SCIBIOEU

SCIence outreach:
The example of BIObanks in Europe
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The SCIBIOEU Project and its progression so far

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Co-funded by the Erasmus+ Programme of the European Union

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BRFAA
BIOMEDICAL RESEARCH FOUNDATION ACADEMY OF ATHENS

DEMOKRITOS

UNIVERSITY OF WEST ATTICA

University of Cyprus

EURAC research

UNIVERSITY OF TURKU

MU Med Uni Graz

Co-funded by the Erasmus+ Programme of the European Union

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What is SCIBIOEU

- "SCIence outreach: The example of BIObanks in Europe"

- Erasmus+ KA2 funded project

- Cooperation partnerships in Higher Education

Partnership

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3 Research Institutes

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Introduction – Biobanks

- A Biobank is a specialized medical research infrastructure that collects, processes, and stores biological samples and associated data for advancing scientific research
- Variety of sample types, such as human tissues (e.g., blood, plasma, urine, DNA, cells), as well as samples from animals or other organisms.
- They follow standard operating procedures (SOPs) and consider relevant ethical, legal, and social issues (ELSI) to comply with regulations, laws, and ethical requirements
- They contribute to human health by promoting better diagnostics, prognosis and disease prevention, and support clinical studies for new discoveries (new drugs or vaccines)

Current State & Needs

- Public involvement is essential in biobanking for medical research rely on public trust and citizen participation

- Recent cases of mistrust in science and misinformation biobanks with the aid of researchers and students need better community engagement strategies

Aims

➢ Identify **communication gaps** between the **general public** and **science**

➢ **Support students** and **young scientists** to be well-equipped in using effective science outreach strategies and to enrich their communication skills

➢ Support teaching methods of Higher Education Institutions and other institutions by offering **a new course**

➢ Develop an **e-learning platform** including the course that can be easily integrated in HEIs' platforms

➢ **Support citizens** to better understand the aims of science and usefulness in their lives through an online Serious Game

Target Groups

Students
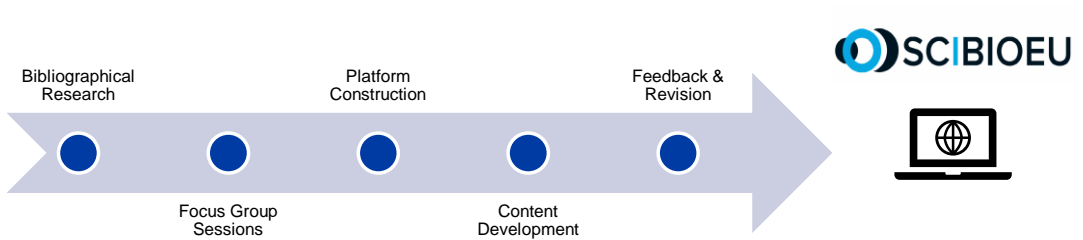
Young Scientists

Professors of HEIs

Health care professional

General public, patients and their families

Methods

Bibliographical Research

Focus Group Sessions

Platform Construction

Content Development

Feedback & Revision

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Bibliographical Research

Online Course:
1. Existing Courses about Biobanking

2. Adaptation of Medical University of Graz courses

Serious Game:
1. Existing Serious Games about Biobanking

- Resulting reports to be considered for lesson format and serious game design

Focus Group Sessions (1)

Online Course:
- Target Groups:
  o Uni Students interested in Biobanking
  o Biobanking Experts/Employees
  o Scientists in related fields

- Questions/Topics:
  o Goal of a Biobank (BB)
  o Mission of a BB
  o Relevant issues (Ethical, Communication, Practical, etc.)
  o Metaphor for a BB
  o Format of a Lesson

Report drafting - labelling by two independent researchers on each partner and combined into final summary-report

Focus Group Sessions (2)

Serious Game:
- Target Groups:
  - Same as Course +
  - General Public
  - Game Developers

Definitions of BB and Serious Game were also introduced

Different Versions of Questionnaires were prepared depending on Group composition
- Questions/Topics:
  - Topics in a Serious Game about BBs – Public Interest
  - Usage of a Serious Game for promoting engagement and participation in BBs
  - Game Format – Various Suggestions
  - Challenges of Game Developers – Elements to be included
  - Possible platforms - Fun & engaging games while being informative

Report drafting - labelling by two independent researchers on each partner and combined into final summary-report

Platform & Content Development

Online Course:
- Developed in Moodle – Liberty in content format

- Lesson Format:
1. Extensive document with citations
2. Brief Recorded Presentation of Key points
3. Evaluation Quizzes

Serious Game:
- 3-D Game developed in Unity, using WebGL for online browser support

- Adventure game, with distinct stages

Results – **Bibliographical Research**

Online Course:
- 27 Lessons were included in the research – Adaptation of the existing MUG courses to the SCIBIOEU target groups
- Creation of a Course Flowchart "Journey of a Biobank"

Serious Game:
- 9 Serious Game on Biobanking were included
- Current Game design based on raising awareness

AI Biobanking Bot (GPT)
- Open access literature was used to train a Biobanking Virtual Assistant LLM
- Evaluation of responses
- Training Loops

Results – **Focus Groups**

Online Course – Important Points:
- Knowledge about BBs is necessary above all - Clear Definitions
- Impact of BBs, Ethical Implications
- Metaphors for BBs (Tree, Library, Goldmine)
- Course: Interactive, Audio-Visual, External Bibliography

Serious Game – Important Points:
- Simplicity/Intuitive design – Short Duration
- Showcase success stories – Focus on social & personal benefits of BBs
- Feedback & Reinforced learning, Decision-based scenarios
- Focus on:
1. Building trust in BB
2. Basic workflow
3. Legal framework

SCIBIOEU Course on Biobanking Outreach

- A total of 7 lessons – Aimed at University Students, Young Scientists, Workers in Health
- Introduction to Biobanks – Sample & Data Storage – ELSI Issues – Communication Strategies – Public Engagement
- Assessment Module for User Feedback – Quizzes for Evaluation
- Free to access and take part – Registration necessary to keep track of completion
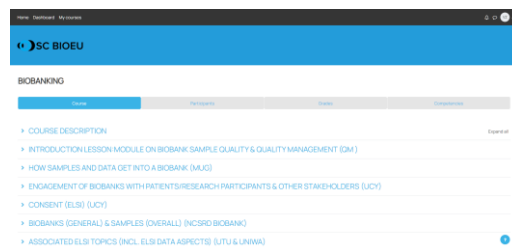
SCIBIOEU Course on Biobanking Outreach
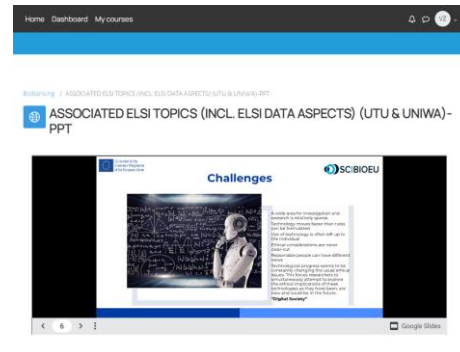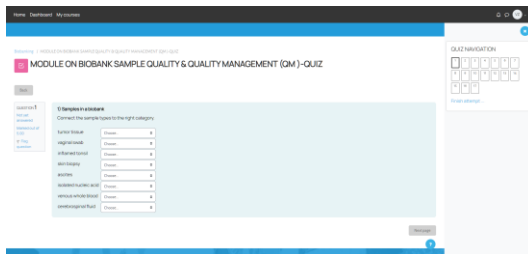
Screenshots from the course e-platform
1) Demonstration of an evaluation quiz
2) Presentation of a lesson

SCIBIOEU Serious Game

- An online 3-D adventure game aimed at the General Public

- Raise awareness for Biobanking – Mythbusting – Encourage Donors

- 5 Stages: Introduction – Informed Consent – Sample and Data processing – Advanced Concepts – Evaluation

- Small in duration and scale but scientifically accurate

- Avatar Customization – Final Scoring according to correct answers

SCIBIOEU Serious Game

Screenshots from the developer environment
1) Sampling room in a hospital – based biobank
2) Storage room of samples

Additional Information

- Evaluation of the Participant's satisfaction of the Focus Groups

- Internal Evaluation of Meetings & Feedback from partners

- SCIBIOEU Ethical Considerations

- Constant Interval evaluation of the content – Scientific Integrity

Conclusions

- SCIBIOEU deliverables aim at 2 focus groups
1. Equipping scientists with knowledge and tools to be able to perform outreach about BBs themselves
2. Raising the awareness of the general public about BBs

- Focus Groups offered precious insights for the course and game content and format
o General public is interested about ethical issues and scientific misconceptions

- Online course can clarify the proper scientific background of BBs

- Serious game is a valuable asset to teach the general public about BBs, coupled with a fun experience

Acknowledgments

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All Focus Group Participants - Feedbacks

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Erasmus+
Ανοίγει δρόμους, αλλάζει ζωές.

Thanks

Visit our website

www.scibioeu.eu

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