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

Digital laboratories for Students at Risk (DigiLabStar II)
AUTHORS

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Wartime challenges in education

Taras Shevchenko National University of Kyiv was bombed several times:

October, 10th, 2022

New Year Eve (December, 31st 2022)
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Institute of Biology and Medicine

✓ Cell culture laboratory
✓ Microscopy laboratory
War

Natural disasters

Pandemics

Real (wet) laboratory classes

Interactive digital labs

✓ Compensate the lack of lab classes

Emergency remote learning
Partner universities

DigiLabStar II

Interactive Bilingual Digital Labs

Taras Shevchenko National University of Kyiv (KNU)

Dnipro State Medical University (DSMU)

Ruhr University Bochum (RUB)
Interactive Bilingual Digital Labs

✓ Ensure learning in wartime
✓ Restore education system after the war
✓ Available on any device
✓ Suitable for asynchronous learning (ex., Internet problems)
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

No stress!
Interactive Bilingual Digital Labs

- Intercultural communication
- Improvement of language competencies
- Can be used at any university

Ukrainian + English
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
Required software

- **Davinci Resolve**: Video editing
- **Open Broadcast**: Recording the lectures
- **Moodle**: Development of online courses
- **H5P**: Design of interactive videos and tasks

Free!
✓ Interactive multimodal tasks

- **Image Sequencing**
  - Place images in the correct order

- **Image Hotspots**
  - Create an image with multiple info hotspots

- **Drag and Drop**
  - Create drag and drop tasks with images

- **Image Choice**
  - Create a task where the alternatives are images

- **Timeline**
  - Create a timeline of events with multimedia

- **Fill in the Blanks**
  - Create a task with missing words in a text
Project management

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

✓ Assistance in laboratories
✓ Revision of the videos

✓ Assistance in digitalization of teaching material

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

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

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

Concept
- Selection the disciplines
- Format of the lab programs

Ukrainian teachers
- Training at RUB
- Development the teaching materials

Lectures and tests
- Composing and recording
- Interactive lectures

Labs
- Capturing and editing the videos
- Interactive labs

Implementation
- Export to TSNUK and DMSU Moodle
- Feedback and evaluation
Copyrights

✓ Use of self-created photo and video materials

✓ Original lecture presentations and assessment tasks
Project’s outputs

✓ Advanced scientific content

✓ Collaborative use of learning content

✓ Standardized competencies are in the focus of content
Project’s outputs

✓ Transferrable globally

✓ Can be used with other systems

✓ Lab units can be used in flexible way

✓ The content can be transferred to any Moodle platform
Introduction to wet (real) laboratory classes

Interactive digital labs → Outputs for offline learning → increase the effectiveness

Holistic educational content
✓ Theoretical basics of the methods
✓ Lab algorithm
✓ Self-assessment

✓ engagement
✓ motivation
Thank you for your attention!