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Novel Biotechnological Solutions in Climate Change Mitigation
2024-1-EL01-KA220-HED-000251373

LT TA Organisation and Evaluation Report

1. Activity Overview

- **Project Title**

Novel Biotechnological Solutions in Climate Change Mitigation (BIOSHIELD)

- **Activity Type**

WP4 - Online LTTA Pre-Piloting Training

- **Leading Organisation**

University of Maribor (UM)

- **Target Group**

Proposed: 50 students (10 per partner) and 5 lecturers (1 per partner)

In the LTTA activity 89 students participated in total, including the ones who attended at least 1 day. Out of 89, 19 students attended the LTTA regularly for 5 days, 50 students attended the LTTA for at least 4 days, and 68 students participated in the LTTA at least for 3 days. The partnership agreed to consider at least 3 days of participation as eligible for certificate issuance, though it was indicated in the project proposal 70% attendance whose rate mathematically requires 3.5 days of participation. However, all the LTTA training was recorded and video records were shared with the students to follow the training delivery in case they couldn't participate. So, 3 days of participation was deemed eligible.

- **Methodology**

Online learning, lectures, case studies, and group presentations over 5 days. Student Evaluations through satisfaction survey including open ended questions that will be used in replacement of student diaries.

- **Process**

The first day, Prof Dr Yiannis Kourkoutas made an opening speech. Prof Dr Kemal Melih Şahin introduced the activity and Assoc. Prof Dr Hudson Ashrafi gave a lecture about Climate Change and Disasters' Effect on Agricultural Productivity, Blueberry as a Case Study. Then question and answer session followed and students asked their questions.

The second day started under the moderatorship of Prof Dr Yiannis Kourkoutas and Assist Prof Dr Dunja Samec introduced Dr Erna Karalija (University of Sarajevo) to give a lecture about Phytoremediation. After the lecture, Q&A session continued.

The third day, Assist Prof Dr Vasiliki Kachrimanidou gave a lecture about Industrial biotechnology, followed by the Q&A session. The fourth day, Assoc Prof Dr Silva Grobelnik Mlakar gave a lecture about Microbial Biotechnology in soil-plant systems, followed by the Q&A session.

The final day of the LTTA, the student groups from partner universities presented innovative applications in biotechnology to mitigate the climate crisis.

[Hackathon Programme](#)

[Lectures](#)

[Student Evaluations](#)

2. Student Satisfaction Survey Analysis

A. Participant Demographics and Focus Areas - University North

The following table summarises the distribution of participants across academic years and their primary biotechnological focus areas as defined in the training questionnaire.

Table 1: Participant Profile Summary

Category	Metric	Total (N=14)	Percentage (%)
Academic Year	1st Year	0	0
	2nd Year	4	28.5%
	3rd Year	10	71.5%
	4th Year	0	0
	Graduate (MSc or PhD)	0	0
LTTA Focus Area	Climate Change Mitigation	4	28.5%
	Mitigation of Disaster Effects	0	0
	Plant Biotechnology	6	42.8%
	Microbial Biotechnology in Soil-Plant Systems	0	0
	Industrial Biotechnology	3	21.4%
	Other	0	0

B. Statistical Analysis of Participant Feedback

This section presents the mean scores for quantitative feedback based on the 1-5 agreement scale (1 = Strongly Disagree, 5 = Strongly Agree).

Table 2: Feedback on Training Effectiveness and Career Aspirations

Survey Question	Mean Score (1-5)	Achievement % (Agree - 4 /Strongly Agree - 5)
Preparedness: Training made me feel more prepared for the actual pilot course.	5	100 % (5)
Entrepreneurship: Considering starting a biotech startup or initiative.	3	60 % (3) 30 % (4) 10% (5)
Industry Preference: Prefer to work in biotech industry (public/private).	4	80 % (4) 20 % (5)
Satisfaction: Overall LTTA organisation met expectations.	5	100 % (5)

C. Learning Attainments and Theoretical Insights

This section summarises the "Key Learning Attainments" reported by students, focusing on new concepts encountered during the 5-day session.

- **New Concepts Learned:**

- Students strongly agreed with this approach. They explained that regular courses rarely give them the opportunity to develop their own ideas and present them to others. They especially valued being encouraged to think independently, discuss different perspectives, and explain their reasoning. In an era when artificial intelligence makes information readily available, they felt that these skills are more important than simply finding answers.

- **Most Inspiring Aspect:**

- Students found the opportunity to exchange ideas with peers from other countries particularly inspiring. Working together exposed them to different perspectives and encouraged them to discuss and develop their own ideas. They also explored topics that are not usually covered in their regular study programme. This combination of international collaboration and new subject matter made the experience especially valuable to them.

- **Career Impact:**

- The experience sparked students' interest in new topics that they consider relevant to their future careers. They also highlighted the opportunity to present their ideas in English. Doing so helped them realise that they can communicate effectively in an international setting and gave them greater confidence to use English in their future professional work.

D. Identified Challenges and Obstacles

Participants were asked to identify major obstacles in the lecture topics or challenges encountered during the online activities.

- **Reported Challenges:**

- Students noted that some activities were scheduled just before the Christmas and New Year holidays, which was inconvenient because several of them had already arranged to travel. They also reported technical difficulties during one session, which had to be postponed.

- **Mitigation Strategy for Piloting:**

- For future piloting activities, the schedule should be agreed with students in advance

E. Transversal Skills Application

In accordance with the project's goal to connect data with transversal skills, participants identified specific skills they consciously applied during the training.

Table 3: Application of Transversal Skills

Skill Identified	Frequency of Mention	Specific Examples
Entrepreneurial Thinking	9/14	Students described developing an original idea, considering who might benefit from it and discussing how it could be put into practice. They valued the chance to move beyond learning about a topic and propose something of their own.
Critical Thinking	11/14	Students reported comparing different sources of information, questioning their initial assumptions and discussing which ideas were feasible. They also reflected on the importance of evaluating information carefully when AI tools can generate answers so quickly.
Problem-Solving	10/14	When an idea proved difficult to develop, students worked through the obstacle together, considered alternatives and adjusted their

		approach. They also had to decide how to present complex information clearly within the time available.
Effective Communication	12/14	Students practised explaining their ideas to an international audience, presenting in English and responding to questions. Several felt that successfully making themselves understood gave them more confidence to use English in future academic or professional settings.
Teamwork	12/14	Students exchanged ideas, divided tasks and brought different contributions together in a shared presentation. Working with international peers encouraged them to listen carefully and find common ground when their perspectives differed.

F. Indicators of Achievement

- **Attendance Rate:** (Requirement: 70% for certification, determined for at least 3 days of participation).
- **Certification:** 14

G. Conclusion and Recommendations

Assess whether the LTTA met the specific objective of enabling students to feel ready to think about how to generate creative biotech ideas for the mitigation of climate change impacts.

The LTTA appears to have met this objective. Students found the topics related to climate change engaging and relevant to their future work. Exploring how biotechnology could help mitigate the impacts of climate change encouraged them to think beyond the content of their regular courses and develop ideas of their own. Discussions with international peers helped them consider different approaches, while preparing and presenting their ideas in English gave them confidence to share those ideas. By the end of the activity, students reported feeling more ready to think creatively about biotechnology solutions to climate change challenges.

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Date: 01/03/2026

Verification: [Attendance Sheets](#)
[Screenshots](#)

Appendix 1

List of 68 Qualifying Participants by University (Participated at least 3 days or more)

Democritus University of Thrace (DUTH)

1. Vasiliki Bouladaki: 5 days (Days 1, 2, 3, 4, and Hackathon)
2. Glykeria Psarra: 4 days (Days 1, 2, 3, and Hackathon)
3. Katerina Tounta (Aikaterini Paraskevi Tounta): 3 days (Days 1, 4, and Hackathon)
4. Anastasia Karvouni: 3 days (Days 1, 3, and Hackathon)
5. Aspasia Riga: 3 days (Days 1, 4, and Hackathon)
6. Spyridoula Papadopoulou: 3 days (Days 1, 2, and 4)

Çanakkale Onsekiz Mart University (ÇOMÜ)

1. Akikat Dimagambetov: 5 days (Days 1, 2, 3, 4, and Hackathon)
2. Ayşe Öncüler: 5 days (Days 1, 2, 3, 4, and Hackathon)
3. Berk Çelikel: 5 days (Days 1, 2, 3, 4, and Hackathon)
4. Ecem Arslan: 5 days (Days 1, 2, 3, 4, and Hackathon)
5. Eftelya Nergis Özbiçerler: 5 days (Days 1, 2, 3, 4, and Hackathon)
6. Esmâ Zehra Sağlam: 5 days (Days 1, 2, 3, 4, and Hackathon)
7. Ezgi Coşkun: 5 days (Days 1, 2, 3, 4, and Hackathon)
8. Melis Buse Uslu: 5 days (Days 1, 2, 3, 4, and Hackathon)
9. Melis Köleoğulları: 5 days (Days 1, 2, 3, 4, and Hackathon)
10. Altuğ Dirim (Altuğ Didim): 4 days (Days 1, 3, 4, and Hackathon)
11. Asya İrem Kayış: 4 days (Days 2, 3, 4, and Hackathon)
12. Ayşe Ayzıt Bekirhan: 4 days (Days 1, 2, 3, and 4)
13. Ceren Şevval Yıldız: 4 days (Days 1, 2, 3, and 4)
14. Ecem Dilay Demirkalp: 4 days (Days 1, 3, 4, and Hackathon)
15. Eray Ekrem: 4 days (Days 1, 2, 3, and Hackathon)
16. Eylül Türkmen: 4 days (Days 1, 2, 3, and Hackathon)
17. Hiranur Başak: 4 days (Days 1, 2, 3, and Hackathon)
18. Nurten Coşkun: 4 days (Days 2, 3, 4, and Hackathon)
19. Zülal Hoş: 4 days (Days 1, 3, 4, and Hackathon)
20. Cansu Demirboğa: 3 days (Days 1, 2, and Hackathon)
21. Didem Durmuş: 3 days (Days 1, 3, and Hackathon)
22. Emek Can: 3 days (Days 1, 2, and 4)
23. Melike Güneş: 3 days (Days 1, 2, and 4)
24. Mert Doğrucu: 3 days (Days 1, 2, and 4)
25. Muhammed Emir Karagöz: 3 days (Days 1, 3, and 4)
26. Ranya Demir: 3 days (Days 1, 3, and 4)
27. Zübeyde Gökteke: 3 days (Days 1, 3, and 4)

Ionian University (IU)

1. Andriana Argyrakou: 5 days (Days 1, 2, 3, 4, and Hackathon)
2. Eleftheria Michou: 5 days (Days 1, 2, 3, 4, and Hackathon)
3. Konstantina Voukelatou: 5 days (Days 1, 2, 3, 4, and Hackathon)
4. Lydia Epitropaki: 5 days (Days 1, 2, 3, 4, and Hackathon)
5. Maria Gkouzou: 5 days (Days 1, 2, 3, 4, and Hackathon)
6. Maria Martini: 5 days (Days 1, 2, 3, 4, and Hackathon)
7. Panagiota Skoufa (Skoufa Panagiwta): 5 days (Days 1, 2, 3, 4, and Hackathon)
8. Georgia Konstantina Tsami: 4 days (Days 1, 3, 4, and Hackathon)
9. Maria Serafeimidi (Maria Serafimeidi): 4 days (Days 1, 2, 3, and Hackathon)
10. Maria-Epistimi Kanaki (Maria Epistimi Kanaki): 4 days (Days 1, 3, 4, and Hackathon)
11. Michael Koumianos (Mike Koumianos): 4 days (Days 1, 2, 3, and Hackathon)
12. Argiro Avgoustidou: 3 days (Days 1, 3, and 4)
13. Regina Evliatou (Reggina Eyliatou): 3 days (Days 1, 4, and Hackathon)

Univerza v Mariboru (UM)

1. Jovana Jevtić: 5 days (Days 1, 2, 3, 4, and Hackathon)
2. Matjaž Muršec: 5 days (Days 1, 2, 3, 4, and Hackathon)
3. Milica Marković: 5 days (Days 1, 2, 3, 4, and Hackathon)
4. Irina Mozhginskaya: 4 days (Days 1, 2, 3, and Hackathon)
5. Lara Ribič: 4 days (Days 1, 2, 3, and Hackathon)
6. Nika Hozjan: 4 days (Days 1, 2, 3, and Hackathon)
7. Hana Skrbinšek: 3 days (Days 1, 4, and Hackathon)
8. Mojca Duh: 3 days (Days 1, 3, and Hackathon)
9. Til Trinkaus: 3 days (Days 1, 3, and Hackathon)
10. Vid Švab: 3 days (Days 1, 3, and Hackathon)

University North (UNIN)

1. Bojana Đurašević 4 days (Days 1, 2, 3, and Hackathon)
2. Ema Zavrtnik 4 days (Days 1, 2, 3, and Hackathon)
3. Gabriela Berić 4 days (Days 1, 2, 3, and Hackathon)
4. Inka Jakupec 4 days (Days 1, 2, 3, and Hackathon)
5. Iva Škrlec 4 days (Days 1, 2, 3, and Hackathon)
6. Jana Iličić (Jana Iličič) 4 days (Days 1, 2, 3, and Hackathon)
7. Lara Bosanac 4 days (Days 1, 2, 3, and Hackathon)
8. Maja Crljenica 4 days (Days 1, 2, 3, and Hackathon)
9. Martina Blažun 4 days (Days 1, 2, 3, and Hackathon)
10. Mia Nardić 4 days (Days 1, 2, 3, and Hackathon)
11. Michaela Zrnić (Michael Zrnić) 4 days (Days 1, 2, 3, and Hackathon)
12. Paula Vidoša 4 days (Days 1, 2, 3, and Hackathon)

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