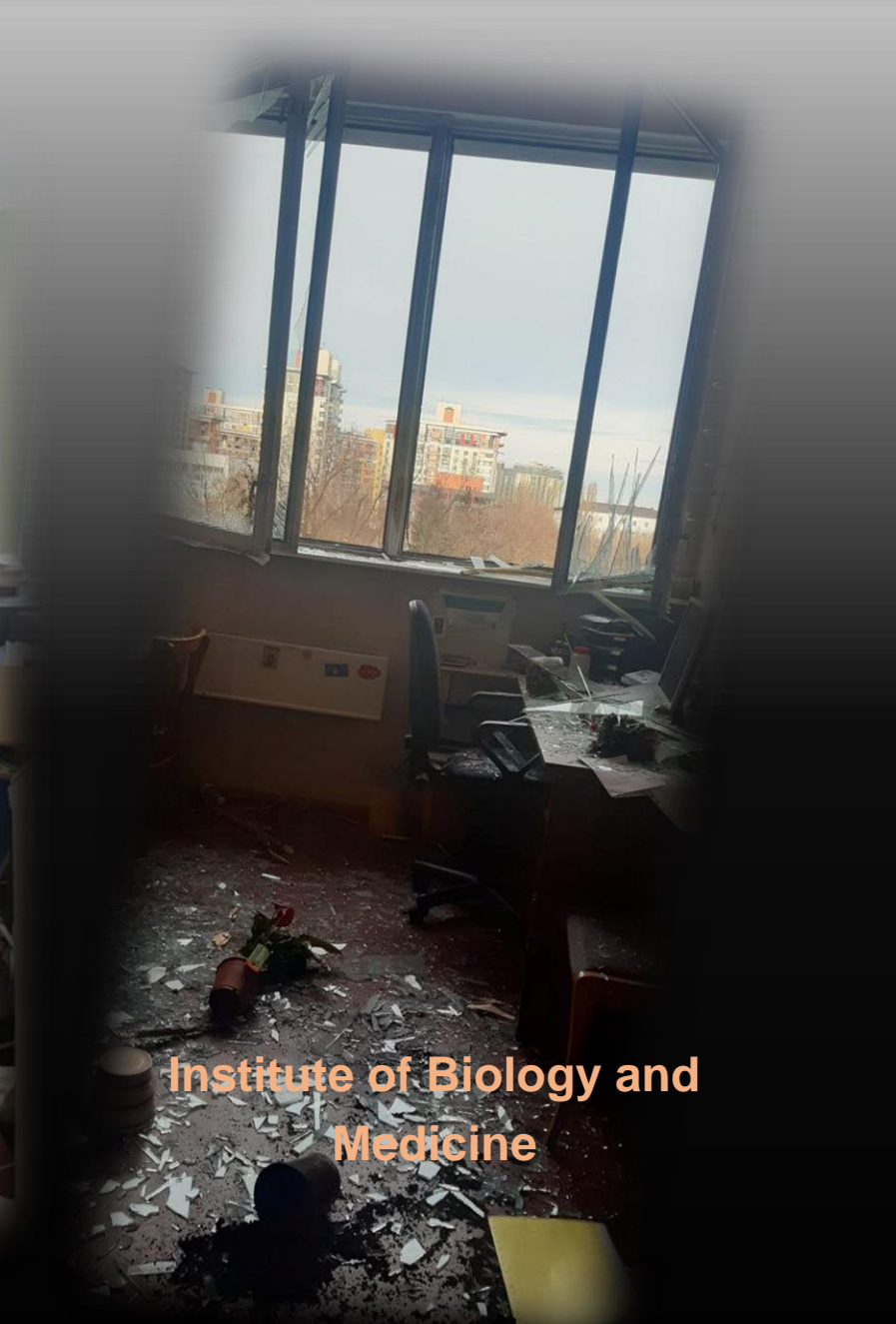
New Year Eve (December, 31<sup>th</sup> 2022)



Institute of Phylology



Institute of Biology and  
Medicine



Institute of Biology and  
Medicine

New Year Eve (December, 31<sup>th</sup> 2022)

Institute of Biology and  
Medicine

✓ Microscopy  
laboratory

✓ Cell culture  
laboratory

New Year Eve (December, 31<sup>th</sup> 2022)

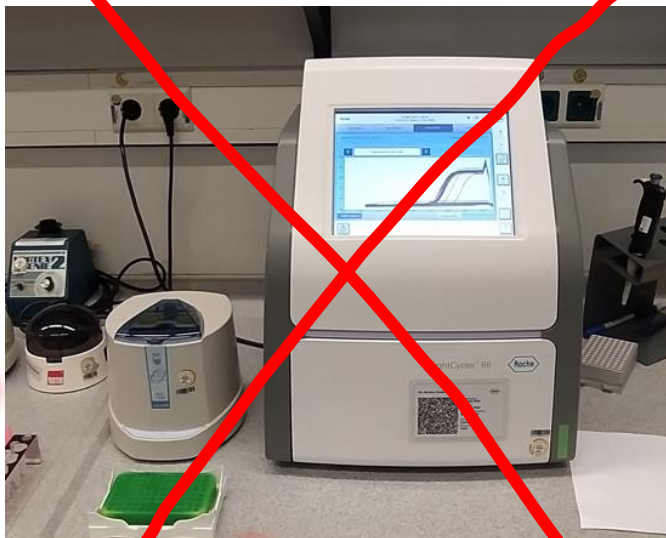
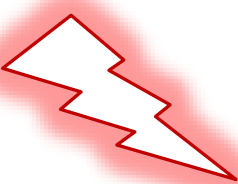


**Emergency  
remote  
learning**

Real (wet) laboratory  
classes

✓ Compensate the  
lack of lab classes

War



Natural  
disasters



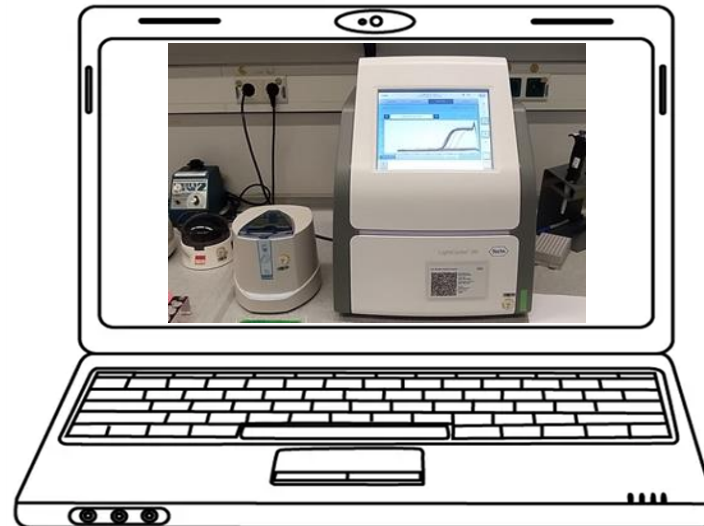
Pandemics



# Partner universities



## DigiLabStar II



Taras Shevchenko  
National University of  
Kyiv (KNU)



Dnipro State Medical  
University (DSMU)

Interactive Bilingual  
Digital Labs

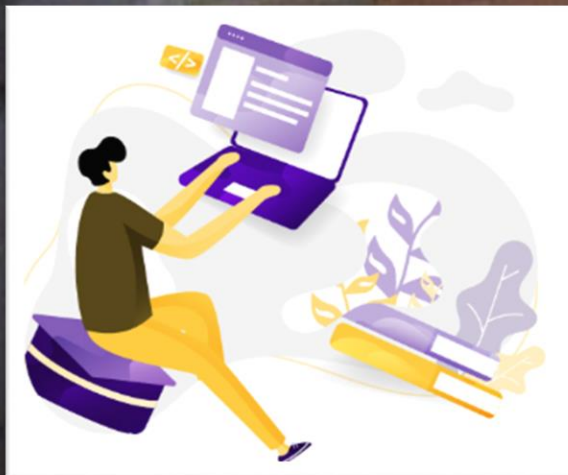


Ruhr University  
Bochum (RUB)

# Interactive Bilingual Digital Labs



- ✓ Ensure learning in wartime
- ✓ Restore education system after the war



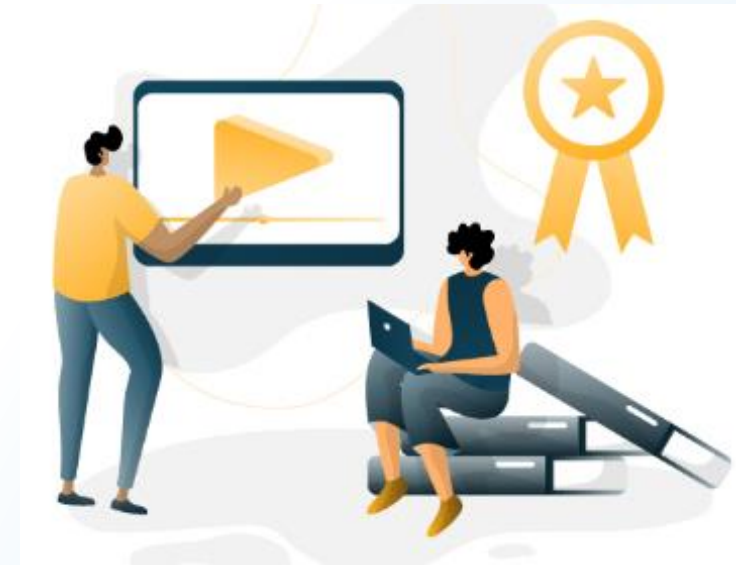
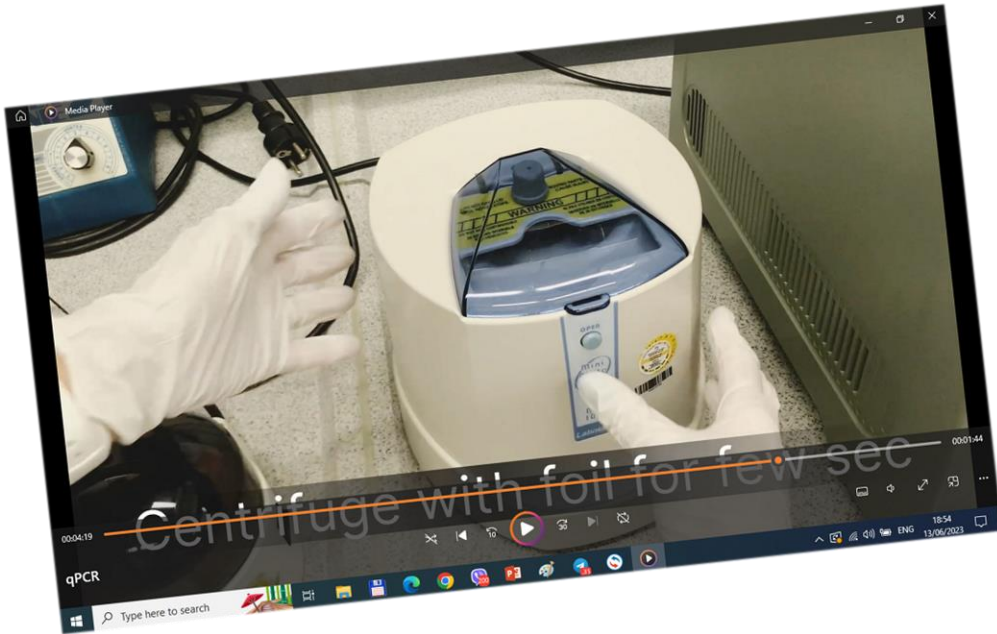
- ✓ Suitable for asynchronous learning (ex., Internet problems)



- ✓ Available on any device



# Interactive Bilingual Digital Labs

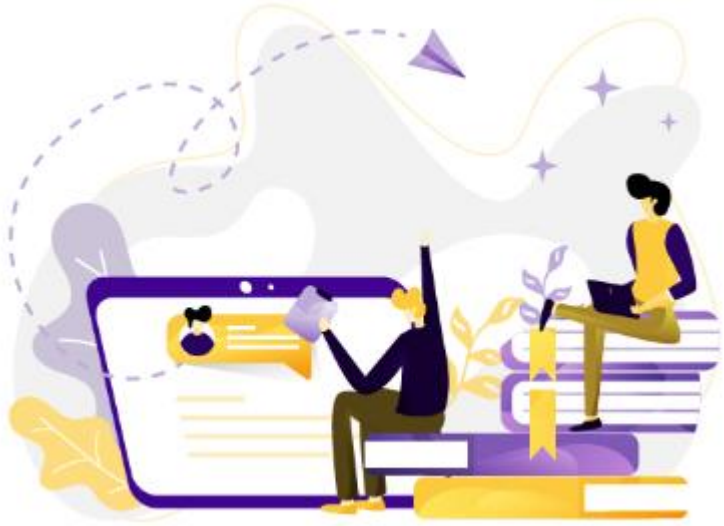


## Holistic digital educational content

- ✓ Theoretical basics of the methods
- ✓ Lab algorithm
- ✓ Self-assessment

Convenient access to teaching materials and other learning sources

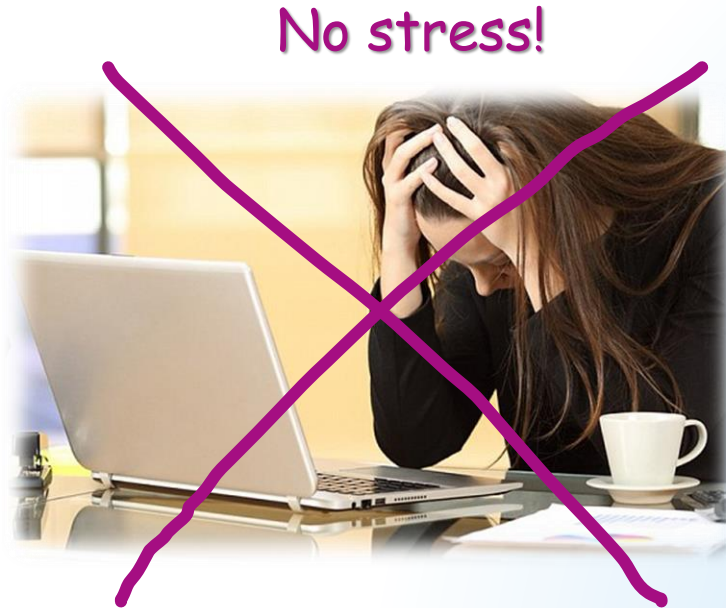
# Interactive Bilingual Digital Labs



✓ Engage and motivate students



✓ Self-paced learning and self-assessment



✓ Reduce the stress level in threatening conditions

# Interactive **Bilingual** Digital Labs



**Ukrainian + English** →



✓ Can be used at any university

- ✓ Intercultural communication
- ✓ Improvement of language competencies

# Bilingual interactive laboratory modules

## Biology

**Prof. Dr. Stefan Wiese**

Department of Cell Morphology  
and Molecular Neurobiology

1. Quantitative polymerase chain reaction (qPCR)
2. Immunohistochemistry
3. Western-blot
4. ELISA
5. Confocal microscopy
6. In situ hybridization

## Medicine

**Prof. Dr. Brand-Saberi**

Department of Anatomy and  
Molecular Embryology

1. Tissue processing
2. Conventional staining
3. Immunostaining
4. Basic tissue types
5. Organs' structure
6. Histopathology

# Structure of the lab module

## Lecture

- **Interactive** video-lecture
- Presentation
- **Interactive** tasks for the lecture

## Lab

- **Interactive** video-based laboratory manual
- Protocol
- **Interactive** tasks for video-based laboratory work

## Final assessment

- Test for the lecture and lab

in **Ukrainian**  
in **English**

# Required software

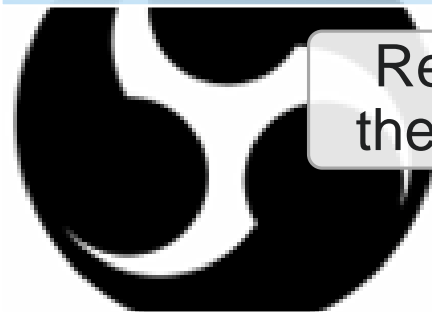
Free!

Davinci  
Resolve



Video editing

Open  
Broadcast



Recording  
the lectures

Moodle



Development of  
online courses

moodle

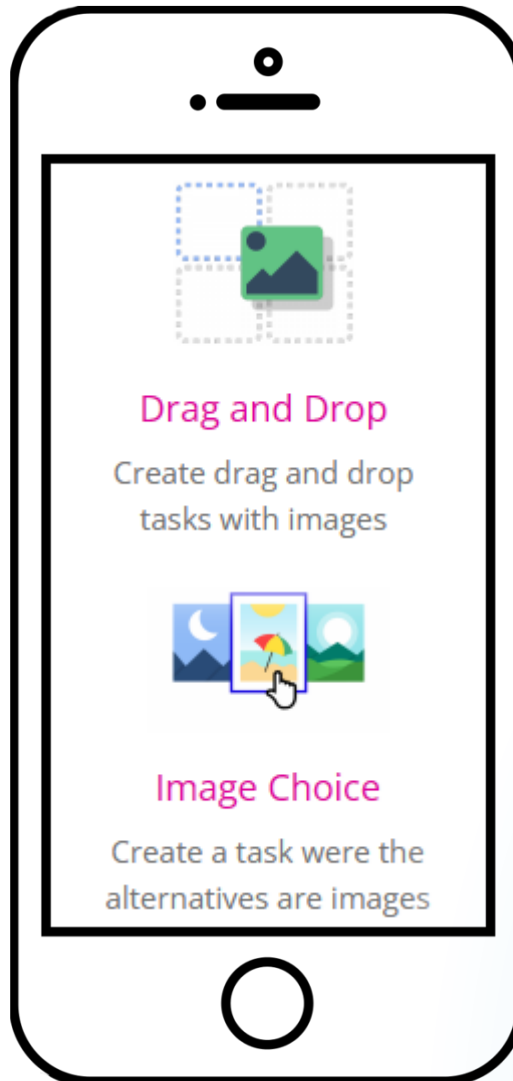
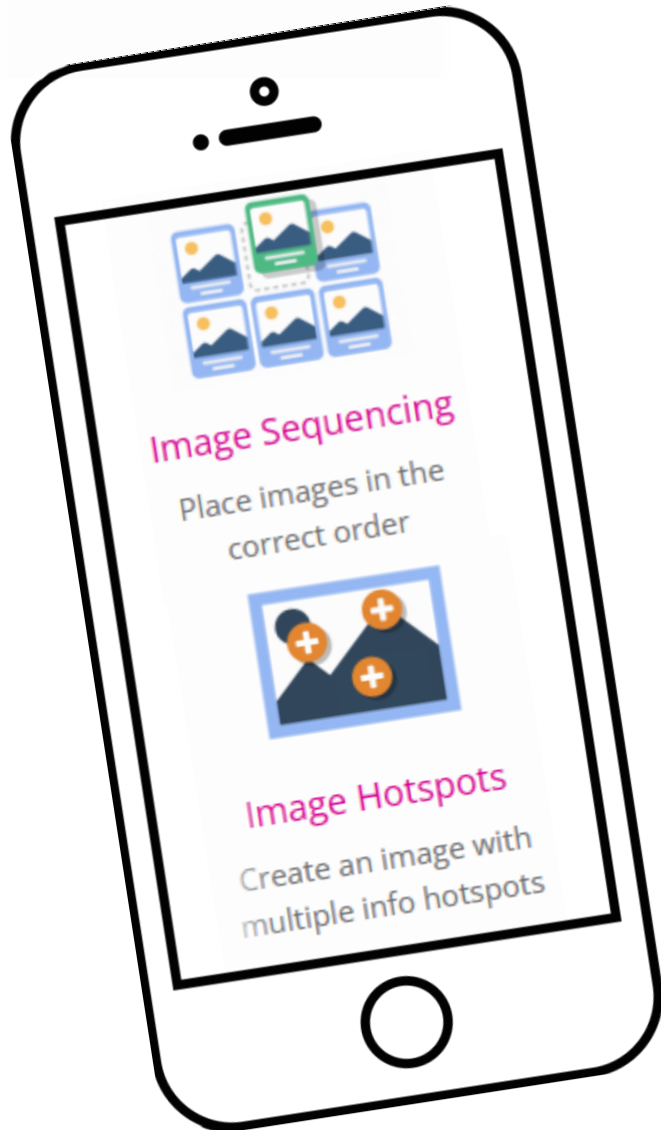
H5P



Design of interactive  
videos and tasks



## ✓ Interactive multimodal tasks



# Project management

- ✓ Supervising and scientific consulting (lectures, labs, and assessment tasks)
- ✓ Revision of the teaching material

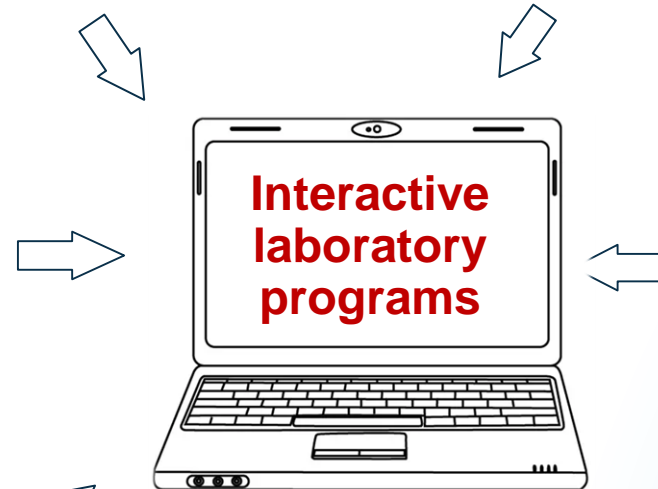


- ✓ Training at RUB
- ✓ Creation of the lectures and assessment tasks
- ✓ Implementation of the teaching materials in Ukrainian universities

- ✓ Assistance in laboratories
- ✓ Revision of the videos



1 for Biology  
1 for Medicine



- 1 from KNU**
- ✓ Coordination between RUB and KNU
  - ✓ Development of the videos, lectures, and interactive lessons using Moodle and H5P

- ✓ Assistance in digitalization of teaching material

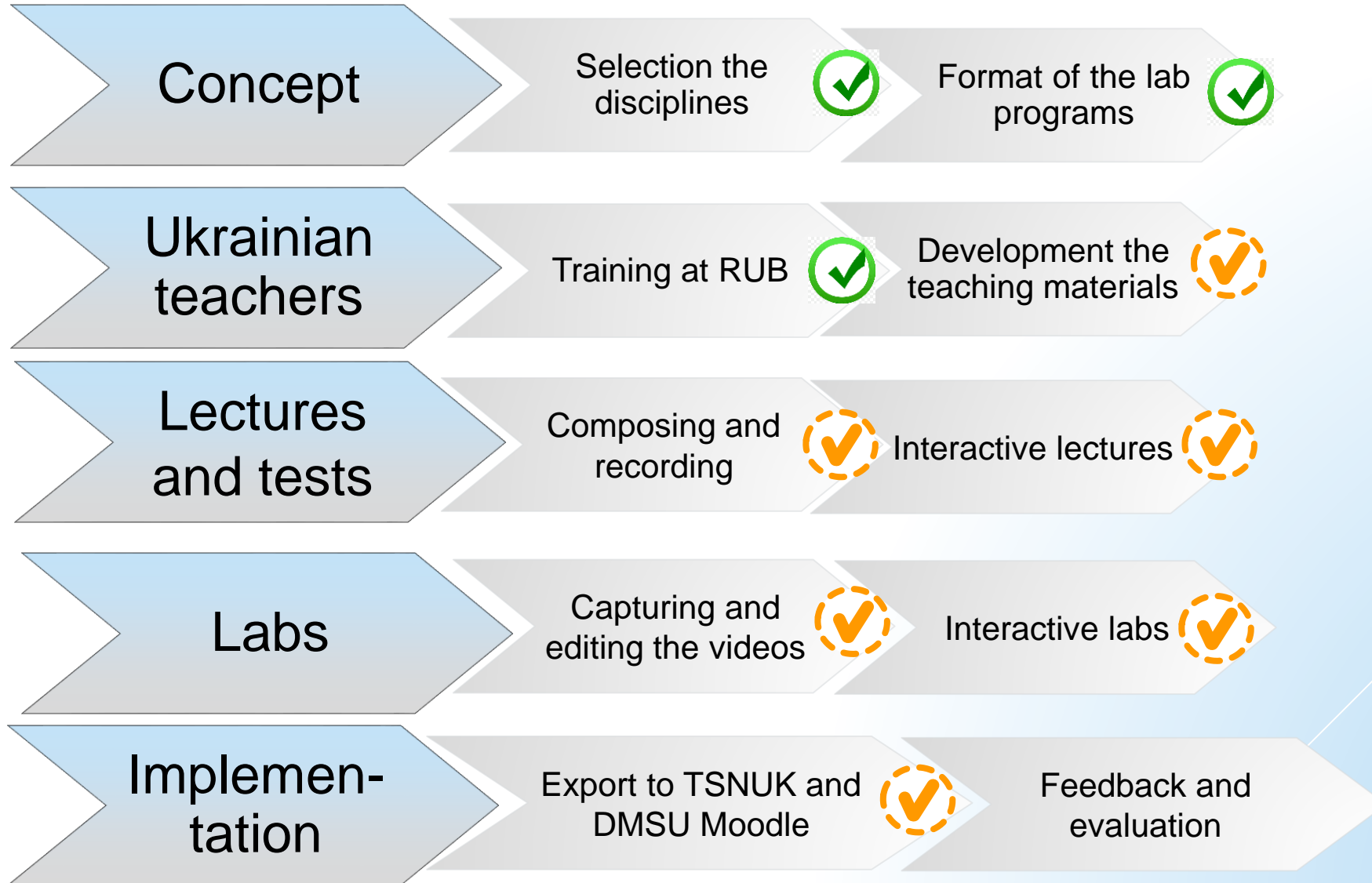


will be used in KNU,  
DSMU, and RUB

- 1 from DSMU**
- ✓ Coordination between RUB and DSMU
  - ✓ Development of Moodle assessment tasks, reflection tools



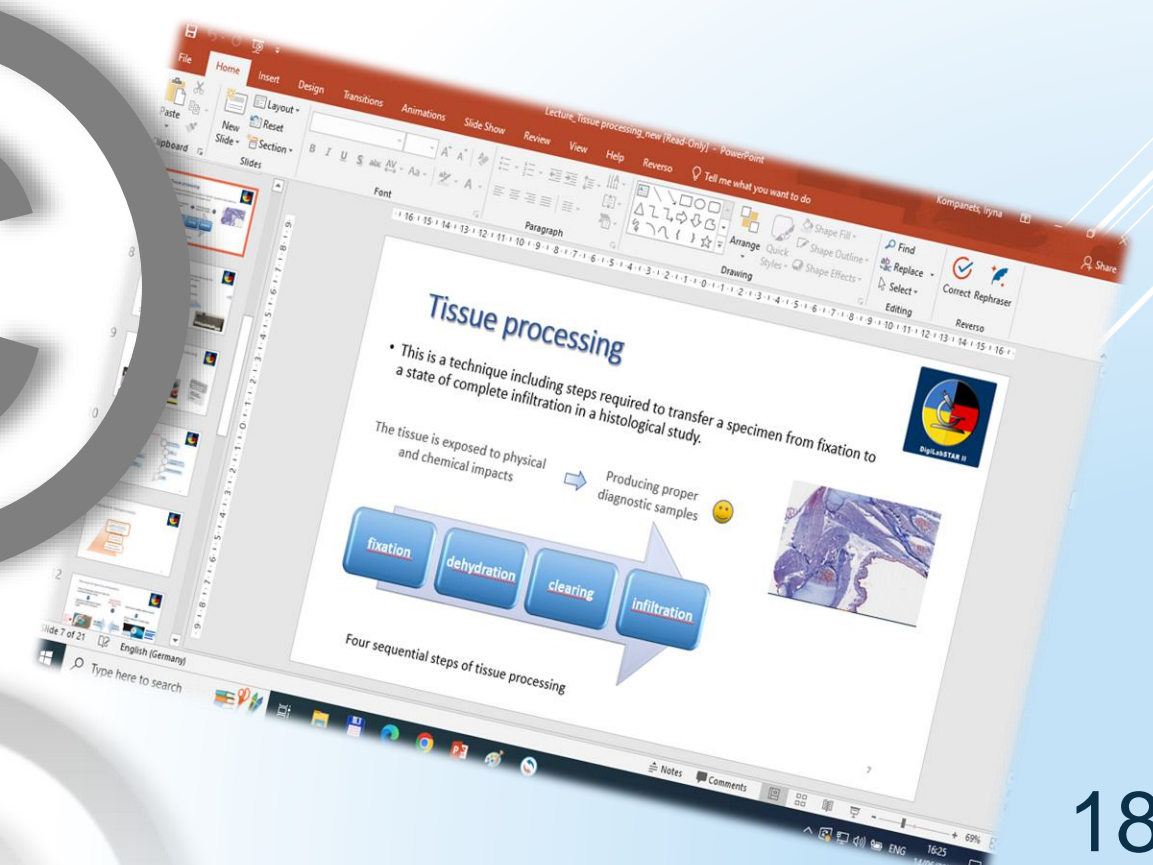
# Project progress



# Copyrights

✓ Use of self-created photo and video materials

✓ Original lecture presentations and assessment tasks



# Project's outputs



- ✓ Advanced scientific content



- ✓ Standardized competencies are in the focus of content

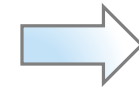
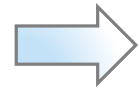


- ✓ Collaborative use of learning content

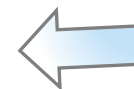
# Project's outputs



✓ Transferrable globally

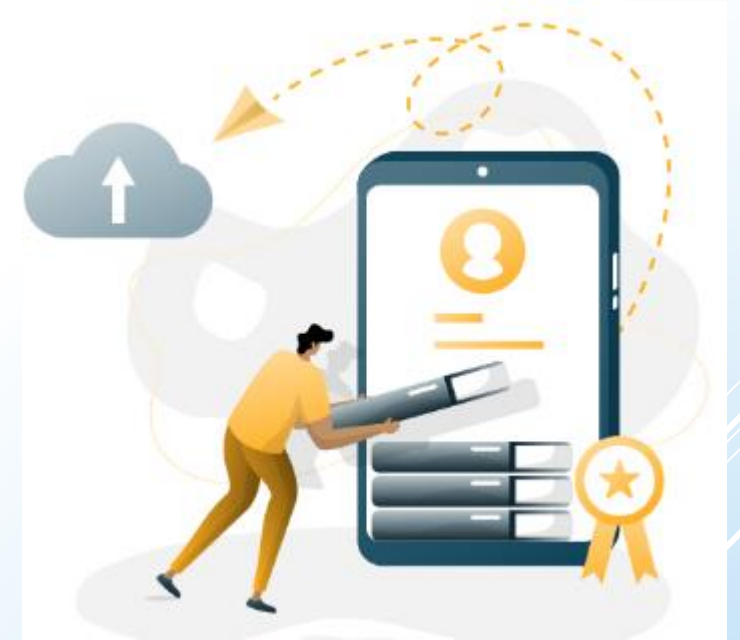


✓ Can be used with other systems

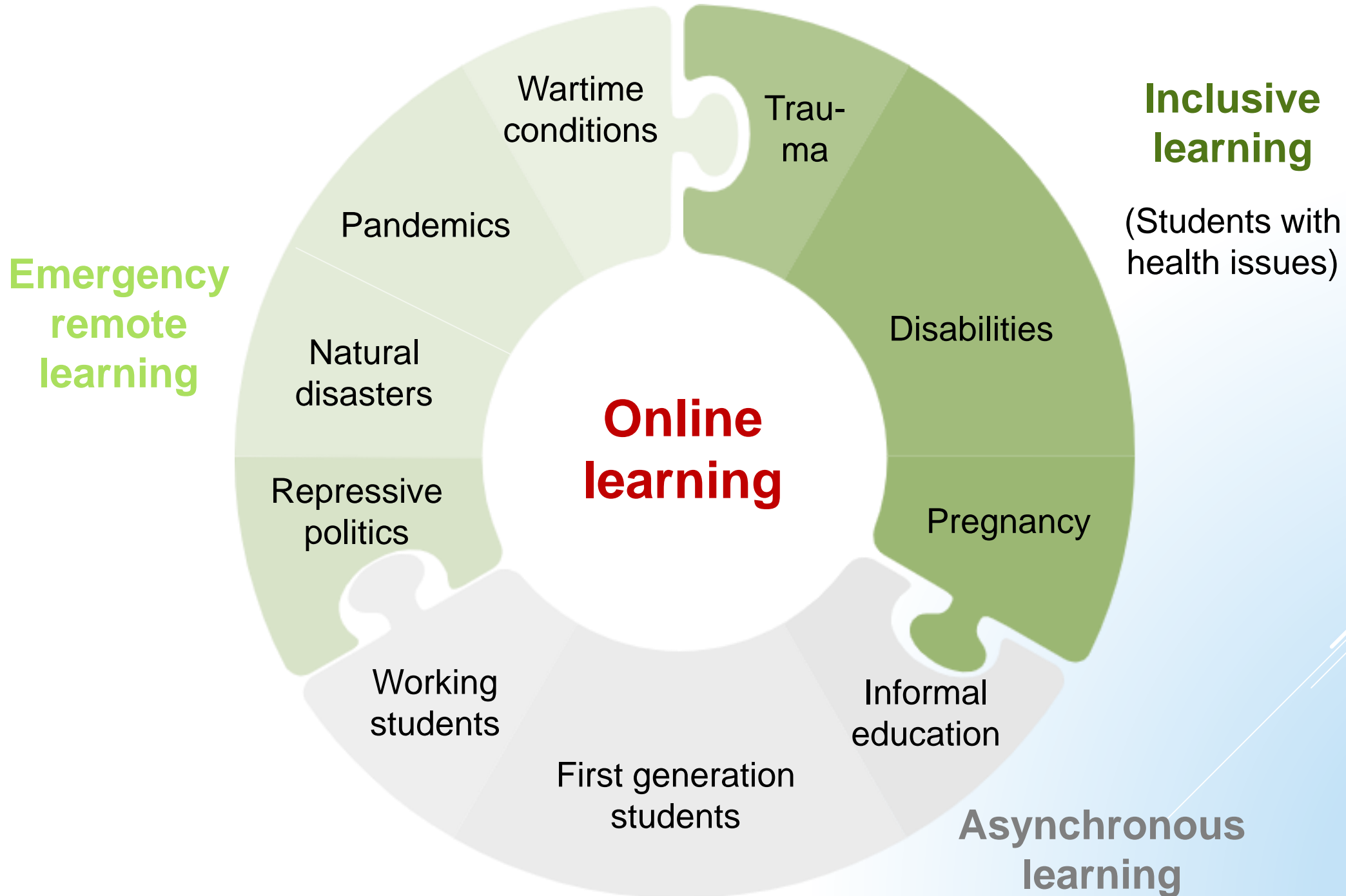


moodle

✓ The content can be transferred to any Moodle platform



✓ Lab units can be used in flexible way

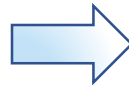
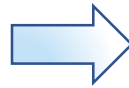


# Outputs for offline learning



increase the effectiveness

## Introduction to wet (real) laboratory classes



### Holistic educational content

- ✓ Theoretical basics of the methods
- ✓ Lab algorithm
- ✓ Self-assessment



- ✓ engagement
- ✓ motivation

**Thank you for your attention!**

