Biomimicry Design for Sustainability Skills in VET

KA220-VET-00620D4B

Quality Evaluation Report for

WP2. Biomimicry Process Design for Sustainability Skills

Elaborated by

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

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Introduction

The project Let's Mimic aims to make vocational education and training (VET) systems more sustainable and relevant, equipping young people with the skills needed to contribute to and benefit from sustainable development. Under sustainability, the project supports the integration of eco-conscious practices into VET curricula across Europe, emphasising environmental management and promoting eco-education. It encourages collaboration among stakeholders to enhance VET delivery and fosters public appreciation for technical careers, promoting a culture of lifelong learning. In terms of relevance, Let's Mimic seeks to align VET with evolving labour market demands. This includes skills forecasting, competency-based training, and making vocational pathways more attractive to learners. The project also promotes the creation of industry-responsive programs at the secondary level and the use of digital learning tools to modernize training delivery. By combining sustainability and relevance, Let's Mimic helps build future-ready VET systems that empower both learners and communities.

The project has five Work Packages (WP):

- WP1. Project Management
- WP2: Biomimicry Process Design for Sustainability Skills
- WP3. Training Modules on Biomimicry Process Design
- WP4. Biomimicry Platform Development
- WP5. Dissemination and Exploitation

This report compiles the findings of the Post Development WP2 Quality Evaluation Survey, which focused on the Let's Mimic project's second work package: Biomimicry Process Design for Sustainability Skills. WP2 has two deliverables:

1) *D2.1 Biomimicry process design for sustainability skills*
    - **PART A – Learning Outcomes Matrix for Sustainability Skills in VET:** This document presents a needs analysis on building biomimicry and problem-solving skills through innovative, project-based learning.
      The study is based on desk research of current practices on building general sustainability and more specific biomimicry skills in countries represented in the consortium through project partners, namely Greece, Romania, Türkiye, France, Spain, and Portugal.
      In addition, it analyses results from questionnaire-based research conducted by all project partners on student needs and expectations related to the same subject.
      The outcomes of needs analysis are summarised in a Learning Outcomes Matrix for Sustainability Skills in VET learners. This matrix aims to integrate sustainability-focused competencies into VET initiatives, fostering a generation equipped to contribute to sustainable development.
    - **PART B – Project-based learning framework on biomimicry process design:** This document outlines a comprehensive framework for integrating biomimicry into a PBL environment, fostering green and problem-solving skills in demand by industry and society. The Let's Mimic framework defines the desired learning

outcomes, including the knowledge, skills, and competencies students are expected to acquire. It also outlines specific learning activities and assessment strategies, ensuring a comprehensive and coherent approach to teaching and learning. This document provides a detailed blueprint for teachers and curriculum developers to facilitate the effective implementation of PBL in biomimicry design projects through the Let's Mimic framework. The ultimate goal is to enhance student engagement and learning outcomes while fostering innovation and sustainability in design.

2) *D2.2 Biomimicry platform design:* The D2.2 Biomimicry platform design describes the key functionalities of the Let's Mimic Collaborative Platform, which implements the Biomimicry Design Process and can be experimented with through collaborative working areas and a self-regulated learning kit. The platform design specifications include the platform architecture diagram, design specifications for the mentor and student interfaces, and detailed functionalities for the frontend and backend modules, covering microlearning management, SRL-P, collaborative learning, gamification, and assessment.

Each deliverable has been evaluated separately.

Methodology

There have been two sources of evaluation:

- **Internal**: all 6 partners have participated in the evaluation, specifically regarding the OECD/DAC evaluation criteria.
- **External**: Each participating country engaged at least one expert to conduct the external evaluation of the project, ensuring that the assessment adhered to the internationally recognised OECD/DAC evaluation criteria. These external evaluators, drawn from all partner countries, contributed to a comprehensive and balanced review of the project's outcomes and methodologies.

The profiles of the evaluators are the following:

- *Internal evaluators:* Project Coordinators, Project Managers, Project Technicians, Researchers, VET Educators.
- *External evaluators:* VET teachers and trainers working with VET learners at secondary level, VET educators, company trainers and VET practitioners, community leaders, civic initiatives and NGOs active in the field of education and training.

The evaluators brought a diverse range of professional backgrounds and expertise, enriching the evaluation process. Their profiles included secondary-level VET teachers and trainers, VET educators, company-based trainers, and experienced practitioners in vocational education and training. In addition, representatives from community organisations, civic initiatives, and NGOs active in the field of education and training also participated. This multidisciplinary approach provided valuable insights and reinforced the relevance and quality of the evaluation across different educational and socio-cultural contexts.

Each survey is designed to ensure the qualitative KPI defined in the Project Proposal for each specific WP are reached. The following are the **qualitative KPI** as defined in the proposal:

- Content of the desk research: how sustainability skills are being developed, what instruments are being used, and what associated national strategies exist.
- Extent of the questionnaires for VET leaners: aimed to learn about their knowledge on the concept of sustainability (design), the importance of 21st century skills, etc.
- Extent of the questionnaires for VET teachers teaching STEM subjects: the place given to sustainability skills in current curricula; methodologies they apply to train sustainability skills; tools they use; sources they have; how (often) they apply PBL methodology, etc.
- Active involvement, collaboration and contribution of the partners in the development of the activities.

Please note that this report only covers the quantitative and qualitative KPI that refer to the deliverables of WP2. The KPI referring to meetings and collaboration between the partnership is covered in the respective quality evaluation report.

Internal and external evaluators were asked to evaluate Let's Mimic WP2 according to the following criteria:

- The development process of both D1.1 and D1.2
- The possible conclusions that can be made and the consequences that can be drawn/ expected as a result of both deliverables.
- Quality: Whether partners are satisfied with the quality of WP2 deliverables (and if not, how could it be improved?).
- To what extent the purpose envisaged for the WP2 has been achieved.
- How well the deliverables (content, methodology, etc) can be converted into results,
- Sustainability: How partners' organisations will use the WP2 deliverables beyond the project lifespan.
- Relevance: How suitable the WP2 deliverables are for the target users, and the extent to which partners would evaluate that the stated objectives of the project result correctly address the identified problems and needs of the target group.
- Impact: The impact of the WP2 deliverables in a general sense, and on partner organisations, and how this impact could be maintained during and after the project lifespan.
- If there are any additional benefits to the WP2 deliverables which target users or beneficiaries have or will experience.
- Whether partners have any additional comments or recommendations.

Evaluators were asked to rate various aspects of the deliverable on a scale from 1 to 5, with 1 representing the lowest score and 5 the highest.

OECD/DAC Evaluation Criteria

The OECD Development Assistance Committee (DAC) is the leading international forum for bilateral providers of development co-operation. Its main objective is to promote

development cooperation and other policies in order to contribute to sustainable development. The OECD DAC Network on Development Evaluation (EvalNet) has defined six evaluation criteria – relevance, coherence, effectiveness, efficiency, impact and sustainability. These criteria provide a normative framework for determining the merit or worth of an intervention (policy, strategy, programme, project, or activity). They serve as the basis upon which evaluative judgements are made.

- **Relevance**: This criterion refers to the extent to which the deliverable addresses the identified problems and needs of the target groups. In what way does the deliverable/ does the deliverable not reflect this?
- **Effectiveness**: This criterion refers to the extent to which the purpose envisaged for the deliverable has been achieved. In what way does the deliverable/ does the deliverable not reflect this?
- **Efficiency**: This criterion refers to how well the deliverable can be developed into the appropriate project results. Are any additional requirements needed?
- **Impact**: This criterion refers to what the expectations are for impact. What can be done to further deliver an effect?
- **Sustainability**: This criterion refers to the evaluation of the likelihood of a continuation in the benefits produced by the deliverable beyond the project lifecycle
- **Added Value:** This criterion refers to an assessment of usability and applicability of the deliverable for the relevant organisations in the partnership.

For more information, please refer to:
https://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm#

Deliverables Quality Evaluation

D2.1 Biomimicry process design for sustainability skills Evaluation

Internal Evaluation

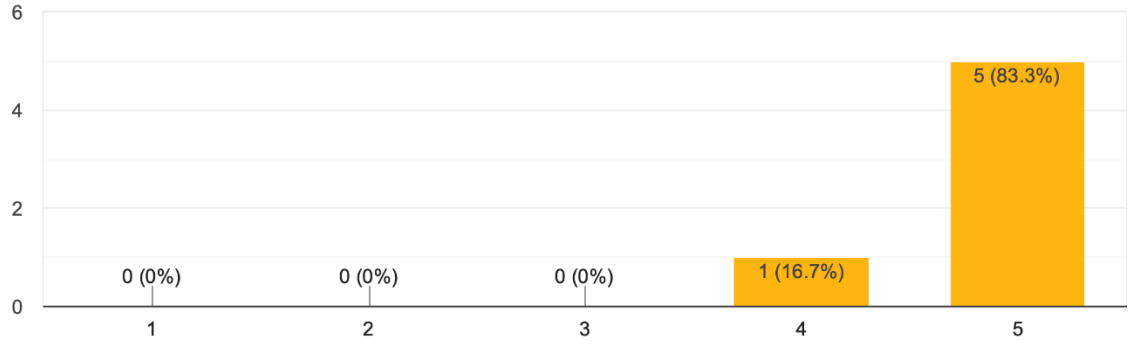
D2.1 Development Process

The Let's Mimic Partnership has reported that they found the development process (work programme, guidelines, template, and overall implementation) for D2.1. Development to be clear, smooth and issue-free.

Specifically, for D2.1 *PART A – Learning Outcomes Matrix for sustainability skills in VET* partners were asked the following questions and reported the following:

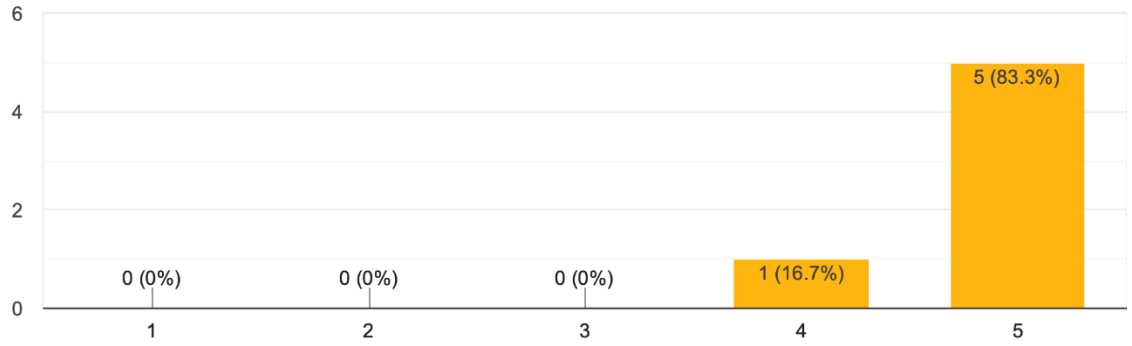
Please rate your satisfaction with the content of the desk research carried out (how sustainability skills are being developed, what instruments are being used, what associated national strategies exist)

6 responses



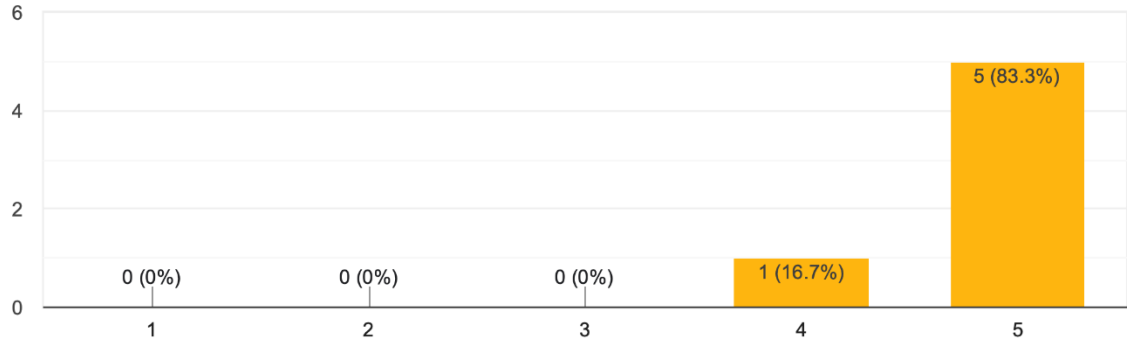
Please rate your satisfaction with the extend of the questionnaires for VET leaners (aimed to learn about their knowledge on the concept of sustainability design, the importance of 21 century skills, etc)

6 responses



Please rate your satisfaction with the extend of the questionnaires for VET teachers teaching STEM subjects (the place given to sustainability skills i...y have; how (often) they apply PBL methodology etc)

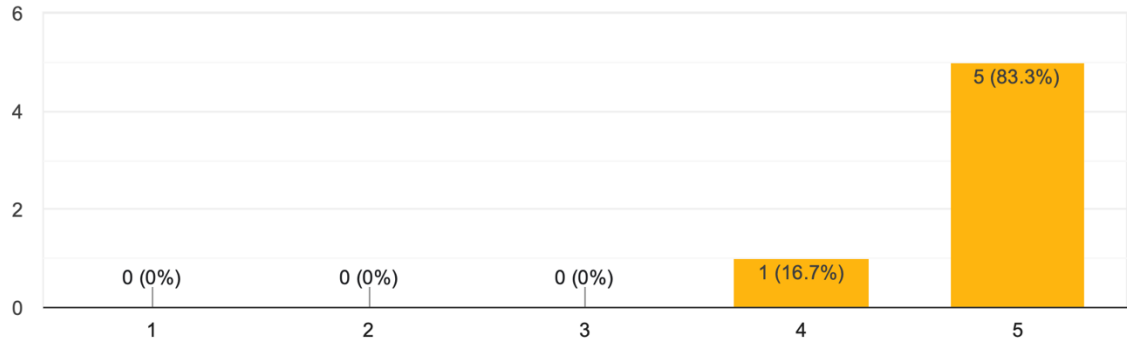
6 responses



For D2.1 *PART B – Project-based learning framework on biomimicry process design* partners were asked the following questions and reported the following:

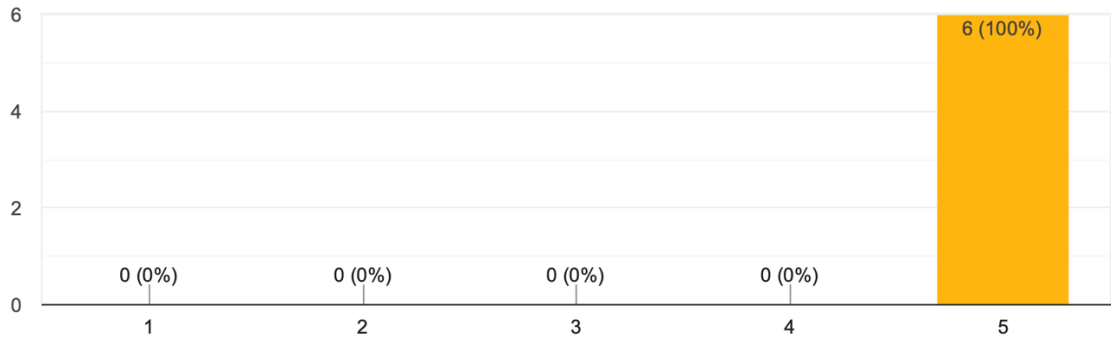
Please rate your satisfaction with the development process of PART B – Project-based learning framework on biomimicry process design

6 responses



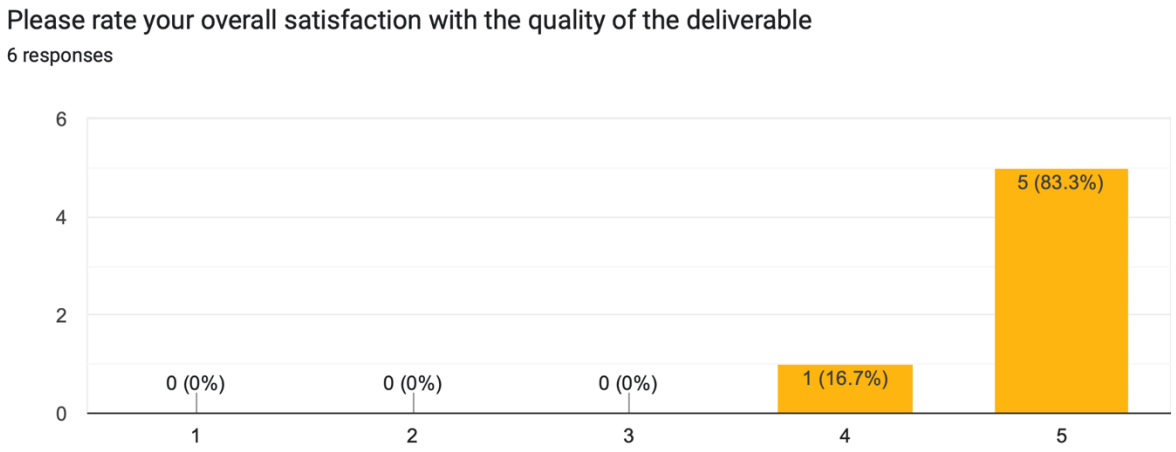
Please rate your organisations' level of compliance with the implementation of the deliverable work programme.

6 responses



D2.1 Overall Quality

The Let's Mimic Partnership have reported that they are completely satisfied with the quality of D2.1. It is very impactful and of high quality, there is high consistency of the contents included in the deliverable in relation to the project topic, the deliverable is highly user-friendly.

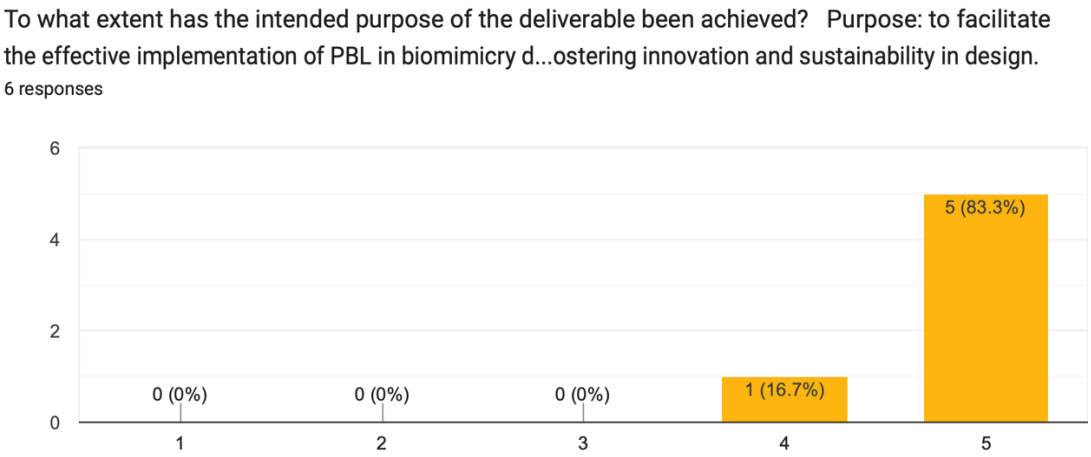


Target Audience and Relevance

The Let's Mimic Partnership agreed that D2.1 is very suitable for the target groups. Additionally, partners agreed completely that the stated objectives of the project accurately address the identified problems and needs of the target audience.

Effectiveness

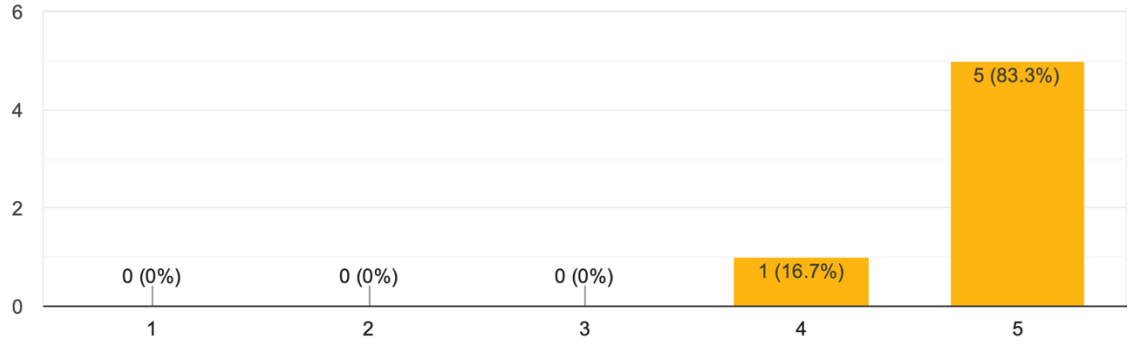
Partners were asked about the effectiveness of the deliverable, i.e. to what extent the intended purpose of the deliverable has been achieved. Partners expressed full satisfaction with the project result, affirming that it effectively fulfils its intended purpose.



Efficiency

Partners expressed complete satisfaction with the deliverable, noting that its content, methodologies, and structure are well-developed and practical. They highlighted its strong potential to be effectively transformed into concrete results, both in terms of educational implementation and real-world impact.

How well do you think the he deliverable (contents, methodology) can be converted into results?
6 responses



Impact

For both, target users and target beneficiaries, the deliverable is considered that it will have high impact:

Target Users: VET Trainers and Educators

- The deliverable offers a structured and practical **Learning Outcomes Matrix** that enables educators to integrate **sustainability and biomimicry** into their teaching practices.
- This tool addresses a key gap in formal training, as currently only a small percentage of VET teachers teach topics directly related to sustainability.
- It enhances teaching innovation by introducing **problem-based learning (PBL)** approaches linked to real-world environmental challenges.
- It improves educators' **skills and competencies** to embed biomimicry in their subjects and programmes, fostering more engaging and future-oriented STEM education.
- The resource also promotes a **better understanding of biomimicry** and introduces innovative learning design aligned with 21st-century education goals.
- This work package can offer educators a comparative **overview of biomimicry and PBL practices** across partner countries, encouraging the use and dissemination of the resource.

Target Beneficiaries: VET Learners

- The deliverable identifies a clear lack of exposure among learners to biomimicry and sustainability-related skills.
- It helps students develop core competencies in **creativity, innovation, and scientific research**, areas often underrepresented in traditional vocational training.
- By engaging learners through **problem-based and creative approaches**, it raises awareness of sustainability challenges in a way that is meaningful and motivating.

- The content aims to **align education with labour market needs**, building future-oriented skills that meet both environmental imperatives and employer expectations.
- Ultimately, it equips learners with the **knowledge, tools, and mindset** to become active contributors to sustainable development.

Sustainability

All partners agreed that the deliverables´ impact and benefits will be sustained beyond the project lifecycle. On this, partners commented as following:

- To ensure the lasting impact of the Let's Mimic project, key strategies include integrating its outcomes into national and regional VET curricula, providing continuous professional development for teachers through webinars and refresher courses, and fostering collaboration with stakeholders, environmental organisations, and innovation hubs to strengthen links between education and the labour market.
- To maintain the impact and benefits of the Let's Mimic project both during and after its lifespan, several strategic actions can be taken to ensure sustainability, scalability, and long-term relevance, such as: embedding the project's outcomes into national and regional VET curricula, support an ongoing professional development for teachers by organising periodic webinars, refresher courses, and collaborative projects that keep the content dynamic and responsive to emerging trends, engaging stakeholders, environmental organisations, and innovation hubs that can help bridge the gap between education and the labour market.
- By integrating the framework into existing VET curricula and providing accessible training for teachers, the impact can be sustained. Uploading materials to open platforms and promoting their use in national contexts will also be beneficial. Ongoing collaboration with schools and continuous feedback loops could further support long-term benefits.
- Enriched learning methodologies and experiences, development of green skills. Activities will be integrated into learning practices within the organisation and beyond.
- As a VET school (applying modular system) we will be using the results with our teachers and students
- Since the platform will remain available after the project conclusion, its impact will continue, and the target groups will continue to be able to benefit from the use of the resources developed.

Added Value

Partners considered that the deliverable is highly useful and applicable to their organisations and that it will have a substantial impact on their organisation and staff. Partners listed the following benefits that the deliverable will bring to their organisations:

- INFODEF: The deliverable will bring significant benefits to INFODEF as a research and innovation centre, particularly by enhancing the quality and relevance of its vocational education and training outputs. By incorporating the Learning Outcomes Matrix for Sustainability Skills, INFODEF will be able to enrich its methodological frameworks and learning resources with forward-looking topics such as biomimicry, sustainability, and project-based learning (PBL). This will strengthen its capacity to design innovative, competency-based curricula aligned with current environmental priorities and evolving labour market needs.
- ATS: The deliverable will bring several key benefits to the organisation training center, particularly in enhancing the quality and relevance of its vocational education programs. By integrating the Learning Outcomes Matrix for Sustainability Skills, the organisation will be able to modernize its curriculum to include cutting-edge topics like biomimicry, sustainability, and project-based learning (PBL). This will help align training with current environmental and labour market demands.
- ECC: It strengthens our expertise in sustainability education, provides new training tools, and enhances our capacity to support VET learners with innovative, interdisciplinary methods like biomimicry.
- UTH: Enriched learning material and practices for green skills, innovation, and technology-enhanced learning, especially for in-service teacher training activities we will use the deliverable, which will support teachers' skills and competence in this term
- Virtual Campus: It's an innovative tool about a very interesting topic, so the benefits for our organisation are pretty positive. It will allow us to disseminate the project with the VET community that collaborates with us on various initiatives and projects.
- YACACIK: especially for in-service teacher training activities, we will use the deliverable, which will support teachers' skills and competence in this term

Additional information/comments

Partners were invited to provide suggestions for improving or complementing the deliverables. One of the partners suggested creating visually appealing infographics or interactive presentations that summarise key components of the matrix, which can be shared on social media, used during events, or included in newsletters to raise awareness and spark interest.

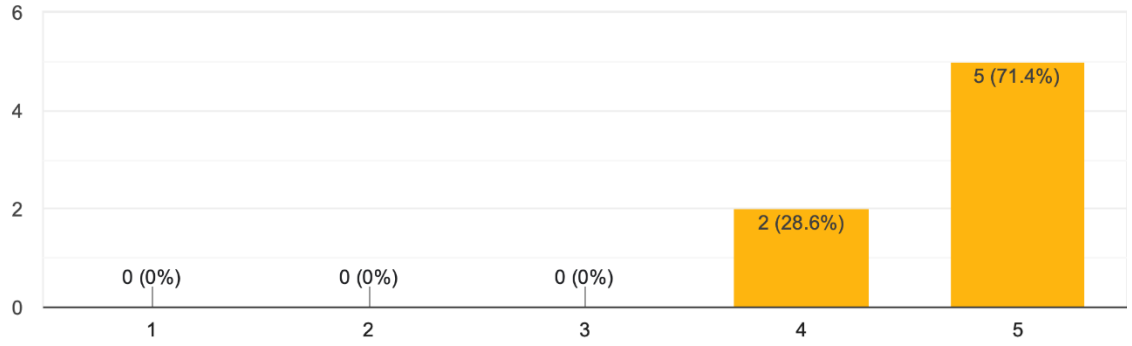
External Evaluation for D2.1

Each country contacted at least one expert on the matter, who conducted the external evaluation of the project using a semi-structured questionnaire. External evaluators from all partner countries participated in the assessment of D2.1.

Overall quality evaluation of D2.1 *PART A – Learning Outcomes Matrix for sustainability skills in VET*

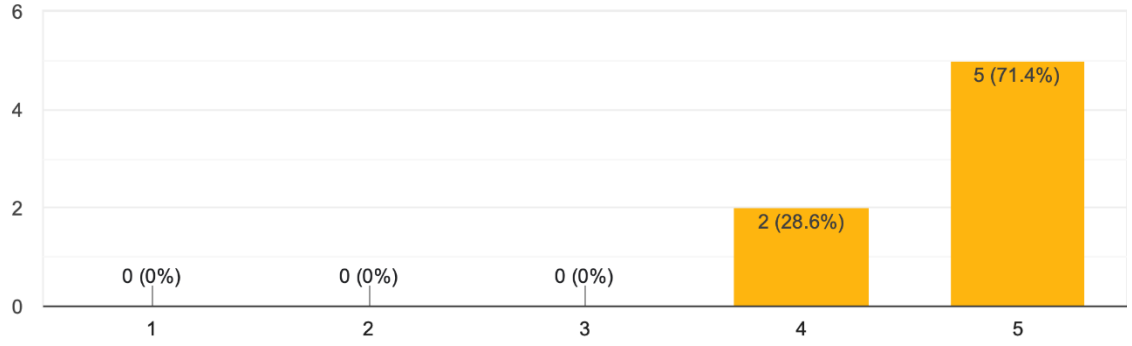
Please rate the overall quality of the content of the desk research carried out (how sustainability skills are being developed, what instruments are being used, what associated national strategies exist)

7 responses



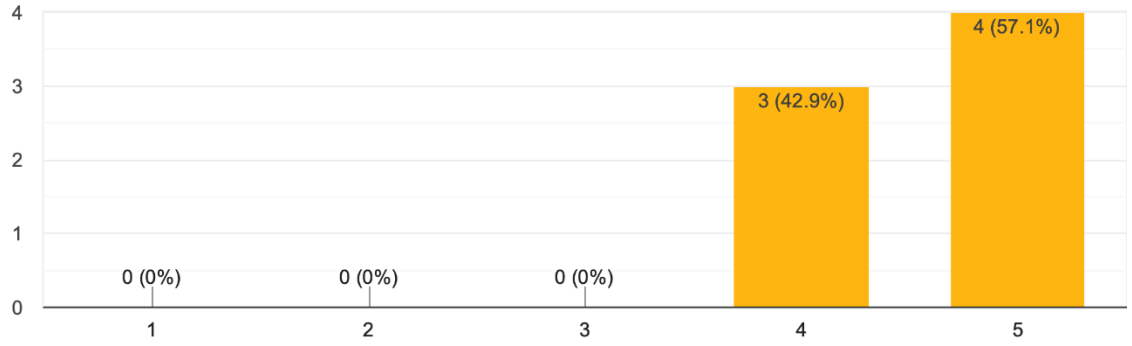
Please rate the overall quality of the questionnaires for VET leaners (aimed to learn about their knowledge on the concept of sustainability design, the importance of 21 century skills, etc)

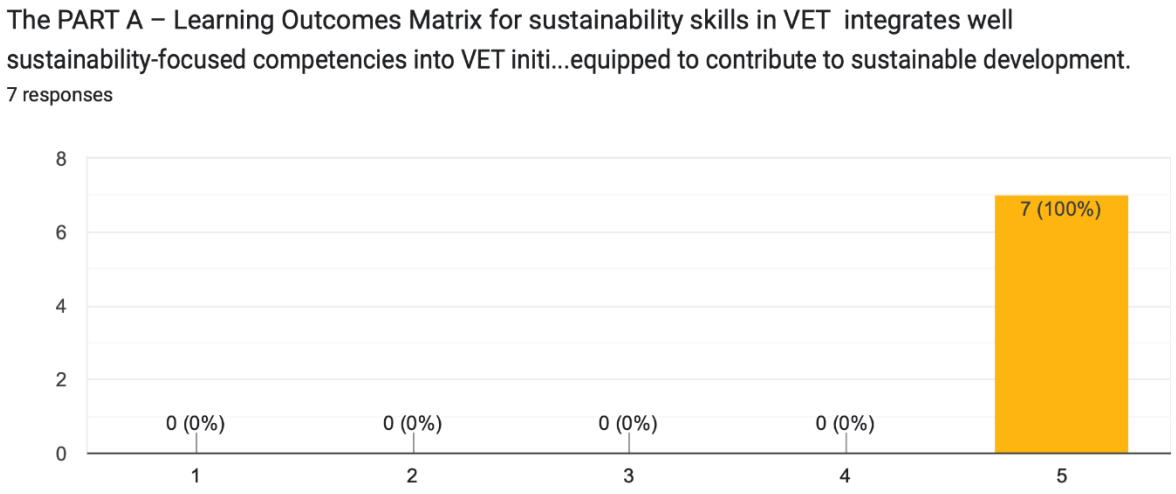
7 responses



Please rate the overall quality of the questionnaires for VET teachers teaching STEM subjects (the place given to sustainability skills in current curr...y have; how (often) they apply PBL methodology etc)

7 responses





The external evaluators provided the following comments:

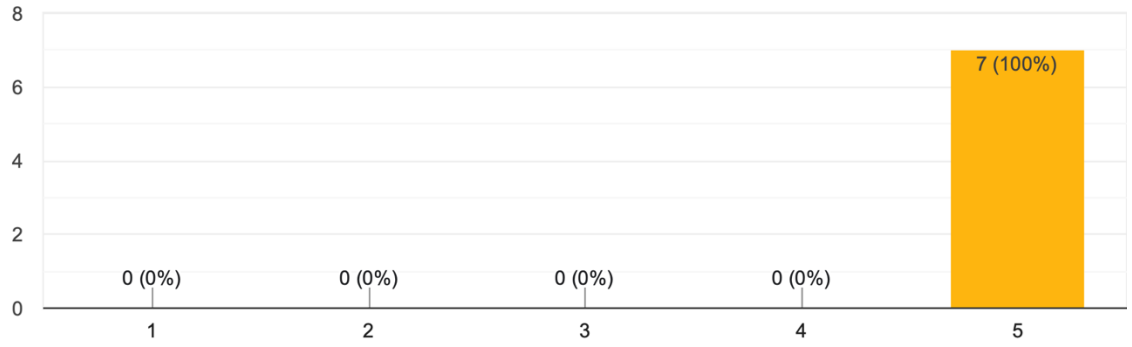
- The learning outcomes matrix is carefully designed and highly aligned to VET needs.
- The Learning Outcomes Matrix is a well-designed and relevant tool that aligns sustainability competencies with VET learning objectives. It provides a clear, adaptable framework for educators to integrate sustainability into various vocational disciplines, bridging research and pedagogy. While highly effective, it could be further improved by including sector-specific learning outcomes for key VET fields such as construction, agriculture, or IT.
- Very complete and accurate.
- The Learning Outcomes Matrix is highly relevant and thoughtfully constructed. It offers clear alignment between sustainability competencies and VET learning objectives. Its structure allows for easy adaptation by educators, and it effectively bridges research insights with pedagogical application. A possible improvement could be the inclusion of more sector-specific learning outcomes tailored to key VET fields (e.g., construction, agriculture, IT).
- PART A – Learning Outcomes Matrix for sustainability skills in VET defines the knowledge, skills, responsibilities, and autonomy VET students must possess to build sustainable habits, civic sensibility, and specific competencies required by the labour market, elaborating a Learning Outcomes Matrix for sustainability competencies in VET learners. The matrix is highly appropriate for integrating sustainability into VET curricula. It provides a structured framework that helps educators identify and embed relevant sustainability outcomes across different vocational disciplines.
- The deliverable Learning Outcomes Matrix for sustainability skills in VET is appropriate for its intended audience —VET educators, but also for other groups such as curriculum developers or other professionals in education and it aligns well with current EU priorities on sustainability and green skills in vocational education.
- By addressing the growing need for sustainability competencies in vocational training and focusing on the biomimicry and project-based learning (PBL), the deliverable

introduces innovative pedagogical approaches that can be considered as effective in fostering critical thinking and real-world problem-solving. The inclusion of both student and teacher in the applied questionnaires ensures a balanced and inclusive approach while the matrix of knowledge, skills, responsibilities, and autonomy proposed is a good example that can guide curriculum development. Overall the deliverable is generally easy to navigate and understand, especially for professionals in education.

Overall quality evaluation of D2.1 *PART B – Project-based learning framework on biomimicry process design*

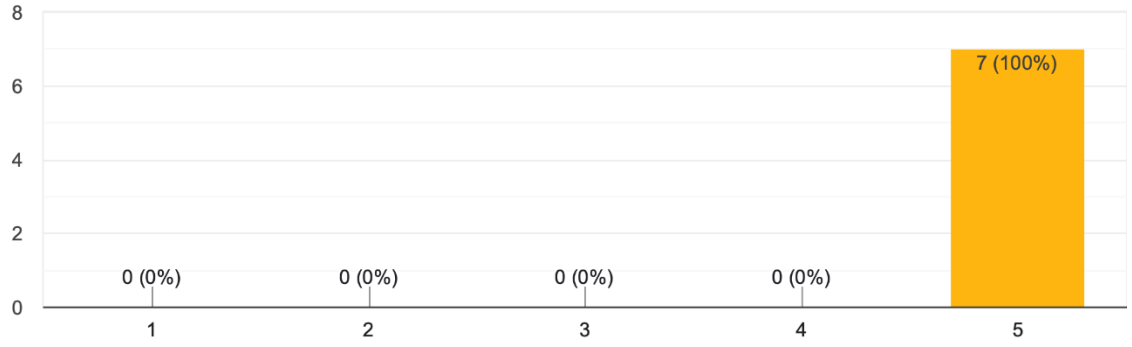
Please rate the overall quality of the Part B: Project-based learning framework on biomimicry process design

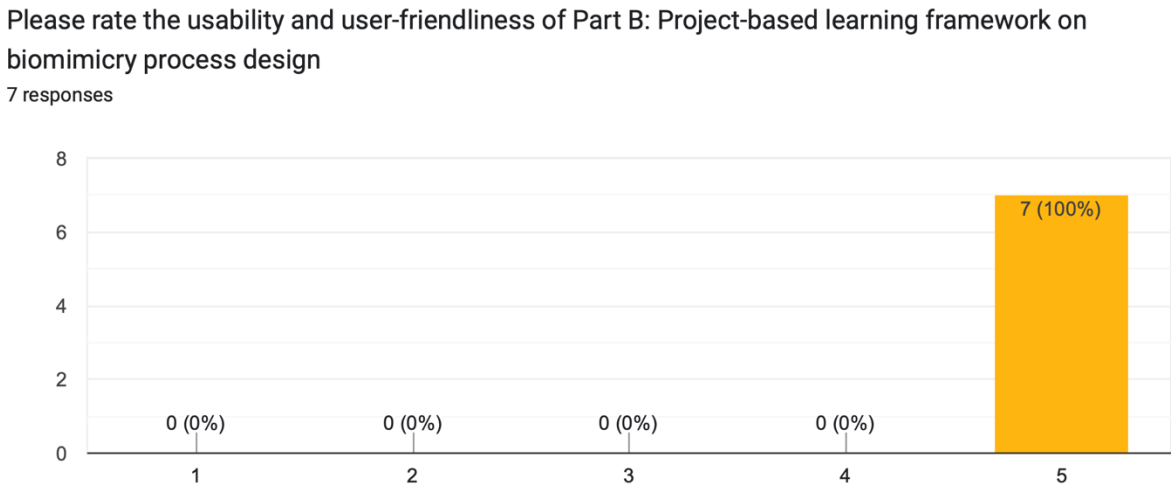
7 responses



Please rate the overall quality of the contents included in the Part B: Project-based learning framework on biomimicry process design in relation to the project topic?

7 responses





The external evaluators provided the following comments:

- The project-based learning framework based on biomimicry is very innovative, not yet deployed widely in Greece, and offers significant new opportunities for green and sustainability skills development through critical thinking inspired by nature.
- The deliverable is a high-quality educational resource that combines project-based learning and biomimicry to promote green skills, innovation, and sustainability in VET. It aligns with EU green transition goals and 21st-century skills, offering practical guidance, assessment tools, and a strong emphasis on creativity, collaboration, and ethical thinking. Overall, it provides a transformative, nature-inspired learning experience.
- Good structure, complete and detailed. Easy to use and to understand.
- The Project-Based Learning Framework is structured and highly aligned with the goals of the Let's Mimic project. It integrates PBL methodology and biomimicry in a pedagogically sound and innovative manner. The step-by-step structure (Define, Biologize, Discover, Abstract, Emulate, Evaluate) is coherent and allows educators to apply it in a wide variety of VET contexts. The integration matrix, practical examples, and detailed assessment strategies make the document both user-friendly and directly usable in classroom settings. It promotes active learning and sustainability literacy, and its flexibility allows adaptation to various disciplines and teaching styles.
- The Project-based learning framework on biomimicry process design is exceptionally appropriate for teaching sustainability and innovation in VET. The framework is highly relevant in today's context of ecological transition and the development of green skills. It supports learners in understanding complex systems, fostering creativity, and applying sustainable design principles in real-world scenarios. Its focus on biomimicry encourages learners to think beyond conventional engineering and design methods, considering nature as a model, measure, and mentor.
- The deliverable is suitable for education and training contexts, especially in areas related to sustainability, design and innovation. It effectively brings together two

robust educational methodologies—project-based learning (PBL) and Biomimicry, a relatively new concept—to promote green skills and innovative thinking.

- The proposed framework is highly relevant in the current educational and environmental landscape, and it is crucial that it seeks to align with the EU's goals towards the green transition and with 21st-century skills, making it a valuable resource for educators and curriculum developers.
- The document demonstrates high quality in several areas such as: structured integration of PBL and biomimicry, with precise alignment between their respective phases; guidance on each step of the two methodologies presented and clear explanation of the correlation between the steps in PBL with the steps of Biomimicry; concrete examples demonstrating the water conservation issue and which illustrates practical application of the two concepts, emphasis on soft skills like creativity, collaboration, ethical thinking, and resilience; practical examples of formative assessment strategies and tools that can support continuous feedback and student growth.
- Overall, the deliverable is a highly valuable, relevant, and well-constructed educational resource. It not only supports the development of sustainability competencies in VET learners but also promotes a transformative learning experience through nature-inspired methodologies.

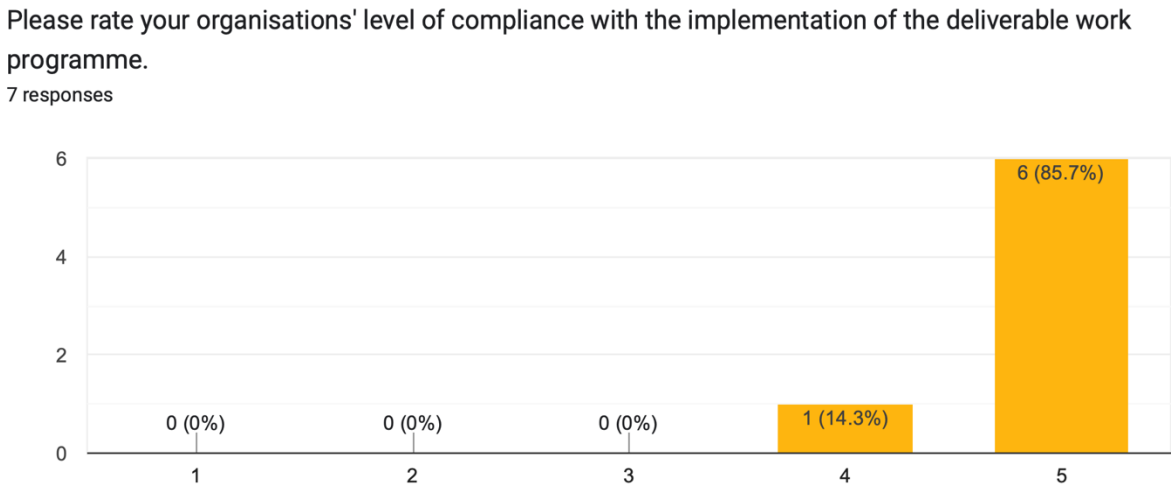
D2.2 Biomimicry platform design evaluation

Internal Evaluation

D2.2 Development Process

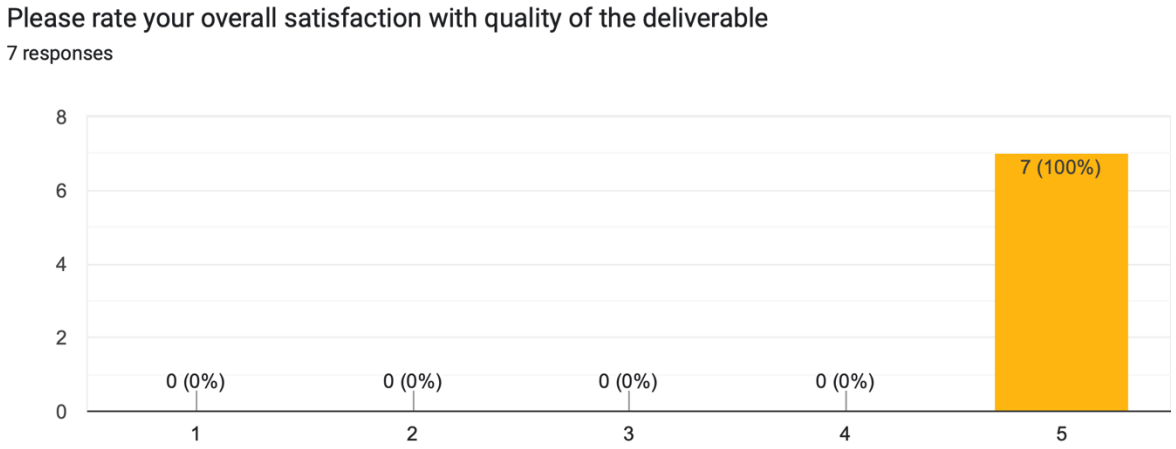
The Let's Mimic Partnership has reported that they found the development process (work programme, guidelines, and template) for the D2.2. development to be clear, smooth and issue-free.

Partners contributed to the deliverables in various capacities. One partner served as the primary author, leading the platform design and software development. Several partners contributed to providing content and translations, reviewing the beta version, and offering detailed feedback to enhance the structure and usability. Others supported the process by conducting alpha testing, assessing platform functionality, and ensuring alignment with the needs of VET users. Collectively, contributions focused on providing quality, user-friendliness, and relevance for vocational education contexts.



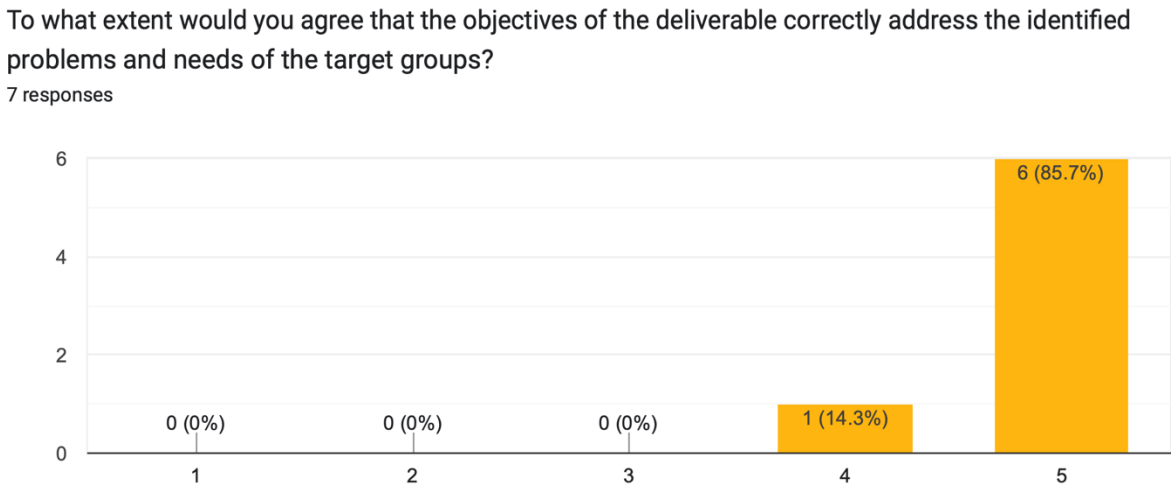
D2.2 Overall Quality

The Let's Mimic Partnership have reported that they are completely satisfied with the quality of D2.2. It is very impactful and of high quality, there is high consistency of the contents included in the deliverable in relation to the project topic, the deliverable is highly user-friendly.



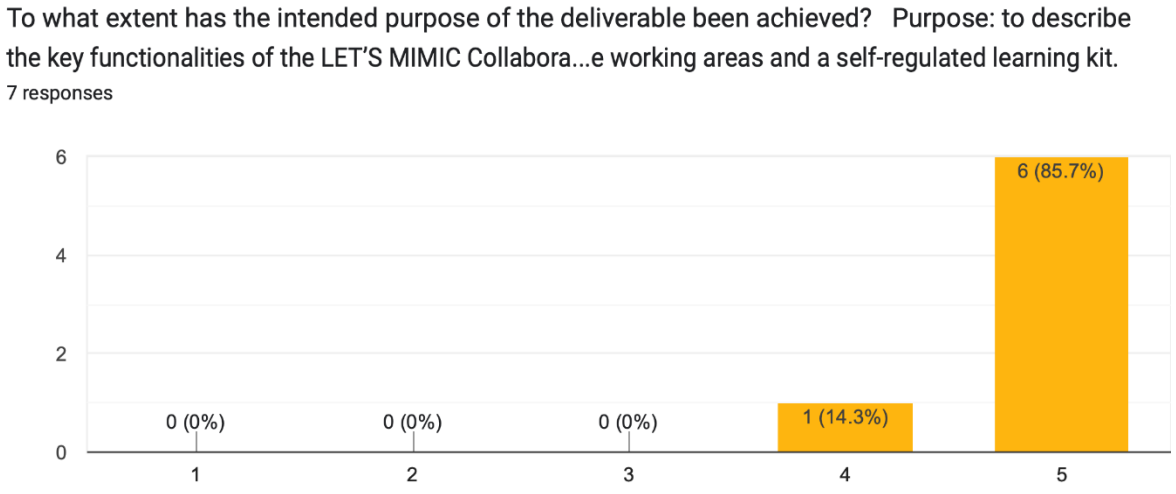
Target Audience and Relevance

The Let's Mimic Partnership agreed that D2.2 is very suitable for the target groups. The deliverable correctly addresses the identified problems and needs of the target groups. Additionally, partners completely agreed that the stated objectives of the project result correctly address the identified problems and needs of the target audience.



Effectiveness

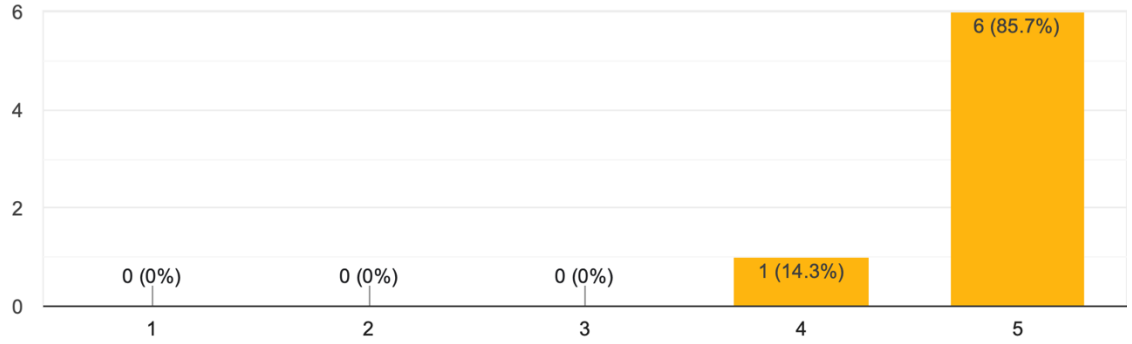
Partners were asked about the effectiveness of the deliverable, i.e. to what extent the intended purpose of the deliverable has been achieved. Partners expressed full satisfaction with the project result, affirming that it effectively fulfils its intended purpose: "*to describe the key functionalities of the Let's Mimic Collaborative Platform, which implements the Biomimicry Design Process and can be experimented with through collaborative working areas and a self-regulated learning kit.*"



Efficiency

Partners expressed complete satisfaction with the deliverable, noting that its content, methodologies, and structure are well-developed and practical. They highlighted its strong potential to be effectively transformed into concrete results, both in terms of educational implementation and real-world impact.

How well do you think the he deliverable (contents, methodology) can be converted into results?
7 responses



Impact

For both target users and target beneficiaries, the deliverable is considered to it will have a high impact:

For Target Users (VET educators, trainers):

- Provides an intuitive, ready-to-use digital tool to integrate biomimicry and sustainability into teaching practices.
- Supports teachers in managing microlearning content, tracking student progress, and guiding collaborative learning activities.
- Increases educators' confidence and willingness to explore biomimicry through innovative and flexible educational resources.
- Encourages the adoption of learner-centred methodologies and enhances digital competence in vocational education settings.
- Lays the groundwork for continued professional development and integration of sustainability education.

For Target Beneficiaries (VET learners):

- Introduces learners to self-regulated learning and nature-inspired problem-solving through gamified and collaborative modules.
- Promotes engagement, curiosity, and autonomy in learning, while building 21st-century skills such as critical thinking, creativity, and teamwork.
- Offers an accessible and motivating platform to explore real-world sustainability challenges.
- Helps students build green and innovation-related skills aligned with future labour market needs.
- Fosters long-term impact by encouraging learners to take ownership of their educational journey and contribute meaningfully to sustainable development.

Overall Platform Impact:

- Establishes a strong foundation for front-end and back-end functionality, ensuring future scalability and adaptability.
- Supports long-term integration of biomimicry-based content and tools into VET systems.
- Enables continuous updates, technological enhancements, and broader dissemination through open-access platforms.
- Builds on the success of similar past projects, with high expectations for sustained usage by educators and learners alike.

Sustainability

All partners agreed that the deliverables´ impact and benefits will be sustained beyond the project lifecycle. On this, partners commented as follows:

- The platform's modular and scalable design is essential for ensuring long-term sustainability.
- The deliverable provides a clear overview of the platform's architecture to support structured development and ongoing use.
- Outcomes will be hosted on internal servers and managed by existing staff, ensuring continuity.
- Project results will be fully integrated into regular learning activities and teaching practices within the organisation.
- Free access to the platform will be maintained to promote widespread and sustained use.
- Regular updates and user support (e.g. error reporting and correction) will help preserve platform relevance and usability.
- Dissemination of project outcomes will continue post-project through networks and institutional channels.
- A user guide will be created to facilitate adoption and ease of use for educators.
- Promotion via educational networks and national education portals will support broader visibility and engagement.
- Feedback mechanisms will help adapt and improve content based on user experience over time.
- Integration into teacher training programmes will further embed the platform into education systems.

Added Value

Partners considered that the deliverable is highly useful and applicable to their organisations and that it will have a substantial impact on their organisation and staff. Partners listed the following benefits that the deliverable will bring to their organisations:

- ATS: The deliverable can serve as a technical and pedagogical guide for adopting the platform as-is and tailoring training programs based on its structure.
- INFODEF: The deliverable will have a substantial impact on INFODEF by enhancing its capacity-building efforts and strengthening its role in promoting green skills development. It provides an innovative digital tool that supports the adoption of forward-thinking, sustainability-oriented teaching methodologies. By facilitating collaboration with educational institutions and policy makers, the deliverable fosters international partnerships and contributes to aligning research outcomes with labour market demands.
- YACACIK: Improved employability skills and competences; better prepared graduates for the labour market's current needs
- Virtual Campus: An innovative tool
- ECC: It enhances our digital training offer, supports innovative teaching approaches, and strengthens our role in promoting sustainability education within the VET sector.
- UTH: Innovative digital learning services for green skills, support of the digital and green transition. Capacity building, green skills development, networking with educational bodies and policy makers, and international collaboration

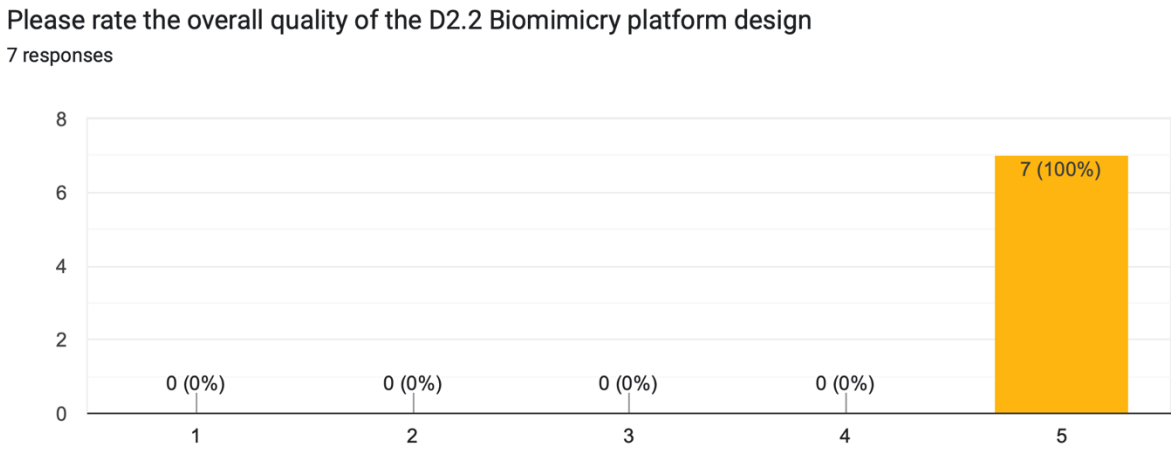
Additional information / comments

Partners were invited to provide any suggestion for the improvement or complementation of the deliverable. No further comments were made.

External Evaluation for D2.2

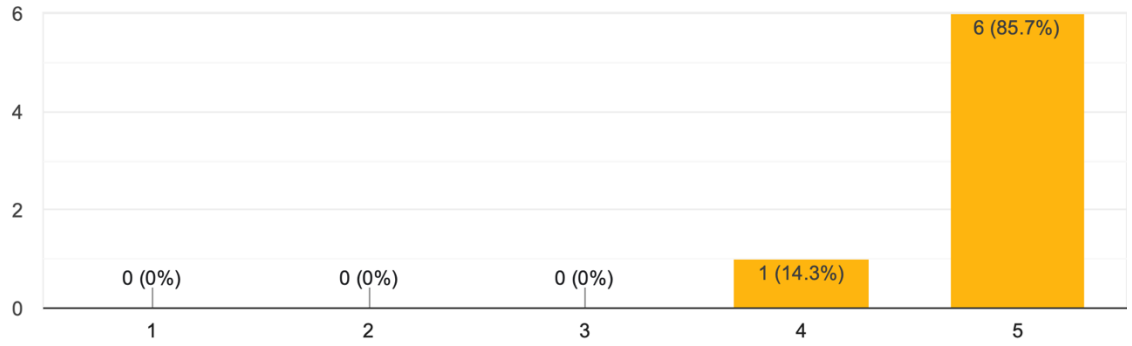
Each country contacted at least an expert on the matter, who carried out the external evaluation of the project according to a semi structured questionnaire. External evaluators from all partner countries participated on the evaluation of D2.2.

Overall quality evaluation of D2.2 Biomimicry platform design



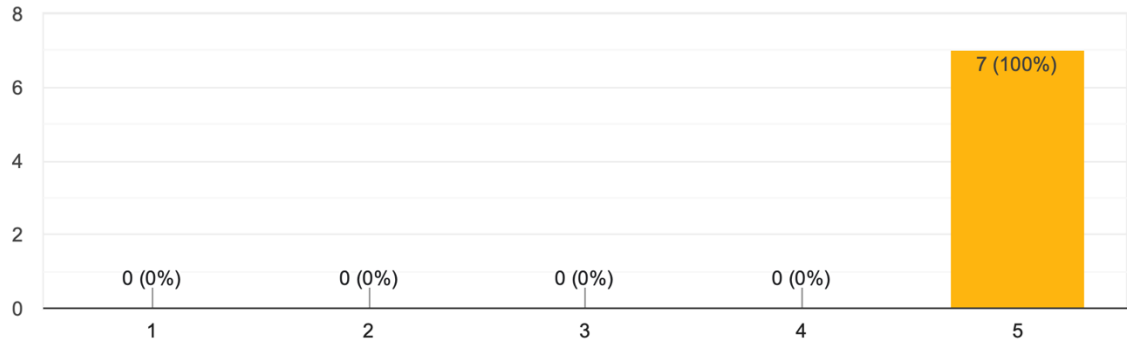
Please rate the overall quality of the contents included in the D2.2 Biomimicry platform design in relation to the project topic?

7 responses



Rate the usability and user-friendliness of the D2.2 Biomimicry platform design

7 responses



External evaluators shared their insights, which have been synthesised as follows:

- Pedagogical Soundness:
  - The platform is well-aligned with educational goals and designed to support critical thinking, collaboration, and learner autonomy.
  - Strong integration of self-regulated learning, microlearning, gamification, and collaborative workspaces.
- Design and Structure:
  - Thoughtfully conceived and structured, with a modular architecture that enhances flexibility and usability.
  - Designed with both mentors and learners in mind, accommodating varied educational needs and contexts.
- User-Focused Functionality:
  - The user interface is intuitive and inclusive, catering to the diverse needs of VET learners and educators.

    - Includes visual walkthroughs and architecture diagrams, which improve transparency and understanding of the system.
- Relevance and Impact:
    - Highly aligned with green transition goals and sustainability education within the VET context.
    - Considered a foundational component for integrating biomimicry and sustainability in VET institutions and curricula.
    - Suitable for a broad audience beyond VET, such as other professionals and educators.

Areas for Improvement:

- Technical Detailing:
    - Evaluation notes a lack of technical artefacts such as user stories or functional requirements, which would enhance clarity for development and implementation.
    - Needs more detailed specifications to guide further development phases.

Overall Assessment:

- The platform is an innovative, comprehensive, and user-oriented educational tool that supports biomimicry learning in VET.
- Despite minor gaps in technical documentation, it is well-structured, future-proof, and plays a key role in advancing sustainability-oriented digital education.

WP2 Overall External Evaluation

External evaluators have reported that they are delighted with the quality of both deliverables of WP2 and that it will have a high impact on both target users and beneficiaries:

For Target Users (VET Educators and Trainers)

- WP2 offers a coherent and innovative methodology for teaching sustainability through biomimicry.
- Specifically, it supports curriculum modernisation, promotes active, interdisciplinary teaching methodologies, and facilitates the integration of sustainability and biomimicry into vocational education.
- Enhances professional development by introducing new digital and nature-inspired resources.
- Encourages a shift from traditional teaching to more facilitative, student-centred roles.
- Empowers teachers to deliver future-oriented education, increasing their confidence and pedagogical innovation.
- Supports systems thinking and real-world challenge integration in lesson planning.

For Target Beneficiaries (VET Learners)

- WP2 deliverables set the basis for providing a dynamic and engaging learning experience based on biomimicry and project-based learning.
- Improve:
  - Engagement and motivation.
  - Real-world problem-solving abilities.
  - Critical thinking, creativity, and collaboration.
- Encourage autonomy, adaptability, and environmental consciousness.
- Foster the development of green skills and ecological literacy, essential for sustainability-focused careers.
- Prepare learners to be self-regulated, future-ready professionals, capable of responding to evolving labour market demands.
- Enhance practical competencies directly applicable to green jobs across all sectors.
- Encourage exploration of nature-inspired solutions, aligning with green transition goals.

Additional information/comments

External evaluators were invited to provide any suggestions for the improvement or complementation of WP2:

- The WP2 deliverables are highly relevant, well-structured, and provide a solid foundation for integrating biomimicry into VET through engaging, hands-on, and scalable methods.
- The pedagogical framework and learning matrix are sound and thoughtfully designed.
- Recommendations for improvement include:
  - Adding sector-specific use cases or templates (e.g., for construction, agriculture, IT) to enhance applicability.
  - Including video tutorials or onboarding materials to support platform usability.
  - Incorporating practical examples, diagrams, or infographics to make the biomimicry concept more accessible, particularly for educators unfamiliar with the topic.

KPI Compliance for WP2

Quantitative KPI

KPI	Number	Yes/No (*)	Evidence
VET learners at secondary level	180	Y (201)	

VET teachers/trainers	120	Y (126)	
Desk Researches	6	Y	
Reports on the conclusions from desk research and questionnaires	6	Y	
Comparative analysis of reports	1	Y	

(*) Specified in brackets if the number is different from the planned.

Qualitative KPI

KPI	Yes/No	Evidence
Content of the desk research: how sustainability skills are being developed, what instruments are being used, and what associated national strategies exist.	Y	D2.1 Internal and External Evaluation Surveys
Extent of the questionnaires for VET learners: aimed to learn about their knowledge on the concept of sustainability (design), the importance of 21st century skills, etc.	Y	D2.1 Internal and External Evaluation Surveys
Extent of the questionnaires for VET teachers teaching STEM subjects: the place given to sustainability skills in current curricula; methodologies they apply to train sustainability skills; tools they use; sources they have; how (often) they apply PBL methodology, etc.	Y	D2.1 Internal and External Evaluation Surveys

Conclusions and Recommendations on WP2

Conclusions

- **High Quality and Relevance**: Both deliverables (D2.1 and D2.2) were rated as high-quality outputs by both internal and external evaluators. They are well-aligned with project goals, target needs, and EU priorities on sustainability and green skills in VET.
- **Pedagogical Soundness**: The Learning Outcomes Matrix and the Project-Based Learning (PBL) framework are pedagogically robust, clearly structured, and practical for integration into Vocational Education and Training (VET) curricula. The biomimicry approach is seen as innovative and well-suited to foster sustainability-oriented education.
- **Effective Digital Platform**: The D2.2 Biomimicry Platform design is an intuitive, learner-centred digital solution incorporating gamification, collaborative tools, microlearning, and self-regulated learning. Its modular, scalable design ensures adaptability and long-term use.
- **Strong Impact on Target Groups**:
    - For VET Educators and Trainers: WP2 provides new teaching tools and methodologies that enhance curriculum modernisation, support digital competence, and promote active learning.
    - For VET Learners: The deliverables offer engaging, real-world learning experiences that foster green skills, critical thinking, and creativity.
- **Sustainability Ensured**: The project outcomes are expected to be maintained beyond the project lifecycle through integration into regular VET activities, hosting on internal servers, open access, ongoing dissemination, and inclusion in teacher training programmes.
- **Added Institutional Value**: Partner organisations highlighted how the deliverables will enrich their existing training offers, support capacity building, and enable better alignment with green transition objectives and labour market needs.

Recommendations

- **Enhance Technical Documentation**: Include user stories, functional requirements, and more detailed technical specifications to improve the platform's clarity and facilitate its broader implementation.
- **Include Sector-Specific Use Cases**: Provide adaptable templates or examples for specific sectors such as construction, agriculture, and IT to enhance the applicability of the Learning Outcomes Matrix and PBL framework.
- **Increase Accessibility Through Visual Aids**: Develop infographics, diagrams, and short onboarding videos to help educators less familiar with biomimicry understand and adopt the methodology more easily.
- **Expand Dissemination Strategies**: Leverage national education portals, institutional networks, and social media to promote deliverables and ensure visibility among educators and learners.
- **Encourage Continuous Feedback Loops**: Establish mechanisms for user feedback and platform updates to ensure the platform evolves in response to the needs of VET institutions and remains technologically relevant.