PATTERN.
Empowering Open and Responsible Research and Innovation

D2.1

First version of PATTERN new curriculum

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OUR CONSORTIUM

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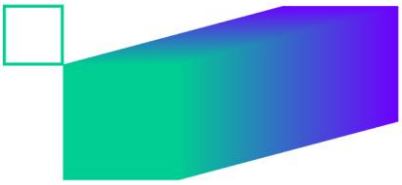

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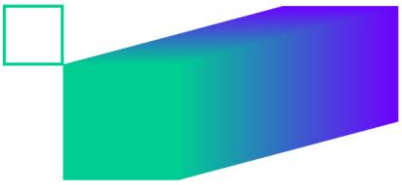
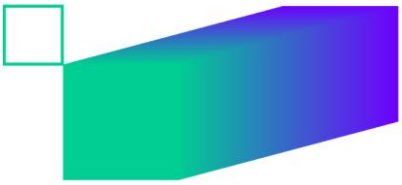


Table of Abbreviations and Acronyms

Abbreviation	Meaning
CS	Citizen Science
D	Deliverable
D&E	Dissemination & Exploitation
ECR	Early-Career Researcher
GEP	Gender Equality Plan
GNI	Gender, non-discrimination and inclusion
IPR	Intellectual Property Rights
K	Knowledge
KH	Know-how
KPI	Key Performance Indicator
MEL	Monitoring, evaluation and learning
OA	Open Access
OER	Open Educational Resources
OS	Open Science
P	Practical skills
PBL	Project-Based Learning
RDM	Research Data Management
RI	Research Integrity
RRI	Responsible Research and Innovation
SC	Science Communication
T	Task
TtT	Train-the-Trainer
WP	Work Package



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ESF	Fondation Europeenne de la Science
ZSI	Zentrum Fur Soziale Innovation GMBH
SISSA	Scuola Internazionale Superiore di Studi Avanzati di Trieste
LPI	Learning Planet Institute
OpenAIRE	OpenAIRE AMKE
UHelsinki	Helsingin Yliopisto
TCD	Trinity College Dublin
IZTECH	Izmir Institute of Technology
UDebrecen	Debreceni Egyetem
HEAL-Link	Panepistimio Patron
EARMA	European Association of Research Managers and Administrators
UniSR	Università Vita-Salute San Raffaele
DANS	Koninklijke Nederlandse Akademie Van Wetenschappen - KNAW
RBI	Ruđer Bošković Institute
SciLink	Stichting SciLink
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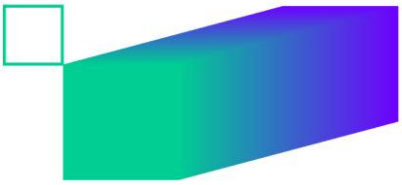

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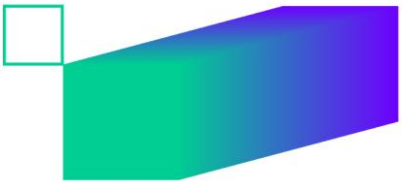


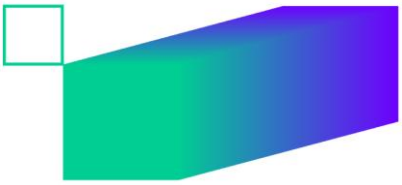
1 Executive Summary

The current document, titled "First Version of the PATTERN Curriculum" presents a major milestone in the project's effort to build a structured, competency-based training framework for Open and Responsible Research and Innovation (Open RRI). Expanding upon the initial syllabi created during Learning Cycle 1, the document connects pilot findings, WP1 gap analysis results, and evolving training needs into a coherent curriculum strategy for Cycle 2. It introduces the methodology used—emphasizing modular content, active and project-based learning, and the Train-the-Trainer model—and details how intra-thematic learning paths were developed across PATTERN's eight thematic areas: Open Access, FAIR Research Data Management, Citizen Science, Gender, Diversity and Inclusion, Science Communication, Dissemination and Exploitation, Research Integrity, and Mental Health Leadership. Special focus is placed on aligning curriculum updates with identified gaps and promoting learner-centered, inclusive approaches based on adult learning, action research and Open Studio good practices.

Supporting this structure, the deliverable also includes detailed annexes that operationalize the transition from syllabus to full curriculum. Annex 2 maps modules to clear learning outcomes, competency types (Knowledge, Know-How, Practice), delivery methods, tools, and evaluation strategies, ensuring a systematic development of learning paths. Furthermore, the deliverable highlights multilingual adaptation, sustainability, and cross-thematic integration as key priorities for scaling the curriculum across European research institutions, reinforcing PATTERN's commitment to advancing Open Science and Open RRI capacity building.

Lastly the annexes of this deliverable contain detailed supporting material that complements the main report, documenting key processes, outcomes, and assets developed during the project phase. Each annex provides specific insights, as outlined below:

- **Annex 1 – WP1 Gap Analysis Summary**
  This annex presents the key findings from the WP1 gap analysis, identifying thematic gaps and challenges per area. It maps these gaps to specific learning objectives and curriculum modules and describes the measures taken to address them, laying the groundwork for the curriculum design.
- **Annex 2 – From Syllabus to Curriculum Through Learning Paths**
  This annex outlines the evolution from the initial syllabus to a structured curriculum for Cycle 2. It provides a thematic breakdown of modules, learning outcomes, knowledge elements (Knowledge, Know-How, Practice), delivery methods, tools, materials, assessment strategies, and highlights both existing references and newly developed resources.
- **Annex 3 – Summary of Monday Meetings, Working Groups, and Train-the-Trainer Support Sessions**
  This annex summarizes the weekly coordination activities carried out from December 2024 to April 2025. It highlights how regular Monday meetings, working groups, and support sessions contributed to the alignment of pilot organizations, thematic leaders, and work packages, while enabling agile responses to feedback from training implementations.

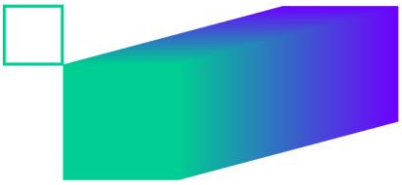


- **Annex 4 – Brand & Template Assets**
  This annex compiles the branding and visual assets created to support the project's learning materials. It includes examples of module templates, visual structures, and icons, along with screenshots from the Open Access self-paced course hosted on Open Plato and the PATTERN Projects e-learning platform.

1.1 Background: PATTERN project

The PATTERN project is a 42-month coordination and support action designed to promote Open and Responsible Research and Innovation. By developing and piloting training activities for researchers at all stages of their careers, PATTERN aims to enhance transferable skills, empower higher education institutions, and improve the excellence of science conducted within the European Research Area. The ultimate goal is to better equip researchers to tackle societal challenges and strengthen the interaction between science and society.

The **PATTERN project** is structured around two main **learning cycles**, each lasting **12 months**. The first learning cycle starts after the initial development of the training modules around **month 16** and concludes at **month 28**, after which the materials are evaluated and refined. A second learning cycle follows immediately, running from **month 28 to month 40**, incorporating improvements based on feedback from the first cycle. These learning cycles are part of a broader 42-month project timeline, beginning in January 2023 and ending in June 2026, and are closely connected to piloting, evaluation, and policy recommendation activities.



2 Background research and needs analysis

2.1 Alignment with WP1 findings

In the current chapter, the alignment between the thematic areas developed under PATTERN and the findings from Work Package 1 (WP1) is outlined. Each thematic area is analyzed in terms of the gaps and challenges initially identified in WP1, alongside the specific measures taken to address them through Learning Cycle 1 curriculum development. Key interventions include the creation of new modules to tackle complex issues like varied Open Access publishing models, advanced FAIR RDM practices, Citizen Science engagement strategies, and Research Integrity challenges. Where gaps remained recommendations for further development in Cycle 2 are part of this curriculum design process.

The chapter details the improvements made in adapting content for different skill levels (beginner, intermediate, advanced), interconnected thematic pillars and transferable skills from each thematic area to another, expanding thematic depth, and enhancing the flexibility and accreditation of resources through the available e-learning platforms of PATTERN digital ecosystem. Special attention is given to areas where partial coverage was achieved, highlighting the modular and project-based learning (PBL) approaches that allow for future adaptation and discipline-specific customization. Overall, this alignment exercise ensures that PATTERN's evolving curriculum responds strategically to the initial WP1 findings while setting priorities for strengthening content diversity, impact, and learner engagement in Cycle 2.

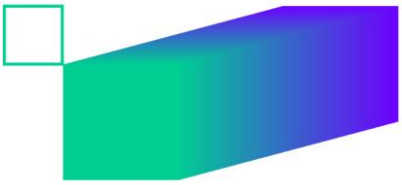
2.2 A curriculum for Open Responsible Research and Innovation (RRI)

"Responsible Research and Innovation (RRI) is a framework promoted by the European Union under Horizon 2020 to ensure that scientific research and technological development are ethically acceptable, sustainable, and aligned with societal needs and expectations. It encompasses six key pillars: public engagement, open access, gender equality, ethics, science education, and governance, aiming to foster inclusive and anticipatory innovation processes."[1]

When it comes to Open Science, it integrates all elements mentioned above as part of RRI as well as open scholarship, open culture, open-source software, open data, open access, open reproducible research as well as inclusion and diversity, and citizen science.

Open RRI is a concept used in the PATTERN Open Research project to link Open Science with RRI, including environmental and societal challenges as well as the participation of various stakeholders beyond academia and research: scientific or policy officers, programme specialists, third sector organizations, civil society or activists as well as the private sector, among other.

[1] European Commission. (2014). Responsible Research and Innovation: Europe's ability to respond to societal challenges. Directorate-General for Research and Innovation. Retrieved from https://op.europa.eu/en/publication-detail/-/publication/8ce0e2ea-2436-4e40-bb18-e40de0e9f1ec



For this reason, for this first learning cycle, PATTERN training has been built on the basis of the gaps and opportunity in training modules identified in the D1.1[2]. Report on the Analys of existing training activities and quality assessment, as well as on the initial training analysis and outline developed by the thematic leaders of identified transversal skills: Open Access, Research Integrity, Mental Health Leadership, FAIR data management, Science Communication, Dissemination and Exploitation of results, Citizen Science, Gender, non-discrimination and inclusion in research.

These transferable skills are fully aligned both with the principles of Open Science while responding to specific societal challenges and different roles of researchers within and beyond academia.

2.2.1 Competency Based Learning Curriculum and Open Educational Resources

"A curriculum reflects society itself" (UNESCO IBE, 2015)

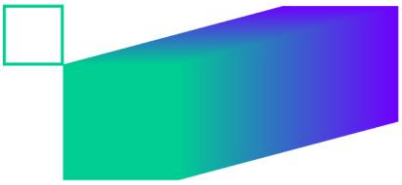
A competency-based learning curriculum emphasizes not only the acquisition of knowledge but also the application of skills, attitudes, and values in real world contexts. According to the UNESCO International Bureau of Education (2015)[3] "a curriculum reflects society itself," as it shapes and responds to the evolving expectations of citizens and labor markets. This perspective is particularly relevant to Open Science and Responsible Research and Innovation (RRI), which require a curriculum that moves beyond traditional content delivery toward fostering problem solving, ethical reasoning, collaboration, and digital literacy.

Competency-based learning ensures that learners do not merely learn on a knowledge-based basis but demonstrate their ability to apply them across interdisciplinary and dynamic contexts and research settings a foundational need identified in the PATTERN D1.1 gap analysis, which revealed limited integration of advanced skills and real world scenarios in existing training resources.

The approach to developing a curriculum involves a strategic process grounded in contextual analysis, educational philosophy, and empirical evidence. It commences with identifying national objectives and societal requirements, followed by defining broad learning outcomes often articulated as generic learning statements or competencies.

The effective implementation of a competency-based curriculum in Open RRI must be complemented using Open Educational Resources (OER), which enhance accessibility, reuse, and contextual adaptation. As outlined by the European Commission (2020)[4] in the Digital Education Action Plan, OER promotes inclusive education by providing equitable access to high quality learning materials, adaptable to diverse learner profiles and educational systems. This is particularly relevant in e-learning environments, where flexible formats, interactivity, and modularity is key. In

[2] doi.org/10.5281/zenodo.10640916
[3] UNESCO International Bureau of Education (2015). Reaching out to all learners: *A resource pack for supporting inclusive curriculum implementation.*
[4] European Commission (2020). *Digital Education Action Plan 2021–2027: Resetting education and training for the digital age*.



the PATTERN resource mapping exercise (D1.1), many available resources were static and lacked depth for advanced learners. PATTERN not only seeks to embed existing OER, but it also seeks to develop its own OER to be part of the existing curricula supported by visual templates, mobile access, and self-paced design. This approach will ensure educators active and broader participation and facilitate continuous learning across regions, disciplines, and skill levels.

Moreover, the integration of competencies and OER aligns with the OECD's Learning Compass 2030[5], which defines competencies as a combination of knowledge, skills, attitudes, and values that learners need to thrive in and shape a changing world. The Learning Compass advocates for agency, co-agency, and transformative learning principles that resonate deeply with Open Science and RRI practices. In this context, the PATTERN curriculum must empower learners to navigate complex ethical, societal, and technological challenges through collaborative inquiry and critical reflection. OER provides not only the tools but also the openness required to co-create and adapt content in response to local needs, learner feedback, and technological change. Therefore, competency-based curricula and OER must be viewed as mutually reinforcing pillars of a future oriented, inclusive, and responsible research training ecosystem.

[5] OECD (2019). *OECD Learning Compass 2030: A Series of Concept Notes*.

3 Methodology

A curriculum encompasses more than a mere compilation of subjects and material designated for educational institutions. It represents the comprehensive educational experience intended for learners, guiding what, how, and why students engage in their studies within a formal education system. It functions not only as a structured content framework but also as a collection of values, competencies, and learning outcomes that align with national objectives and societal needs.

According to the UNESCO Curriculum Framework for Mauritius[6], a curriculum should be inclusive, learner-centered, and intellectually, physically, emotionally, socially, and ethically comprehensive.

A well-structured curriculum offers a roadmap for both educators and learners, facilitating coherent progression through educational stages and ensuring equitable access to quality learning opportunities.

The UNESCO document emphasizes that curriculum design should integrate knowledge, skills, values, and attitudes to equip learners for life and work in a changing world. This process includes cycles of planning, implementation, evaluation, and revision, making it both dynamic and responsive.

It also incorporates the perspectives of diverse stakeholders like teachers, learners, policymakers, and other research communities to ensure relevance and effectiveness. Essential elements in the curriculum development process include the formulation of learning outcomes, contextualization of content, selection of pedagogical approaches, and design of assessment frameworks.

3.1 PATTERN curriculum transversal approaches: interconnecting Open Science and RRI frameworks

The following diagram (Figure 1) addresses the interconnection between RRI and Open Science (OS) within a dynamic system that evolves through iterative learning and feedback as part of PATTERN curriculum. Its main goal is to respond to societal needs and the diverse educational profiles of target learner groups, while being firmly rooted in inclusivity, collaboration, and competency-based development.

From this central framework, the following four key aspect reinforce the overall curriculum methodology explained above:

a. Learners & Learning Outcomes – Learning Cycle One: The initial learning cycle established a foundation for understanding learner needs through real world testing. Pilot organizations implemented initial modules and collected feedback on accessibility, relevance, and learner engagement. Customization during this phase

[6] UNESCO. (2016). *Curriculum Framework for Pre-primary, Primary and Secondary Education in Mauritius*. United Nations Educational, Scientific and Cultural Organization. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000247890

included language translation, format adaptation, and learner profiling to ensure inclusivity. These insights informed both content and delivery strategies.

b. A monitoring, evaluation and learning (MEL) system based on Action Research & Project-Based Learning (PBL): Both learning cycles are anchored in a methodology that prioritizes experimentation, reflection, and iterative improvement. Action research shapes curriculum design through continuous cycles of planning, implementation, evaluation, and redesign. Concurrently, project-based learning empowers learners to co-create knowledge while addressing real world challenges, enhancing their agency, collaboration skills, and critical thinking.

c. Learning Cycle Two: Drawing on insights from Learning Cycle One, the Learning Cycle 2 emphasizes refinement. Thematic leaders are launching updated or in some cases, new modules with enhanced interactivity, greater domain specificity, and guided self-learning components. This phase introduces customized learning paths, enabling learners to navigate content according to their skill levels, interests, or contextual applications.

d. Continuous Improvement & Feedback Loop: A vital feedback loop connects each phase of the curriculum development, incorporating internal audits, peer reviews, and mechanisms for learner feedback. This Feedback relates to T3.3 and evaluation strategy as for the results to feed the processes of refinement and re designing for Learning Cycle 2.

As described above the following diagrams illustrate the transition and evolution of the PATTERN training programme from Learning Cycle 1 to Learning Cycle 2. It visualizes how initial thematic modules, pilot trainings, and curriculum elements developed in Learning Cycle 1 are assessed, refined, and expanded based on feedback, learning material development and strategic priorities. The diagram highlights key pathways for improving content depth, enhancing learner engagement through problem-based and modular approaches, and integrating accreditation and adaptation mechanisms (Figure 1).

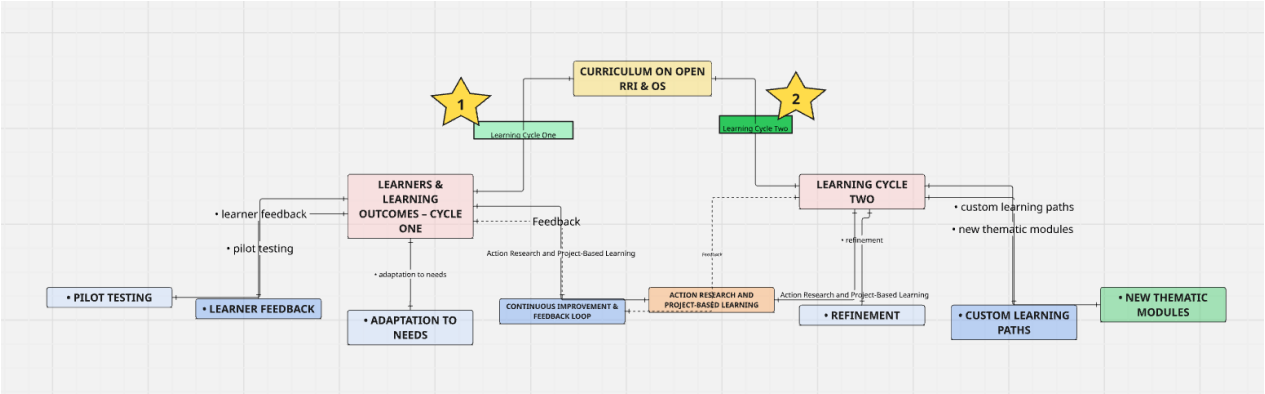
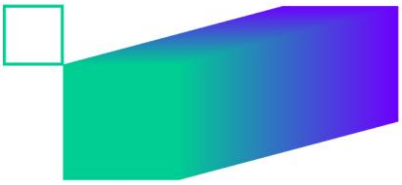


Figure 1 - Curriculum Methodology Framework from Learning Cycle 1 to Cycle 2: A Cyclical and Learner-Centered Approach



Additionally Figure 2 represents the way of how learning paths in Learning Cycle 2 aim to build a structured yet flexible foundation for a concrete and comprehensive training curriculum. Learning paths will be developed by combining multiple self-paced courses, study cases, flipped classroom activities, and project-based exercises, all supported by OpenPlato and the Projects Platform within the PATTERN digital ecosystem. Each learning path will target different audience needs (ex. users, trainers, and institutions) and will integrate various topics, learning levels (ex. beginner, intermediate, advanced), and transferable skills.

The process involves mapping combinations of thematic modules into coherent learning sequences, ensuring that each path addresses identified gaps (from WP1 findings) and promotes both specialization and interdisciplinary competence. The blended model (synchronous webinars, workshops, face-to-face sessions) will complement asynchronous learning, offering participants opportunities for live engagement, mentoring, and skill validation. This multi leveled assembly of resources will ultimately lead to the formation of structured, certified training plans, ensuring the curriculum is practice-driven, adaptable across disciplines, and aligned with the strategic goals of Cycle 2 and beyond.

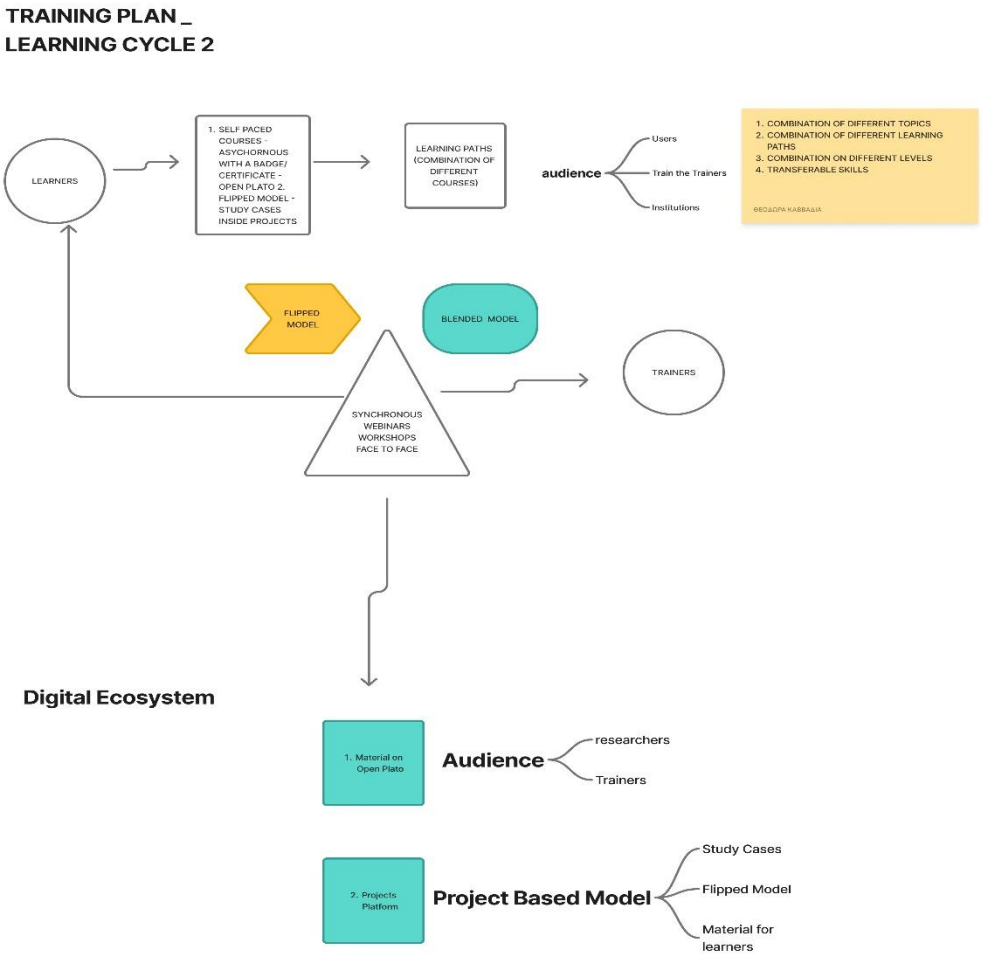
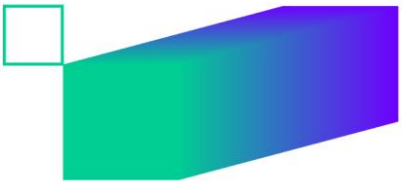


Figure 2 - Building Learning Paths for a Structured and Sustainable Curriculum in Cycle 2

3.2 Addressing Learning Paths challenges: Project and Problem-Based Modular approach

In alignment with the UNESCO curriculum development methodology, this curriculum integrates knowledge, skills, attitudes, and values to address societal needs while supporting individual development.

As indicated in the findings from Deliverable D1.1, existing training resources often serve as introductory, domain-independent materials in English, lacking depth, interactivity, and advanced content. In response, we are establishing a well-designed curriculum for the eight thematic areas that features modular, competency-based frameworks, enabling progression from beginner to advanced levels while aligning with national and international goals for Open Science and RRI literacy.



The emphasis on digital learning requires that PATTERN's instructional design accommodates flexible learning paths, formative assessment, and visual templates. This approach supports asynchronous participation and incorporates various engagement strategies, such as guided self-learning, online mentoring, and collaborative forums. By fostering community-based knowledge sharing and critical reflection, we are enhancing the core values of Open Science and RRI.

PBL actively engages learners in structured, inquiry driven tasks that reflect the complete research process. Through collaborative identification of questions, data collection and interpretation, conclusion drawing, and presentation of findings, learners develop essential research skills, including critical thinking and ethical decision making (Thomas, 2000[7]). The iterative nature of PBL encourages continuous evaluation and improvement of their work, resonating with how researchers refine their methodologies based on feedback. This reflective aspect aligns with the mid-cycle phases of research, specifically methodology, analysis, and interpretation.

Results from the pilot training and PBL projects are frequently shared within collaborative settings such as seminars, digital platforms, and community meetings, fostering transparency and broader engagement. These methodologies also uphold open science principles by promoting reproducibility, peer exchange, and the creation of openly accessible educational materials. Therefore, the incorporation of action research and PBL into these training plans not only enhances pedagogical effectiveness but also cultivates a culture of responsible and participatory research that can contribute to inclusive science policy development and innovation.

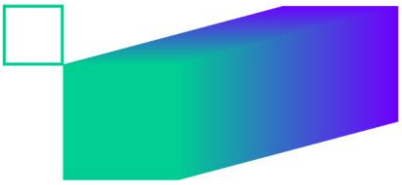
3.2.1 Active learning and learner-based approaches

Throughout Learning Cycle 1, pilot organizations have actively customized the training materials provided by thematic leaders to better serve their audiences' specific needs. For instance, some organizations have translated materials into their native languages, ensuring accessibility and relevance for diverse learner audiences This collaborative effort highlights the importance of tailoring content to different contexts and learner preferences.

PATTERN methodology adopts a multi-phase, evidence-based development process, incorporating principles of project-based and action research learning. A comprehensive analysis of gaps, particularly the need for thematic coherence and representation of advanced, domain-specific materials, was a first step. Working closely with stakeholders, PATTERN consortium co-created learning objectives and is developing thematic modules that utilize problem-based and case-based approaches while integrating feedback from Learning Cycles.

PATTERN strategy also prioritizes inclusive digital pedagogy and adaptive content delivery, responding to the evolving needs of learners in e-learning environments. The D1.1 mapping revealed that main target learners come from diverse backgrounds (including researchers, PhD students, other civil stakeholders) each with unique

[7] Thomas, J. W. (2000). *A Review of Research on Project-Based Learning*. The Autodesk Foundation. Retrieved from https://tecfa.unige.ch/proj/eteach-net/Thomas_researchreview_PBL.pdf



learning preferences, career perspectives and training needs. We continue to implement custom learning paths, modular templates, and interactive media. Additionally, gamification activities are used to facilitate engagement, while elements such as quizzes, multimedia, multilingual resources, and user-friendly formats ensure accessibility and interactivity.

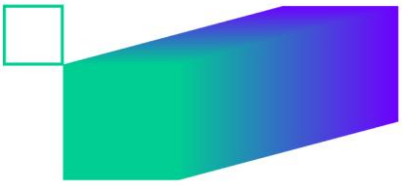
Active learner involvement in selecting preferred learning modes remains imperative for maintaining motivation and aligning pedagogy. PATTERN evolving curriculum strategy for Open RRI and Open Science is thus designed to be flexible and participatory, continuously improving through feedback loops and quality assurance cycles. By integrating the rigorous standards of national curricula with the creativity and adaptability of responsible research, PATTERN aims to create significant, meaningful learning experiences.

3.2.2 The Train-the-Trainers Approach

The Train-the-Trainer (TtT) methodology is a core pillar of the PATTERN project's approach to scalable and sustainable capacity building. TtT sessions are designed to empower thematic leaders to not only develop high quality training content but also to effectively transfer knowledge, tools, and strategies to other piloting organizations within the consortium. These sessions ensure that each thematic area's training materials are disseminated and implemented consistently across institutions, while allowing for localized adaptation. By equipping trainers with both pedagogical strategies and a deep understanding of content, the TtT format strengthens the quality and reach of the project's educational initiatives.

During the first learning cycle, TtT sessions were successfully conducted by several thematic leaders: DANS (FAIR Research Data Management), SISSA (Science Communication), UMinho University (Open Access), and EARMA (Research Integrity). Each session focused on presenting and discussing the structure and delivery of thematic modules, collecting feedback from pilot institutions, and supporting their efforts in adapting and deploying the materials locally. While the content and delivery formats varied, ranging from live modular sessions to hybrid and asynchronous strategies, the shared goal was to provide practical guidance and foster collaboration across the network. Other thematic leaders, such as APRE (Dissemination and Exploitation), SciLink (Mental Health Leadership), and UniSR (Gender, Non-discrimination and Inclusion), have not yet conducted formal TtT sessions, due to the contingencies and specificities of the training activities conducted so far (i.e. sessions delivered directly by thematic leaders to pilot organizations' audiences). However, several have committed to providing replication friendly materials or guidance in the upcoming learning cycle, ensuring continued expansion of the project's training capacity.

Following thematic leaders APRE (Dissemination and Exploitation), SciLink (Mental Health Leadership), and UniSR (Gender, Non-discrimination and Inclusion) will conduct their TtT sessions during the 2nd Learning Cycle. These partners are currently preparing training materials or detailed guidance to support piloting organizations in replicating and implementing their modules. Their upcoming contributions are expected to further enrich the collaborative learning environment fostered by



PATTERN and to ensure that all thematic areas are fully integrated into the project's wider training ecosystem.

An analysis of the Weekly Working Group sessions is available in

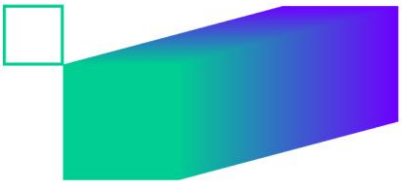
***Annex 3* – Summary of Monday Meetings, Working Groups and Train-the-Trainer Support Sessions**

3.3 PATTERN Curriculum: domain-specific approaches

The PATTERN Curriculum has been strategically developed to address the gaps identified in WP1 by combining domain-specific expertise, inclusive pedagogical models, and practical, co-created improvements informed by the project's Open Studios. Through a combination of self-paced learning, flipped classroom models, and PBL anchored in real-world case studies, the curriculum moves beyond generic training to deliver content tailored to different disciplines, audiences, and levels of expertise. Specific gaps, such as the need for advanced-level training, better support for engineering, social sciences, and the integration of citizen science methodologies, were tackled by designing modular, adaptable learning paths mapped to career stages and institutional needs. Special attention was given to transversal topics like Open Access, FAIR RDM, Citizen Science, Research Integrity, and Gender and Inclusion, ensuring both thematic depth and flexibility across learning levels.

The PATTERN Open Studios events (Open Studio Online session 1 for training improvement, Open Studio Physical Braga for implementation & sustainability planning, Open Studio Online session 2 for policy development) played a critical role in shaping these approaches, translating pilot experiences and early user feedback and evaluation outcomes into actionable insights for Learning Cycle 2 curriculum development. The collaborative sessions engaged consortium members, researchers, trainers, policymakers, and external stakeholders in evaluating the training's adaptability, fostering inter-thematic synergies, and setting priorities for scalability, certification, and policy integration. As a result, the emerging PATTERN curriculum not only fills the identified content and structural gaps but also supports long-term sustainability through its alignment with institutional policies and European Open RRI strategies. It represents a shift from generic resource collection to a dynamic, domain-sensitive educational framework, designed to support future innovation and resilience in Open Science and Responsible Research training ecosystems.

To further support the scope and structure of this chapter, Annex 2 provides a detailed mapping of the progression from syllabus to curriculum through structured learning paths for each thematic area. It outlines how the initial Cycle 1 implementation evolved into a more concrete and operational curriculum for Cycle 2. For each thematic area, Annex 2 organizes the modules by title, specifies the targeted types of competencies (Knowledge, Know-How, Practice), defines the associated learning outcomes, and identifies appropriate delivery methods, tools, materials, and evaluation strategies. By distinguishing between existing resources and new materials required, Annex 2 ensures that the curriculum development process remains targeted, transparent, and aligned with the gaps and strategic priorities identified during Cycle 1. This structured approach will guide the formation of



coherent, domain-sensitive, and sustainable learning paths for the upcoming training cycles.

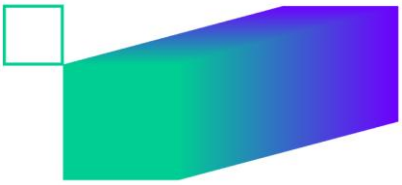
3.4 Action research and continuous evaluation: Weekly Working Groups Across the Research Life Cycle

To effectively implement the curriculum methodology for Open RRI and OS, the consortium has established a structured, collaborative framework that emphasizes continuous exchange and collective learning. Central to this framework are the weekly WP3 meetings, which facilitate a systematic and rigorous approach to curriculum development. These sessions serve as a dynamic platform for sharing experiences, refining pedagogical strategies, and ensuring coherence across various pilot implementations. During each meeting, pilot organizations provide comprehensive updates on their training activities and material development, specifically focusing on: adaptations made to address the gaps identified in Deliverable D1.1, proper preparation and delivery of foreseen activities, material improvement and adjustments based on learners' and pilot organizations' feedback and needs.

The discussions are data driven and incorporate quantitative and qualitative feedback, allowing pilot organizations to evaluate the effectiveness of their pedagogical approaches, audience interaction strategies, and participant engagement metrics. This reflective practice is systematically aligned with the project's main objectives and pathways towards impact, also including Key Performance Indicators (KPIs), and informs the evolving dissemination strategy and content roadmap, particularly concerning underrepresented or emergent topics requiring further exploration. To enhance and guide this collaborative effort, WP2 and WP3 leaders convene additional coordination meetings every two weeks. These meetings are critical in maintaining methodological consistency and ensuring synergy between curriculum development and training delivery. They also facilitate the identification of areas where new or revised training materials are warranted.

By analyzing patterns across pilot initiatives, leaders can consolidate feedback into actionable improvements and assist thematic leaders in addressing identified content or delivery gaps. This organizational structure directly embodies the pedagogical principles of action research and PBL, which form the backbone of the curriculum's development and implementation strategy.

Action research, as articulated by McNiff & Whitehead (2006), is an inquiry process that enables practitioners to critically investigate and evaluate their practice, emphasizing iterative cycles of planning, acting, observing, and reflecting. The WP3 weekly meetings operationalize this methodology by transforming practitioner experiences into validated evidence that informs curriculum evolution. This deliverable documentation reflects these ongoing developments and adjustments, showcasing a commitment to a dynamic, evidence-based curriculum that aligns with contemporary educational standards and societal expectations.



An analysis of the Weekly Working Group sessions is available in Annex 3.

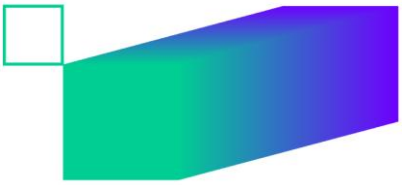
4 PATTERN Curriculum V1: Intra-thematic paths

The PATTERN's Curriculum first version introduces intra-thematic Paths and presents a first integrated set of training modules developed under the PATTERN consortium, structured around key thematic areas such as Open Access, FAIR Data Management, Citizen Science, Research Integrity, and Gender, Non-Discrimination, and Inclusion. Each intra-thematic path groups together related teaching units and courses, ensuring a coherent progression from knowledge acquisition to practical application. Courses are designed with clear learning levels (beginner to intermediate), specific duration, delivery mode (synchronous or asynchronous), and include cross-links to other transferable skills and disciplines. All modules align with the WP1 Gaps and Opportunities analysis, ensuring that identified needs are directly addressed through targeted learning outcomes, practice-based activities, peer-to-peer assessments, and use of tools like Open Plato, Miro, and videoconferencing platforms. This version builds a coherent, flexible learning journey for researchers at different stages, from early career to advanced, emphasizing interdisciplinary, open, and responsible research practices.

During Learning Cycle 1, pilot training sessions functioned as practical laboratories to test in a controlled environment, validate and refine thematic syllabus. Each training activity was delivered by partners across diverse institutional and linguistic contexts, offering an opportunity to evaluate the relevance, accessibility, and pedagogical effectiveness of the designed materials. These pilots followed a PBL and andragogical framework, where learners engage through real-life tasks and practical scenarios, collaborative exploration, and reflective practices. The feedback from these sessions, captured through the evaluation of learning outcomes and refinement surveys under T3.3[8], and weekly consortium meetings, allowed WP2 and WP3 leaders to gather quantitative and qualitative data on participant engagement, knowledge acquisition, and skill application, thereby aligning with the action research cycle of plan-act-observe-reflect (Kemmis et al., 2014[9]).

The insights gained through pilot implementation directly informed the curriculum consolidation strategy moving into Learning Cycle 2. The iterative process ensured that the curriculum was not merely a summation of a thematic syllabus, but a coherent, learner-centered system designed to build progressive competencies aligned with European and global frameworks for Open Science literacy (European Commission, 2023[10]). Furthermore, the methodological bridge between the PATTERN syllabus and curriculum lies in a scaffolded modular design, where each thematic area contributes discrete yet interconnected learning outcomes. These outcomes are mapped to transversal skills, national standards, and the UNESCO four pillars of learning: learning to know, to do, to live together, and to become (UNESCO, 1996),

[8] See D3.3 Evaluation of outcomes and refinement strategy, doi.org/10.5281/zenodo.15209490
[9] Kemmis, S., McTaggart, R., & Nixon, R. (2014). *The Action Research Planner: Doing Critical Participatory Action Research*. Springer.
[10] European Commission. (2023). *Competence Framework for Open Science*. Directorate-General for Research and Innovation.



thereby situating the PATTERN curriculum within a holistic and globally recognized educational vision.

A detailed overview is provided to Annex 1 & Annex 2

In the following chapter, an overview of the eight thematic areas developed within the PATTERN project is provided, following a structured approach. Each thematic area is presented with a general overview, the types of resources produced, examples of adaptation and localization, and the methods of integration into PATTERN's e-learning platforms (i.e. PATTERN Digital Ecosystem). The linkage of modules to broader learning paths and curriculum design is also outlined. The chapter further explains the transition from syllabus development during Cycle 1 to full curriculum implementation through learning paths, highlighting how this process bridges into the Cycle 2 strategy. Finally, it addresses the strategic alignment of future curriculum planning with the gaps and priorities identified in D1.1.

4.1 Open Access Syllabus Development in Learning Cycle 1

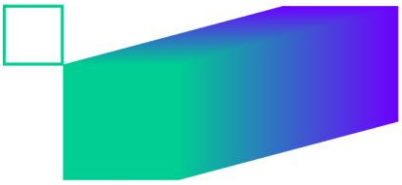
4.1.1 Overview of the Thematic Area

The Open Access (OA) thematic area aims to equip researchers at all career stages with the knowledge and practical tools necessary to navigate the evolving landscape of scholarly publishing. The syllabus addresses both foundational concepts and advanced issues in OA, aligning with funder mandates, copyright retention strategies, and quality control in publishing. It emphasizes practical competencies through a blend of self-paced courses/session, on-line and 2 courses where the PBL approach will be included, supporting learners in designing actionable OA strategies within their research workflows.

4.1.2 Types of Resources

During Learning Cycle 1, a diverse set of resources was developed to ensure flexibility and accessibility. These include:

- Self-paced courses: e.g., "Open Access publishing: overcoming the challenges and busting the myths" (2h) and "Mastering Open Peer Review" (1h), supported by a collection of Word documents, presentations, PDFs, and visuals.
    - The 1st one was already translated into several languages to be piloted at regional level (Portuguese, Greek, Turkish, and Croatian)
- Webinar-based training: e.g., "Empowering Researchers: retaining copyright and maximising your impact" (1h30) offering multiple slide decks and supplemental documents and activities
- Face-to-face courses such as:
    - "Trusted publishers for my research: decoding good practices & overcoming predatory publishers" (2h face-to-face)



- "Meeting Funder Requirements" and "Trusted Publishers for my research," (2h face-to-face) which integrate group activities, evaluation forms, and Mentimeter engagement tools. And also 2 courses where the project-based learning approach will be included.
- Integrating Open Access Publishing into my research: putting into practice
- Designing my research project Open Access strategy: meeting funder requirements

4.1.3 Adaptation and Localization Examples

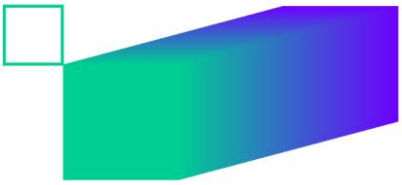
One of the key successes in the Open Access theme has been the proactive localization of materials to increase accessibility across partner institutions. The first self-paced course was fully translated into Croatian, Turkish, Greek, and Portuguese by October 18th, 2024. These localized versions ensure that national and linguistic contexts are reflected in the training delivery, enhancing relevance and comprehension for diverse learner groups. Additionally, content tailored for in-person sessions was adjusted to suit regional norms and participant expectations, such as group exercises and guided discussions.

Train the Trainer - Led by UMinho

UMinho has taken a proactive leadership role in the Open Access thematic area by organizing 15 ongoing monthly coordination meetings. These sessions brought together key piloting organizations and Affiliates such us RBI, OpenAIRE, Heal-Link, Udebrecen, IZTECH, and UHelsinki, to ensure alignment and momentum in developing and implementing training materials. Noteworthy highlights include regular updates on the course development status, translation progress, and onboarding to the OpenPlato LMS platform. Participants collaboratively define actionable steps, resolve outstanding issues, and plan upcoming tasks, fostering a structured and transparent workflow. Future sessions will continue to monitor the onboarding progress and maintain synchronization across partners to ensure timely delivery of high-quality Open Access training.

4.1.4 Integration into PATTERN's Digital Ecosystem

The self-paced modules and translated materials have been successfully integrated into the OpenPlato platform, ensuring wide accessibility through an LMS-compatible structure. Specific courses such as "Open Access publishing: overcoming the challenges and busting the myths" and "Trusted Publishers for my research" are already available to learners. Other components, such as the PBL approaches and webinars, are currently in development and will be added in the second cycle. Therefore, integration with the Projects platform is underway, ensuring a smooth transition between project visibility, learning goals, and institutional engagement.



4.1.5 From Syllabus to Curriculum Through Learning Paths: Bridging Cycle 1 Implementation with Cycle 2 Strategy

The transition from a thematic syllabus to a fully developed curriculum in Open Access within the PATTERN project is anchored in the design and execution of structured learning paths. These paths reflect not only pedagogical progression from foundational to advanced levels, but also the lived experience and evidence collected during pilot implementations in Learning Cycle 1.

Learning Cycle 1 established the groundwork, with diverse training modules & training pilot events tailored to different learner profiles. Modules such as *"Open Access Publishing: Overcoming the Challenges"* and *"Trusted Publishers for My Research"* were successfully delivered through self-paced formats (e.g., via OpenPlato) and face-to-face pilots. Notable examples include virtual sessions by OpenAIRE on 28 and 30 October 2024, a targeted series by IZTECH in early November 2024 on predatory publishing, and UDebrecen's in-person training on 24 February 2025. These pilots served as formative touchpoints to test content usability, gauge interactivity levels, and collect audience-specific feedback.

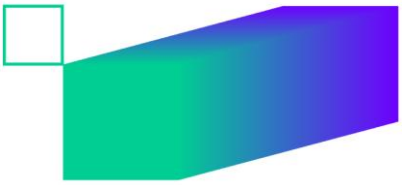
For Early-Career Researchers (ECRs) and PhD students, entry-level modules such as Modules 1 (*Open Access basics*), 2 (*Copyright and Retaining Rights*), and 4 (*Identifying Trusted Publishers*) form the core of the onboarding learning path. These were delivered with success through OpenPlato and face-to-face formats, particularly at IZTECH and UDebrecen.

For intermediate audiences, including postdocs and project managers, Modules 3 (*Meeting Funder Requirements*) and 5 (*Mastering Open Peer Review*) focus on strengthening applied skills in compliance, transparency, and good research practices. These modules were tested during hybrid events like the Open Science Winter School by RBI in February 2025 and the blended OA Summer School scheduled for June 2025. These sessions revealed the need for clearer guidance on interactivity tools (e.g., Mentimeter, breakout groups) and deeper integration with institutional workflows.

Advanced learners, senior researchers and institutional trainers, will engage with Modules 6 and 7, which leverage PBL to support the embedding of Open Access strategies into project design and policy alignment. While these modules are still under development, their pedagogical design is informed by pilot outcomes indicating a strong demand for real-case applications, collaborative formats, and policy-tailored content.

Looking ahead to Learning Cycle 2, the strategy involves consolidating these modules into stackable, competency-based learning paths, enabling learners to:

- Enter at the appropriate level based on background and need;
- Earn microcredentials or badges per module;
- Progress through full certification paths via OpenPlato or the Projects platform.



4.1.6 Strategic Alignment of Future Curriculum Planning with Gaps Identified in D1.1

The findings from Deliverable D1.1 highlight a fragmented and entry-level-heavy landscape of OA training resources. Out of 34 mapped resources, a significant majority (28) were intended for beginners, with no resources designed specifically for advanced learners, and only a minor presence of intermediate-level content. Furthermore, the absence of blended learning formats, limited domain specificity (mostly generic), and a lack of formal qualifications (only 7 badges, 1 ECTS-contributing resource) pose critical gaps in depth, scalability, and audience targeting.

In response, the curriculum development strategy for Learning Cycle 2 builds a learning path model that not only addresses these deficits but transforms them into strengths. The future learning path table introduced in the annex guides the modular and competency-based progression of learners from introductory to advanced levels, ensuring that gaps such as *funder requirements*, *predatory publishing*, and *Plan S* are addressed with dedicated new modules. For example, Modules 3, 6, and 7 (e.g., designing research strategies, integrating OA in projects) directly target underrepresented themes and introduce advanced and strategic content.

Moreover, the structured curriculum will ensure that each module includes learning outcomes, assessment components, and qualification opportunities, standardizing quality and offering micro-credentials or certification pathways through platforms like OpenPlato and Projects. In addition, attention will be given to audience differentiation, as D1.1 pointed out that most resources vaguely targeted “all audiences.”. The future learning paths now specify clear personas: PhD students, postdocs, project managers, trainers, and senior researchers. This segmentation supports the design of tailored modules that use blended learning, case studies, and project-based activities for deeper engagement and professional relevance.

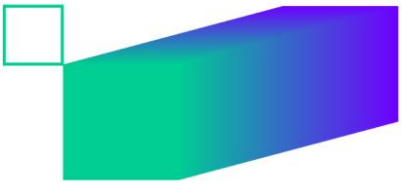
Through this alignment, the curriculum plan not only closes the identified gaps but also establishes a scalable, inclusive, and structured approach to advancing Open Access literacy in research ecosystems across Europe.

More details are provided to Annex 1 & Annex 3.

4.1 FAIR Research Data Management Syllabus Development in Learning Cycle 1

4.1.1 Overview of the Thematic Area

The FAIR Research Data Management (RDM) thematic area is central to enabling responsible, transparent, and reusable research practices. This theme covers a progression of knowledge from introductory concepts around the FAIR principles (Findable, Accessible, Interoperable, and Reusable) to advanced application and integration of FAIR practices in daily research workflows. During Learning Cycle 1, this thematic area was prioritized for building foundational data stewardship capacity across disciplines and career stages, with special attention to aligning training content with the needs of early-career researchers, PhD candidates, and institutional support staff. A structured five-module syllabus was implemented to gradually



introduce and reinforce concepts, moving from awareness (sessions 1 to 3 for beginner level) to implementation (sessions 4 & 5 intermediate level), supported by project-based assignments and multiple “Train the Trainer” sessions.

4.1.2 Types of Resources

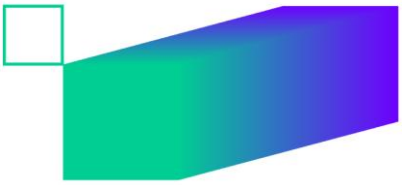
A diverse range of resources was developed to support different delivery formats and learner preferences. These include:

- Face-to-face materials: Five structured sessions, each 2.5 hours long, supported by slide decks (5–12 PPTs per session), case exercises, and a dedicated game for practical engagement.
- Self-paced content: A demo of Session 1 was adapted into a fully self-paced course (developed by DANS/KNAW using Articulate), enabling flexible learning and onboarding through OpenPlato.
- Pre-course materials: Overview documents designed to guide learners before the live training began.
- Train-the-Trainer recordings: All five core sessions were recorded and compiled into a reusable format for trainer capacity-building.
- PBL: Eight study cases (online training material) outlining practical assignments and case studies, designed to be used during Winter/Summer Schools or adapted for institutional courses. These documents were transformed into digital learning material inside the Projects Platform as project-based learning choices allowing for discipline specific learning experience. Same approach has been adopted by Heal Link partners that they have provided study cases in separate projects in Greek.
- QuickStart courses and multilingual resources have been produced by pilot partners: Supplementary materials like the "Quickstart on RDM" were used to introduce the theme in shorter sessions and prepare learners for deeper dives.

4.1.3 Adaptation and Localization Examples

Significant efforts were made during Cycle 1 to localize and translate materials:

- The FAIR RDM course was translated into multiple languages (ex. Turkish, Greek, Portuguese, Croatian, Hungarian and piloted both online and face-to-face by partners including IZTECH (3 sessions), HEAL-Link (5 sessions), U Debrecen (3 sessions), U Minho (3 sessions), RBI (3 sessions).
- In Greece, HEAL-Link ran multiple virtual training sessions delivering “Τι είναι η FAIR RDM και γιατί πρέπει να την κάνουμε;” (What is FAIR RDM and why should we do it?), ensuring accessibility for Greek-speaking participants.
- At IZTECH, a Turkish-language face-to-face training, titled "ARAŞTIRMA VERİLERİNİN YÖNETİMİ VE FAIR VERİ PRENSİPLERİ EĞİTİMİ", demonstrated context-specific delivery that included domain-sensitive examples.
- Additional adaptations were conducted in Portugal and Hungary, where the RDM Winter Schools run by UMinho and integrated PhD courses by



UDebrecen incorporated FAIR RDM modules into their institutional curriculum.

Train the Trainer – Led by DANS

DANS, hosted two TtT sessions on October 8 and November 5, 2024, focusing on FAIR RDM. These sessions convened a diverse group of participants, including the copilot partners for FAIR RDM thematic area (IZTECH, RBI, HEAL-Link, LPI) and other partners to explore modular training materials designed for both live and self-paced delivery at beginner and intermediate levels. Participants appreciated enhancements like annotated slides and the potential use of interactive tools (e.g., Particify, Menti) to improve engagement. Discussions emphasized the importance of evaluation strategies, translation accessibility, and deeper training on licensing and data ownership. The sessions also highlighted the utility of the Projects Platform for collaborative content sharing. Feedback gathered through the PATTERN digital ecosystem and in-session tools is guiding future improvements. Planned follow-up actions include further resource developments such as recording material and the exploration of FAIR RDM self-paced courses as well as additional bi-lateral sessions to exchange experiences and refine the training collectively.

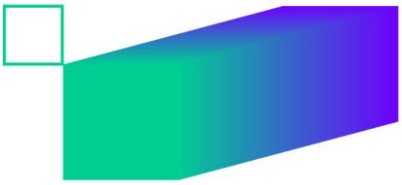
4.1.4 Integration into PATTERN's Digital Ecosystem

All core modules and materials from the FAIR RDM syllabus have been fully uploaded and integrated into the Projects platform (a. FAIR Training for learners & b. FAIR Train the Trainers). This includes structured course pathways, downloadable materials, and recordings for asynchronous access. Furthermore, Open Plato e learning platform hosts the Train the Trainer guide (both digital e learning material & editable slides) and the eight case-based project assignments for use during study programmes and institutional bootcamps are provided via Projects Platforms. Learners and trainers alike are supported by navigation structures that clarify whether content is targeted at ECRs, institutional trainers, or support staff. A distinct demo self-paced course on Session 1, developed using Articulate, serves as a prototype for future expansions of FAIR RDM into modular learning pathways.

4.1.5 From Syllabus to Curriculum Through Learning Paths: Bridging Cycle 1 Implementation with Cycle 2 Strategy

The transition from individual thematic syllabi to a cohesive curriculum relies on well-designed learning paths that build upon the materials, pilots, and feedback generated during Learning Cycle 1. For the FAIR RDM area, Cycle 1 provided a comprehensive and structured set of face-to-face sessions, train-the-trainer recordings, PBL assignments, and self-paced resources. These materials were strategically tested across multiple institutions and contexts, including virtual and on-site formats, ensuring broad applicability and foundational validation.

By piloting these sessions with diverse audiences, ranging from PhD students and ECRs to trainers and research support staff, Cycle 1 enabled a fine-tuned alignment between knowledge (K), skills in know-how (KH), and practice (P). This alignment is



critical in creating learning paths that can scale and adapt. For instance, sessions such as “What is FAIR RDM and Why Should We Do It?” or “Planning for FAIR: Introduction to RDM and DMPs” (including the 1rst exercises of the PBL mini projects) are now positioned as onboarding modules suitable for early-stage learners. In contrast, more advanced sessions like “A Deeper Dive into Putting FAIR RDM into Practice” and the finishing exercises of the PBL mini projects are earmarked for intermediate and advanced learners, including trainers and data professionals.

Learning Cycle 2 will build upon this tiered design by formalizing modular learning tracks that allow learners to progress through structured paths, culminating in micro-credentials, badges, or certification via OpenPlato or Projects. These learning paths are being mapped with clear competency-based milestones, including practical engagement, reflective learning, and domain-specific application. For example, sessions and assignments will be grouped and restructured under headers like “Planning for FAIR,” “Implementing FAIR in Practice,” and “Teaching FAIR RDM,” with entry points depending on the learner profile.

The strategy for Learning Cycle 2 further emphasizes integration, adaptability, and inclusivity, especially by adding more advanced audiences (ex. Data Stewards, project professionals). Restructuring of existing materials (session 4 & 5) will facilitate underrepresented areas identified in Cycle 1 (e.g., advanced training content, asynchronous options, FAIR tools hands-on labs). At the same time, curriculum developers (WP2 & 3 Leaders) will use the existing mappings of knowledge and skills (as defined in D1.1) to ensure the curriculum evolves responsively. These mappings are integrated into shared templates and linked with audit criteria and competency rubrics to evaluate learning progress, engagement levels, and material effectiveness.

In summary, bridging from syllabus to curriculum is not only about sequencing content, but about constructing dynamic, inclusive, and research-aligned learning environments. Through structured learning paths, FAIR RDM and other thematic areas are evolving into a modular, multi-entry curriculum framework, supporting diverse learner profiles and ensuring long-term sustainability and growth of Open RRI literacy across Europe.

4.1.6 Strategic Alignment of Future Curriculum Planning with Gaps Identified in D1.1

The curriculum development for FAIR and Research Data Management in PATTERN has been purposefully informed by the gap analysis and opportunities identified in Deliverable D1.1. These gaps, ranging from the lack of domain-specific training to the need for stronger adult learning scaffolding, provided a foundational reference point for structuring the Cycle 1 learning modules and planning forward into Cycle 2.

On the positive side, Cycle 1 effectively addressed introductory and foundational FAIR RDM training needs. Sessions 1 and 2 offered clear onboarding into FAIR concepts and data management planning. These were successfully piloted, translated, and uploaded on OpenPlato, forming a solid entry point for learning paths. Similarly, practical FAIR implementation was covered comprehensively in Sessions 3 to 5, and

these modules were tested through study cases and PBL activities in the Projects platform.

One of the most pressing needs identified was for discipline-specific training on FAIRification practices, particularly around vocabularies, metadata standards, and file formats. While Cycle 1 offered in-depth technical sessions, such as Sessions 4 and 5 on implementing FAIR in practice, these were developed generically. The current status is partially addressed, with foundational depth achieved with contextualization for distinct disciplines specific needs are only addressed in the PBL use cases that focus on these research domains (e.g., life sciences, humanities, or engineering). Cycle 2 can fine-tune and prioritize the co-development of discipline-tailored variants of these sessions in collaboration with domain experts.

Another critical theme was fostering a culture of data reusability. Although FAIR principles promote reusability by design, real-world adoption depends on researchers' understanding of the value and process of data reuse. Sessions 1 to 5 embedded this narrative and emphasized mindset shifts, yet these examples were still broad. Moving into Cycle 2, case studies and hands-on exercises will focus on discipline-specific reuse scenarios, addressing this partially filled gap.

Issues around data sensitivity, specifically regarding GDPR, intellectual property rights (IPR), and national or commercial data restrictions, remain unaddressed. Some of these legal and ethical issues can be especially relevant for medical, social, or industrial research domains. No dedicated session in Cycle 1 covered these aspects. As such, specific references addressing sensitive data handling and legal compliance will be proposed for Cycle 2, referring to the services at local universities/research institutions provided by their legal advisors or data protection officers.

Similarly, citizen-focused data training, crucial for enabling FAIR principles in Citizen Science, was absent in Cycle 1. This omission limits the ability to link FAIR training with participatory, open science practices. In Cycle 2, cross-thematic references will be developed to link FAIR RDM with Citizen Science initiatives, ensuring relevance for both data producers and public collaborators.

Finally, the Train the Trainer programme fulfilled the requirement for adult learning scalability. The five-session series supported institutional capacity building and is now ready for further refinement based on facilitator feedback and evaluation analytics. For Cycle 2, its structure will be adjusted to support micro-credentialing, and it will be accompanied by modular trainer toolkits and guides for contextual adaptation.

By aligning these curriculum enhancements directly with D1.1 findings, PATTERN ensures its methodology remains agile, evidence-based, and targeted toward learner diversity and sectoral relevance. With the modular approach PATTERN introduces a learning system for which trainers and learners can take materials to suit their own individual needs.

More details are provided to Annex 1 & Annex 3.

4.1 Citizen Science Syllabus Development in Learning Cycle 1

4.1.1 Overview of the Thematic Area

The Citizen Science thematic area in Learning Cycle 1 focused on the intersection of participatory research, public engagement, and interdisciplinary co-creation. It focused on introducing early-career researchers, educators, and community stakeholders to methodologies that involve citizens directly in research projects in a variety of ways, including through co-creation, data collection, knowledge production, and evaluation. Furthermore, there was a specific focus on how to recruit and retain participants in projects. These two areas (Introducing citizen science, and Participant recruitment and management) were identified as gaps in current training materials. Grounded in Open Science and RRI principles, this thematic area placed a strong emphasis on equity, societal relevance, and mutual learning between academics and citizens.

The goal was to foster awareness, practical competencies, and strategic insights for designing, facilitating, and evaluating Citizen Science initiatives. The scope ranged from fundamental concepts to highly contextualized case studies across multiple disciplines and countries, demonstrating how citizen engagement can support scientific discovery, policy input, and social transformation.

4.1.2 Types of Resources

A variety of training formats and learning resources were developed and piloted:

- Virtual training modules
  - “Introducing Citizen Science: Fundamental principles and interactive cases”
  - “Participant Recruitment and Community Engagement in Citizen Science”
  - These were delivered via live virtual sessions on 6 & 11 February 2025 by institutions including AU, UniSR, UHelsinki, and TCD.
- Face-to-face workshops
  - "Introducing Citizen Science” at AU (15–17 May 2024, 25-26 September 2024, 2-6 December 2024, 5-7 March 2025)
  - Wetland Watchers Workshop (14 October 2024)
- Study cases hosted on the Projects Platform, based on real-world Citizen Science projects:
  - Stall Catchers, FoldIt, Isala, Lingscape, Find foråret, Your Family Connects, Pisuna Program, HARISSA, Hitbox, Rural Placenames, Lakes in Your Spare Time, and more.
- Co-Design Workshop
  - A participatory session dedicated to creating an introductory course on Citizen Science using a project-based learning methodology.

4.1.3 Adaptation and Localization Examples

Citizen Science resources were notably localized in terms of context and audience rather than language. The use of regionally specific case studies (e.g., Find foråret in

Denmark, HARISSA in Africa) allowed trainers to engage learners in discussions grounded in local cultures, data needs, and social issues.

Institutions like UHelsinki and UniSR tailored the training structure to reflect participant backgrounds, such as students in social sciences, health, and education studies. Webinars integrated interactive case discussions to foster empathy and interdisciplinary thinking.

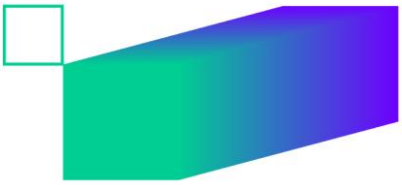
4.1.4 Integration into PATTERN's Digital Ecosystem

- Projects Platform: Hosted 14+ structured case studies used as study material and templates for PBL (Project-Based Learning) activities. Each case encouraged learners to critically assess purpose, methods, participant engagement, ethical concerns, and outcomes.
- OpenPlato (in progress): Train-the-Trainer modules for each participant module, "Introducing Citizen Science" and "Participant Recruitment and Community Engagement" respectively, are currently being developed to enable further re-use of materials in Cycle 2.
- Training Analytics and Evaluation Tools: Participants' interactions were monitored via Projects, with feedback forms assessing engagement and content relevance.

4.1.5 From Syllabus to Curriculum Through Learning Paths: Bridging Cycle 1 Implementation with Cycle 2 Strategy

The Citizen Science thematic area emerged in Learning Cycle 1 as a vibrant and participatory field for engaging multiple learner profiles, ranging from university students, academic researchers and educators to civil society actors. The initial syllabus included key modules such as *"Introducing Citizen Science: Fundamental Principles and Interactive Cases"* and *"Participant Recruitment and Community Engagement"*, delivered virtually by multiple institutions including AU, UniSR, TCD, and UHelsinki. These sessions were further enriched through curated case studies available via the Projects platform, featuring real-world examples like *FoldIt*, *Stall Catchers*, *Pisuna Program*, and *Find foråret*. These cases provided a hands-on perspective into how Citizen Science intersects with health, environment, linguistics, and indigenous knowledge.

The primary achievement of Cycle 1 was establishing the foundational knowledge base (K) and know-how (KH) for engaging learners in Citizen Science. However, Cycle 1 also revealed the need for structured learning paths to move from one-off awareness sessions to sustained curriculum engagement. Feedback indicated that while modules were compelling, learners, especially ECRs and educators, needed clearer pathways to apply knowledge in context and build toward project leadership or policy engagement. Learning Cycle 2 will address this by bundling modules and study cases into progressive learning paths that mirror real-life stages of Citizen Science project development: from concept design and community engagement to ethics, data collection, and impact evaluation.



Strategically, Learning Cycle 2 will integrate the study cases as short-term PBL assignments, enabling learners to explore diverse contexts and challenges while acquiring key competencies in research co-design, ethical frameworks, and communication with non-academic audiences. Modular assessments and reflection activities will be embedded to promote practical skills (P) acquisition and peer-to-peer learning. This learner-centered, project-based methodology will be fully integrated into the OpenPlato and Projects platforms, ensuring reusability, interactivity, and traceable progression toward certification and long-term engagement within Open Science ecosystems.

To effectively allow re-use of the materials developed, a Train-the-Trainer course for each of the two modules will be developed and integrated into the OpenPlato e-learning platform.

4.1.6 Strategic Alignment of Future Curriculum Planning with Gaps Identified in D1.1

The analysis of D1.1 revealed several key gaps in the existing training landscape for Citizen Science (CS), highlighting a pressing need for a more comprehensive, competency-based curriculum. While the first learning cycle successfully introduced foundational and intermediate topics through the two modules, *Introducing Citizen Science: Fundamental Principles and Interactive Cases* and *Participant Recruitment and Community Engagement*, critical areas remain underdeveloped or unaddressed. The strategic curriculum planning for Cycle 2 aims to fill these gaps by aligning new content development with identified needs, stakeholder feedback, and cross-thematic integration.

Furthermore, intersectionality and interdisciplinary connections, such as links between CS and themes like Open Access, Gender, and Inclusion, could be further explored. Learning Cycle 2 will further explore these intersections, helping learners understand CS not just as a method but as a value-based practice embedded in broader frameworks of Open RRI. Additionally, discipline and engagement-specific training will be piloted through *problem-based study cases* derived from real-world projects (e.g., *FoldIt*, *Pisuna Program*, *Stall Catchers*), ensuring learners can specialize according to context. These new offerings will also focus on engaging the public and private sectors, an area neglected so far, by designing tailored exercises and stakeholder collaboration simulations. By integrating these dimensions, the Citizen Science curriculum will evolve into a holistic, future-proof learning journey aligned with both societal needs and the strategic priorities of Horizon Europe and Open Science policies.

More details are provided to Annex 1 & Annex 3.

4.2 Gender, non-discrimination and Inclusion Curriculum

4.2.1 Overview of the Thematic Area

The GNI thematic area within the PATTERN curriculum addresses structural and behavioral inequalities in research and higher education settings. Modules are designed to challenge unconscious bias, promote inclusive workplace culture, and empower participants to understand the gender dimension in data, research design, and funding mechanisms. The curriculum bridges social-cognitive theory, feminist critique, and hands-on activism through interdisciplinary and transdisciplinary pedagogical methods, emphasizing both theoretical grounding and practical application.

Courses are co-led by UniSR, ESF and LPI as thematic leaders, with additional piloting activities by UHelsinki, ensuring both scientific depth and pedagogical innovation. This learning cycle lays the groundwork for competency-based training in inclusive research practices across academia, civil society, and international development sectors.

4.2.2 Types of Resources

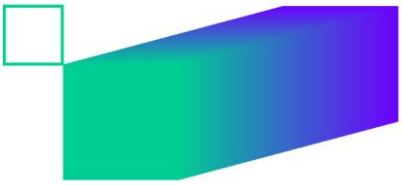
The modules and workshops delivered in Learning Cycle 1 include:

- Seminars and Webinars:
  - Blocking Toxic Speech Online
  - Social-Cognitive Perspective on Gender Bias
  - Risks of Informal Relationships in the Workplace
- PBL Workshops and Hybrid Sessions:
  - Master Suppression Techniques and Counter Strategies
  - Inclusive Research Environment: Power and Privilege in Academia
  - Gender and Data in Research Work (5 interdisciplinary workshops with practical exercises and group projects)
  - Linking CARE & FAIR in Power Systems
  - Interdisciplinar FAIR Data Management
  - Neurodiversity and Open Participation
  - Final Project Presentations
- Formats:
  - Live-hybrid, face-to-face, and online modules
  - Use of PPTs, exercises, breakout group activities, mentored project work, and video production

4.2.3 Adaptation and Localization Examples

The modular design allowed institutions like UniSR and LPI to offer context-specific variations of the same core content, adapting for both online and face-to-face audiences. For example:

- Master Suppression Techniques was implemented in a Paris-based workshop at LPI.



- Gender and Data in Research Work allowed students to choose their own career-oriented pathways, such as Data Activism, AI & Gender Bias, or Governmental Statistics, with co-facilitation from VTT, FORRT, and international NGOs.
- Group projects were localized in both language and topic scope, encouraging students to align their learning with institutional, national, or civil society contexts.

This flexibility supports both formal (e.g., MSc programs) and informal (e.g., pilot workshops) learning environments.

4.2.4 Integration into PATTERN's Digital Ecosystem

All GNI modules are being uploaded progressively into the Projects platform and are partially integrated into OpenPlato for structured access, monitoring, and certification. Certification and accreditation strategies include:

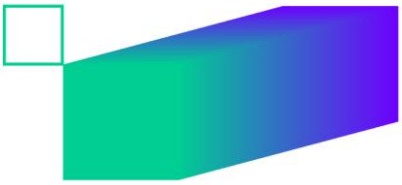
- PATTERN Certificates (project branded) per module or course pathway
- 3 ECTS credits through the Université Paris Cité for MSc AIRE students
- Mentored final projects as evaluation and certification pathways

These modules contribute to the creation of interdisciplinary learning paths for ECRs, students, and administrative stakeholders looking to embed inclusion into their institutional or research practices. Going forward, modules will be linked more explicitly to transferable skills frameworks and FAIR learning pathways through digital monitoring and competency alignment tools.

4.2.5 From Syllabus to Curriculum Through Learning Paths: Bridging Cycle 1 Implementation with Cycle 2 Strategy

The transition from syllabus development in Learning Cycle 1 to a comprehensive curriculum strategy in Cycle 2 is particularly important for the GNI hematic area. In Cycle 1, initial syllabi and pilot trainings in GNI highlighted the need for more targeted, audience-specific materials, especially for intermediate and advanced learners across research domains. Pilot activities helped identify critical content gaps and tested flexible delivery methods to engage diverse learner profiles. Building on these insights, Cycle 2 will transform standalone modules into interconnected learning paths that better support doctoral students, postdoctoral researchers, trainers, and institutional leaders. UniSR's planning timeline beginning content development in May/June 2025, finalizing by September, and launching courses in November shows early alignment with Cycle 2 objectives for the GNI area. Moreover, UniSR's adoption of a blended learning model, combining self-paced OpenPlato courses with live webinars rather than a traditional flipped classroom format, reflects the strategic focus on accessibility, scalability, and structured progression for GNI training in the next phase.

For example, in the Gender, Diversity, and Inclusion track, modules such as "Blocking Toxic Speech Online" and "Social-Cognitive Perspectives on Gender Bias" form the



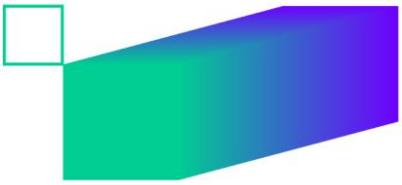
foundation for higher-level content like “Gender in Research Funding” and “Data-Based Activism.” This model ensures that learners can enter at the appropriate level, earn microcredentials, and work toward progressively with digital material creation as for a self-paced course with the possibility of a project based digital badge via Open Plato e-learning platform.

Furthermore, Learning Cycle 2 places greater emphasis on pedagogical diversity and modular scalability within the GNI thematic area, alongside broader Open RRI themes. This is reflected in the integration of self-paced e-learning modules, participatory webinars, PBL formats, interdisciplinary group projects, and hybrid delivery models. These approaches are designed to accommodate diverse learning preferences, career stages, and institutional realities, with a particular focus on expanding multilingual offerings and developing specialized formats for trainers, such as "Train the Trainer" sessions focused on GNI-related competencies. Learning paths are directly informed by the D1.1 gap analysis, ensuring that critical, underrepresented topics such as the intersection of gender with research integrity, citizen science, and science communication are prioritized in new module development. UniSR’s strategy further strengthens this approach by planning to integrate cross-thematic synergies, combining gender, inclusion, research integrity, and communication themes within their curriculum. Additionally, UniSR aims to explore collaborations with external institutions, such as other Milan-based research centers, to broaden impact and enrich the training offer. In this way, PATTERN’s GNI curriculum evolves from a set of standalone syllabi into a cohesive, inclusive, and strategic educational framework, advancing Open Science capacity building across Europe.

4.2.6 Strategic Alignment of Future Curriculum Planning with Gaps Identified in D1.1

The Gender, Diversity, and Inclusion thematic area emerged in Cycle 1 as one of the most interdisciplinary and intersectional domains, with an early focus on unconscious bias, online and offline forms of exclusion, and the gendered dimensions of data. However, strategic analysis reveals a number of thematic and structural gaps that must be addressed to achieve a more comprehensive and impactful curriculum in Cycle 2.

One of the central needs identified in D1.1 is going beyond Gender Equality Plans (GEPs). While Cycle 1 modules, such as “Blocking Toxic Speech Online,” “Power & Privilege in Academia,” and “Risks of Informal Relationships in the Workplace”, engage with issues of exclusion, psychological safety, and systemic power dynamics, they stop short of addressing gender-based violence (GBV) explicitly or offering tools for institutional GEP implementation and monitoring. These remain strategic priorities for Cycle 2, with the focus on developing updated digital modules on GBV prevention, restorative practices, and institutional policy enforcement, aligned with EU frameworks such as the Horizon Europe eligibility criteria for Gender Equality Plans (GEPs). UniSR’s plan to develop and digitalize new courses, including “Gender in Research Funding” and “Gender Medicine,” further supports this expanded focus. By linking local training initiatives to broader PATTERN and EU policy goals, Cycle 2



strengthens the integration of gender, non-discrimination, and inclusion into institutional training strategies.

Another significant gap lies in intersectionality and diversity dimensions beyond gender. Although Cycle 1 includes inclusive modules (e.g., "Unconscious Bias" and the PBL workshop on inclusive environments), the scope has not yet expanded to fully address migrant inclusion, LGBTQ+ realities, neurodiversity, and critical race theory. Future iterations of the curriculum will incorporate co-created sessions and study cases with partners active in these domains to reflect a wider spectrum of lived experiences and equity goals. This expansion will be crucial for addressing the diversity of European research contexts.

Meanwhile, strong foundations were laid in Cycle 1 around self-awareness of bias, reflective action, and the gender-sensitive use of data. Modules such as "Gender and Data in Research Work" (delivered through workshops and group projects), and "Gender-Sensitive Research," have equipped learners with practical tools to integrate gender analysis into data management, research design, and funding applications. These modules will serve as anchor points for Cycle 2, where the aim is to link these micro-credentials into stackable learning paths that culminate in professional development certification. They will also support the launch of a "Train the Trainer" stream to empower institutional actors in policy development and internal curriculum dissemination.

More details are provided to Annex 1 & Annex 3.

4.1 Science Communication Syllabus Development in Learning Cycle 1

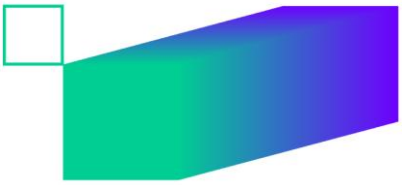
4.1.1 Overview of the Thematic Area

Science Communication (SC) plays a crucial role in bridging the gap between researchers, media, policy makers, and the public. Within the PATTERN Learning Cycle 1, the Science Communication thematic area focused on equipping researchers with the foundational tools and techniques necessary to effectively communicate scientific content to diverse non-expert audiences. The goal was to foster a culture of openness, credibility, and societal impact in research dissemination, closely linked to both OS and RRI principles.

Led by SISSA and developed together with RBI, the syllabus was designed to introduce communication fundamentals, then progress through specialized formats such as media writing, interviews, and social media engagement. Furthermore, a policy-targeted communication module was developed, offering researchers strategies to engage with decision-makers at various levels.

4.1.2 Types of Resources

The syllabus comprises a structured suite of five modular sessions, supported by a comprehensive guide for trainers. Each module was developed using a blend of



presentation slides and supporting Word documents with case-based exercises, checklists, and a full script:

- Module 1: What is Science Communication
- Module 2: Writing for the media
- Module 3: Talking with the media
- Module 4: Social media for scientists
- Module 5: Communicating with policymakers

These were complemented by advanced sessions co-hosted by OpenAIRE and other partners on Dissemination and Exploitation of Research Results (e.g., the two-day training held on November 26 and December 6, 2024), integrating EU funding compliance with communication strategy. All modules have been shared with the partners and pilot institution through sharepoint. A public version is in development for Articulate (digital material production tool) and then for Open Plato.

4.1.3 Adaptation and Localization Examples

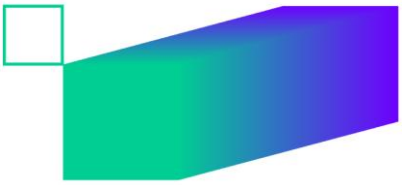
While the SC modules were designed to be domain-independent and flexible, partners began adapting them to face-to-face settings during early 2025. SISSA has implemented a full cycle of in person sessions for a total of 15 hours between early March and mid-April 2025. Pilot partners of the thematic area (ex. RBI) used blended model and learning paths (ex. Flipped classroom model) allowing learners to engage material in multiple ways. These blended training delivery approaches allowed for more practical exercises, small group discussions, and tailored guidance per audience needs.

All materials were adaptable from trainers who were encouraged, for example, to select Eurobarometer data or examples of science and society issues more relevant for their own country. They could use examples of press releases from their own institution, adapt social media exercises to the platforms most used in each country, and the media interview module to simulate national press environments. Similar experiences and policy programmes relevant to each country could also be included in the last module.

Future adaptations will focus on local language translation and incorporation of culturally relevant science narratives when relevant.

Train the trainer – Led by SISSA

On November 15, 2024, SISSA led a dynamic TtT session focused on Science Communication, with participation from partners including HEAL-Link, APRE, AU, and UniSR. The session showcased a series of modules tailored for ECRs, such as PhD students and postdocs, covering key topics like “What is Science Communication,” “Writing for the Media”, “Talking with the media”, “Social media for Scientists,” and “Communication with Policymakers.” While the training was originally designed for live, in-person delivery, participants discussed flexible implementation strategies to overcome challenges such as limited training time and difficulty engaging senior



researchers. Proposed adaptations included condensed module versions, hybrid delivery formats, and asynchronous options utilizing authoring platforms like Articulate. The team emphasized the need for individualized module evaluation and integrating participant feedback for continuous improvement. A potential "6th module" was proposed to summarize the full program. Partners agreed to begin piloting in phases, selecting modules based on institutional needs, and standardizing the feedback process. Follow-up actions include developing hybrid delivery options, drafting the compact summary module, and finalizing evaluation tools for each component.

4.1.4 Integration into PATTERN's Digital Ecosystem

All core materials for the Science Communication syllabus were prepared for upload on Articulate and then on OpenPlato as material for trainers only. A shareable folder containing the Trainer Guidelines, Powerpoint presentations and scripts is available on the project's SharePoint and has been used as a base for all pilot activities.

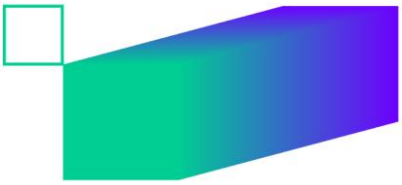
4.1.5 From Syllabus to Curriculum Through Learning Paths: Bridging Cycle 1 Implementation with Cycle 2 Strategy

In Learning Cycle 1, the Science Communication thematic area focused on equipping learners with the foundational and applied skills necessary to navigate the evolving landscape of research dissemination, media engagement, and policy outreach. The modules developed by SISSA and RBI addressed key facets such as media writing, social media use, interviews, and communication with policymakers. The modular structure, with materials for trainers, allowed for flexible integration across different piloting institutions, ensuring scalability and reusability across diverse learning environments. These modules were delivered through in-person sessions or flipped-class approach.

As for the transition into Cycle 2, the curriculum development strategy emphasizes modular stackability, competency mapping, and blended delivery formats. Furthermore, greater integration with the Dissemination and Exploitation thematic modules will allow learners to understand how science communication contributes to the broader impact pathway. By embedding Science Communication within interdisciplinary research strategies and offering recognized credentials via Open Plato, we ensure that the emerging curriculum is flexible, learner-centered, and aligned with both policy agendas and researcher needs.

4.1.6 Strategic Alignment of Future Curriculum Planning with Gaps Identified in D1.1

The curriculum strategy for Science Communication in Cycle 2 will build upon the foundational progress achieved in Cycle 1 while keeping addressing the substantive gaps revealed by the D1.1 analysis.



By directly responding to the identified gaps in D1.1 and integrating insights from Cycle 1 pilots, this strategy ensures that Science Communication training becomes not only more comprehensive but also an even more hig-quality and outstanding course, as proven already by the evaluation from the first Learning Cycle.

More details are provided to Annex 1 & Annex 3.

4.2 Dissemination & Exploitation of Research Results (D&E) Syllabus Development in Learning Cycle 1

4.2.1 Overview of the Thematic Area

The Dissemination and Exploitation (D&E) thematic area addresses the full spectrum of research results' communication, public disclosure, and concrete use, from proposal writing to post-project valorization, as required under Horizon Europe. Its core objectives are to equip researchers with knowledge and skills to communicate results, reach stakeholders, secure long-term impacts, and manage IPR. Cycle 1 activities focused on translating these complex areas into accessible, interactive training sessions supported by practical PBL assignments.

4.2.2 Types of Resources Developed

The training structure is modular and competency-aligned, including:

- Web-based Live Modules and Lessons:
  - **MODULE 1: Horizon Europe Proposal stage**
    - Lesson 1.1: Communication, Dissemination, and Exploitation in Horizon Europe
  - **MODULE 2: Horizon Europe Implementation stage**
    - Lesson 2.1: Managing C&D Activities in HE projects
    - Lesson 2.2: Exploitation of Scientific Results & IPR
    - Lesson 2.3: Creating Actionable Knowledge: how to visually pitch your research results
- Supporting Resources:
  - 4 PowerPoint slide decks
  - 20+ PBL exercise files (PDF, Word) for Horizon Europe clusters, WIDERA, EIC, and Missions
  - Case-based examples and assignments on visualisation and storytelling
- PBL Exercises:
  - The PBL exercises developed under CL1–CL6, WIDERA, EIC, and MISSION themes simulate real-world D&E planning and implementation strategies. These resources are used for hands-on learning, especially for ECRs.

4.2.3 Adaptation and Localization

Modules have been tailored to:

- Different target audiences: ECRs, Horizon Europe beneficiaries, and institutional stakeholders.
- Cluster-specific examples: health, climate, oceans, civil security, digital transition.
- Institutional piloting: materials used by UniSR, IZTECH, SISSA, and others for project planning workshops.

Moreover, the visual pitch module responded to the growing demand for graphical abstracts and multimedia research dissemination, integrating training in storytelling formats suitable for social media and stakeholder engagement.

4.2.4 Integration into PATTERN's Digital Ecosystem

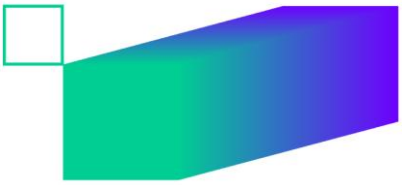
- All training materials have been uploaded as case studies in the Projects platform under each pilot or institutional training stream.
- Materials have been used across multiple pilot sessions in 2024–2025, including the widely attended "Get Funding for your Research, then Disseminate, Communicate and Exploit the Results" webinars co-hosted by APRE, LOBA, SISSA, IZTECH, and UniSR.
- The PBL materials are now structured as templates for Open Research projects, integrated with badges and certification pathways.

4.2.5 From Syllabus to Curriculum Through Learning Paths: Bridging Cycle 1 Implementation with Cycle 2 Strategy

The Dissemination and Exploitation (D&E) training developed in Learning Cycle 1 has laid the foundation for a structured inter-thematic PATTERN curriculum by organizing modular content into competency-aligned learning paths. Modules such as *Communication, Dissemination and Exploitation in Horizon Europe*, *Managing D&E Activities*, and *Exploitation of Results and IPR* were delivered through live online sessions, complemented by PBL proposals targeting real funding contexts (e.g. HE Clusters and Missions, etc.). These activities provided a rich mix of theoretical grounding and hands-on practice, enabling learners to begin developing essential D&E skills.

The transition into Learning Cycle 2 focuses on transforming these standalone modules into progressive learning paths tailored to different learner profiles. Key areas of improvement include:

- **Improved structure and navigation**, making the course more intuitive and user-friendly
- **Shorter modules and reduced overall course duration**, to improve focus and completion rates
- **Enhanced modularity** allowing for personalized learning paths and enabling cross-thematic links with other PATTERN modules



- **Greater versatility** thanks to Train-the-Trainer materials that allow pilot organization to customize how the course is delivered locally
- **Increased sustainability**: content will be less dependent on Horizon Europe rules and practices, but will build on it as a real-life reference case
- **Expanded accessibility**, implemented through:
  - A self-paced version on Open Plato, with multilingual options
  - The publication of static training resources on Zenodo, maximizing open access and reuse
  - Broader relevance of case studies, which will now target not only researchers, but also research managers and research support staff (e.g. university grant office staff involved in EU projects at various levels)
- **More "persona-based" design** with updates based on feedback from Cycle 1 participants and tailored to the practical needs of pilot organisations

4.2.6 Strategic Alignment of Future Curriculum Planning with Gaps Identified in D1.1

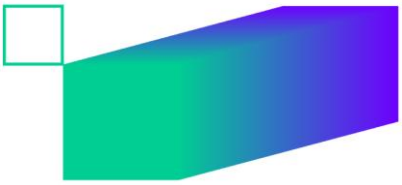
The D&E training course developed and piloted in Learning Cycle 1 successfully addressed several of the key gaps highlighted in Deliverable D1.1.

The lack of training on exploitation, particularly in relation to investments and funding opportunities for researchers in this field, was directly addressed through Lessons 1.1, 2.1, which focused on the exploitation of scientific results and Intellectual Property Rights (IPR), as well as through the PBL exercises. These teaching units provided both theoretical grounding and practical examples, ensuring that learners grasp how to navigate exploitation within Horizon Europe's legal and strategic frameworks.

The limited availability of thematic training materials in the D&E field was also comprehensively addressed. The course included a rich collection of PBL exercises based on 11 different Horizon Europe topics, along with an open template for learners to apply the methods to their own research projects. This approach directly responded to the observation in D1.1 that most existing materials were overly generic.

However, the limited availability of resources for intermediate and advanced learners, as well as for research support staff, was only partially addressed in Cycle 1. Although Lessons 1.1, 2.1, and 2.2 incorporated content aimed at these target groups, particularly through their focus on Horizon Europe, a more tailored approach will be introduced in Learning Cycle 2. Training materials will be differentiated by target group. The slide sets provided to pilot organisations will include optional, hidden slides to allow for flexible adaptation depending on the audience (e.g. researchers, grant office staff, project coordinators).

Similarly, the need for more open and freely reusable training resources on D&E was partially met in Cycle 1, as all course materials are already available on the Projects Platform. However, Cycle 2 will go further in promoting accessibility and reuse: all pilot organisations will be encouraged to make their training modules fully "public" on the platform (resulting in being findable by any user, even those without an active registration), and static resources will also be uploaded to the PATTERN Zenodo community, ensuring open access and wider discoverability.



Lastly, the lack of multilingual D&E resources, as reported in D1.1, likely influenced by the linguistic profile of the partners involved in the mapping, remains a potential limit. Therefore, this gap will be tackled in Cycle 2 through the release of a self-paced version of the course on Open Plato, currently under development. This version will enable easy translation into multiple languages and allow partners and external audiences to adapt content to their national and regional contexts, further expanding the accessibility and inclusiveness of the training offer.

More details are provided to Annex 1 & Annex 3.

4.3 Research Integrity Syllabus Development in Learning Cycle 1

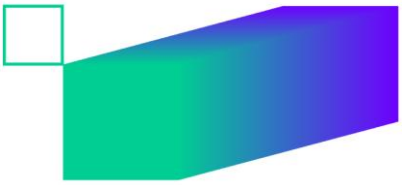
4.3.1 Overview of the Thematic Area

Research Integrity (RI) is a cornerstone of trustworthy, responsible, and impactful scientific research. Within the PATTERN curriculum, this thematic area aligns with promoting transparency, accountability, and ethical behavior across all stages of the research process. The Learning Cycle 1 focus was on equipping researchers of different career levels and institutional trainers and research managers, specifically research integrity officers, with the knowledge and foundational values that underpin Good Scientific Practice within the broader framework of RRI.

4.3.2 Types of Resources

The training developed by EARMA includes:

- 1 core module titled *"Introduction to Research Integrity and the Good Scientific Practice in Responsible Research and Innovation"* covering:
  - A general introduction to research integrity including aspects of the current crisis of trust in science
  - Aspects to foster individual and institutional research integrity
  - Introduction to Research Integrity Promotion Plans (RIPPs)
  - Responsible research environment
  - Policy aspects of fostering responsible research culture
  - This topic is further presented in a separated module on Responsible research environment, building on available documents, templates and toolboxes to foster an establishment, implementation and monitoring of responsible research environment policies at institutional and organisational level.
- 3 modules on "Authorship" introducing and reflecting on fundamental issues as:
  - Principles and guidelines on authorship (ALLEA, ICMJE, Council of Science Editors, ASA Committee on Professional Ethics, etc.)
  - Funders' requirements, including Horizon Europe Programme /CRediT author statement)
  - Author contribution statements and templates
  - Non-author contributions
  - Conflict of interest



    - Responsible publication practices
    - Including a collection of Dilemma games and case studies for i.e. the ROSiE project, and other relevant resources available on the Embassy of Good Science.
- Module 4 on good research practices and guiding documents and the questionable research practices and research misconduct with an interactive movie on research misconduct (ORI).
- And a module on Supervision and mentoring, outlining rules and guiding principles, best practices, templates and tools available.

These resources are foundational and designed to be scalable and adaptable for different levels of expertise, from doctoral students to senior researchers and research managers, research integrity officers and other relevant professionals and stakeholders.

4.3.3 Adaptation and Localization Examples

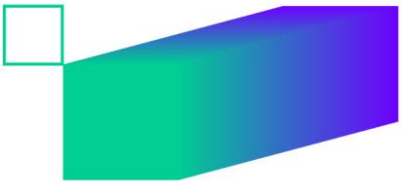
While the core material was centrally produced, partners were encouraged to adapt the examples and frameworks to local legal and institutional contexts. For instance:

- Country-specific codes of conduct and research ethics and integrity guidelines can be integrated into the delivery.
- Discussion sections can be tailored to local questionable research practices, case studies or university protocols.
- The modular format allows for flexibility in timing (e.g., 1-day seminar or integrated in PhD coursework).

Translations and localized case studies are planned for Learning Cycle 2 to enable broader use across different academic environments.

Train the trainer – Led by EARMA

EARMA, on the 18th of February 2025, hosted a focused TtT session on Research Integrity, bringing together participants from AU UniSR, and OpenAIRE. The session emphasized the importance of flexible, adaptable training materials designed to suit various institutional contexts and audiences, from PhD students to senior researchers. Key modules, particularly on Authorship, were identified as effective entry points for piloting due to their wide applicability and relevance. Discussions centered around delivery strategies, with institutions expressing interest in both live and asynchronous formats, including the potential use of Articulate for SCORM-compatible modules. Attendees agreed on the value of tailoring case studies to specific disciplines and ensuring materials remain accessible through centralized platforms like OpenPlato. The session also addressed the role of a self-declaration template, based on the VIRT4EU TtT methodology, and the need for clear guidance on its use. Follow-up actions included integrating the authorship module into an upcoming PHD workshop at AU, structuring self-paced modules by the OpenAIRE team, and coordinating a broader online session to expand outreach. and coordinating a broader online session to expand outreach.



4.3.4 Integration into Digital Ecosystem

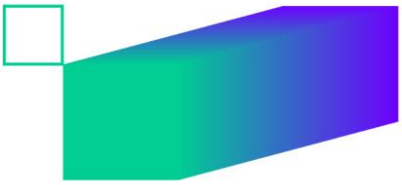
- Training materials must be flexible and adaptable, able to address diverse institutional contexts and audiences, ranging from PhD students to senior researchers.
- The module on Authorship was widely recognized as an effective entry point for pilot sessions due to its universal relevance across disciplines.
- Participants emphasized the need for multiple delivery modes, including live sessions and asynchronous/self-paced options, with interest in using Articulate to produce SCORM-compatible modules.
- There was a strong consensus on tailoring case studies to reflect disciplinary contexts, which enhances practical engagement and ethical reflection.
- The value of hosting the modules on a centralized platform, such as OpenPlato, was reaffirmed for both access and traceability.
- Future approaches will promote the use of a self-declaration template, adapted from the VIRT2EU methodology, to reinforce learner accountability and awareness, underscoring the need for clear implementation guidance.
- Follow-up actions that will be included in Training Material development and Training Event delivery:
    - Integrating the Authorship module into an upcoming PhD workshop
    - Developing structured self-paced modules led by the OpenAIRE team.
    - Planning a broader online session to expand outreach and test the adaptability of the training in different institutional settings.

These developments mark a strategic shift from syllabus design to a curriculum-oriented implementation plan, aligning modular content with the principles of flexibility, reusability, and progressive learning across Cycle 2.

4.3.5 From Syllabus to Curriculum Through Learning Paths: Bridging Cycle 1 Implementation with Cycle 2 Strategy

The transition from individual syllabi to a full curriculum in Cycle 2 builds upon the modular design and pilot-tested resources developed during Cycle 1. In the context of Research Integrity, the implementation of a TtT session and adaptable learning materials laid the foundation for structured learning paths that are both scalable and customizable. Each module, particularly the one on authorship, was identified as a core component for onboarding early-stage researchers, while also being adaptable for more advanced audiences when coupled with reflective case studies.

Learning paths are now being constructed as competency-based frameworks. These begin with core knowledge modules (e.g., Introduction to Good Scientific Practice), proceed through skill-building exercises (e.g., navigating authorship criteria, avoiding questionable practices), and culminate in practice-oriented assignments, such as self-declaration templates and simulated peer review discussions. This approach ensures that content moves beyond awareness-raising toward meaningful behavioral change. In Cycle 2, learners will be able to progress along these paths through either self-



paced SCORM-compatible modules hosted on Open Plato or blended training formats aligned with institutional needs.

Moreover, bridging Cycle 1 and Cycle 2 involves embedding Research Integrity into broader learning ecosystems. Connections are being established with Open Science and Gender thematic areas, using overlapping case studies and shared digital tools. By aligning the curriculum with practical training needs, such as those identified by AU and OpenAIRE, the structure supports both formal academic accreditation (e.g., PhD workshops) and informal capacity building (e.g., peer-led discussions, ethics cafés). This holistic, learning-path-driven model ensures that the curriculum is not only modular and reusable but also adaptable to the evolving expectations of researchers, institutions, and funding agencies.

4.3.6 Strategic Alignment of Future Curriculum Planning with Gaps Identified in D1.1

The insights from D1.1 revealed several critical gaps in RI training resources, particularly in terms of interdisciplinarity, practical relevance, and systemic integration with Open RRI. Building on the initial modules piloted in Learning Cycle 1, such as the Introduction to Good Scientific Practice and discussions around authorship and supervision, the strategy for Cycle 2 curriculum development seeks to deepen and broaden the RI offering along five priority dimensions.

The current modules tend to isolate RI from broader research culture discussions, missing opportunities to connect with themes like environmental sustainability, equity, or open data. In Cycle 2, new modules will explicitly frame Research Integrity within a larger RRI context, including emerging technologies, climate ethics, inclusive knowledge production, and responsible innovation. These integrations will reflect the reality of modern interdisciplinary research and help learners understand the systemic consequences of misconduct across domains and communities.

While Cycle 1 modules on supervision and research environments allude to relational ethics, thematic leaders keep on sufficiently addressing IPR, co-authorship disputes, or hierarchies in interdisciplinary teams in the upcoming trainings. In Cycle 2, these elements will be embedded into more nuanced learning units, such as “Power and Ethics in Research Collaborations” and “IPR and Integrity in Multilateral Projects,” including real case simulations and reflective practice tools.
The feedback from D1.1 pointed to an overreliance on life sciences examples in RI training. To address this, the Cycle 2 plan includes the development of discipline-specific case studies, ranging from engineering and digital humanities to environmental science and data science. These cases will be co-designed with institutional partners to ensure contextual accuracy and real-world applicability.

Through these targeted responses, the curriculum strategy for Cycle 2 does not just aim to “fill gaps,” but to embed Research Integrity into the broader PATTERN framework. This includes alignment with Open Science practices, localized institutional needs, and transferable competencies relevant to academic and professional development. The result will be a curriculum that is modular, inclusive, and deeply connected to the realities of responsible research in the 21st century.

More details are provided to Annex 1 & Annex 3.

4.4 Mental Health Leadership[11] Syllabus Development in Learning Cycle 1

4.4.1 Overivew of the Thematic Area

The "Mental Health Leadership" theme within the PATTERN project was introduced as a cross-cutting area of growing importance for academic and research institutions. Focused particularly on ECRs, the goal of this thematic stream is to empower individuals and institutions to proactively foster their own mental health and to contribute to bringing about supportive research environments. Mental health challenges in academia, such as burnout, isolation, precarity, and stress, are well-documented, yet few structured mental health leadership training opportunities exist to address them from a systemic, preventative perspective. Learning Cycle 1 marked the beginning of a focused effort to close this gap.

4.4.2 Types of Resources

The development of a dedicated self-paced module titled *"Mental Health Leadership: Developing Your Expertise"* was initiated by SciLink, with collaborative inputs from institutional partners. This module (still Work in Progress, to be completed by the end of 2025) aims to provide foundational knowledge, reflective exercises, and practical leadership skills for ECRs and postdocs. The format is expected to combine:

- Introductory readings (PDFs/Word)
- Scenario-based reflection prompts
- Checklists for mental health leadership habits and culture-building
- Short video clips from academic mental health advocates and trainers

To support the development of this self-paced course, SciLink is organizing a series of events at which its team of trainers will pilot topical courses addressing different aspects of mental heatlh leadership. All of these courses will take a problem-based learning approach in which trainees will work together to resolve a series of mental health related scenarios related to the topic at hand. Next to the scenarios developed by the trainers, trainees will also be invited to submit anonymized scenarios based on their own experiences or those in their direct environment. This approach was chosen to ensure that the training content so developed will be relevant to the target audience. By facilitating trainees in working through a series of real-life scenarios, SciLink aims to enhance trainees' decision-making vis-a-vis mental health related dilemmas. At the time of writing the following courses are scheduled (with at least 3 more face to face pilots in the making (in Zagreb and Amsterdam):

[11] Relative to the Grant Agreement, the name of this theme was modified from the rather generic "Management and Leadership" to the more precise "Mental Health Leadership" to better reflect the content and shall hereafter be referred to as such.

- “Thriving Together: Enhancing Well-Being in Academia” (University of Malta, 17 May 2025)
- Empowering Early Career Researchers: Using Job Crafting to Foster Well-Being at Work (Mental Health in Academia: The Hot Potato #2” conference (29 May 2025, Zadar, Croatia), a high-profile community-building event

Next to these single topic events, SciLink is at the time of writing examining the viability of organizing a "Mental Health in Academia”" festival in the Netherlands, during which a larger number of courses can be piloted in parallel over the course of two days.

These events will pilot content (that will ultimately be collated in the upoming module), engage participants in co-creating mental health advocacy tools, and offer networking opportunities with institutional leaders and researcher mental health experts.

4.4.3 Adaptation and Localization Examples

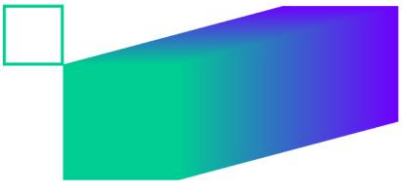
The in-person activities at the University of Malta, the Hot Potato Conference in Zadar, and elsewhere, reflect local academic culture and emphasize the role of institutional structures in promoting well-being. Participant feedback will be used to localize the full module in other contexts during Cycle 2. SciLink plans to create customizable sections within the online version, allowing for institution-specific additions (e.g., national hotlines, HR policies, internal peer-support programs).

4.4.4 Integration into PATTERN’s digital Ecosystem

The finalized module is scheduled for upload to OpenPlato in Q4 of 2025. Interactive components are being designed for compatibility with both SCORM and H5P standards, to support reusability across different LMSs. The module will be linked to transferable skills tracks such as *Leadership*, *Well-being in Research Careers*, and *Academic Supervision* within the PATTERN curriculum.

4.4.5 From Syllabus to Curriculum Through Learning Paths: Bridging Cycle 1 Implementation with Cycle 2 Strategy

The transition from isolated topical training modules to a structured and integrated curriculum in *Mental Health Leadership* marks a critical step in embedding mental well-being into research culture. During Learning Cycle 1, preliminary activities focused on awareness-raising, such as the participatory events “Thriving Together: Enhancing Well-Being in Academia ” and Empowering Early Career Researchers: Using Job Crafting to Foster Well-Being at Work. These offered essential groundwork for exploring early career researcher needs and leadership practices in academic mental health. However, they entail primarily standalone interventions without yet forming a coherent pedagogical structure.



To bridge into Learning Cycle 2, these initiatives must evolve into competency-based, modular learning paths. This involves identifying shared learning outcomes across sessions, such as fostering peer support structures, understanding institutional mental health frameworks, and applying leadership strategies to create healthier research environments. By designing progression pathways from foundational awareness to institutional action planning, Cycle 2 can introduce structured tracks tailored for different learner profiles, including PhD students, supervisors, and policy advisors.

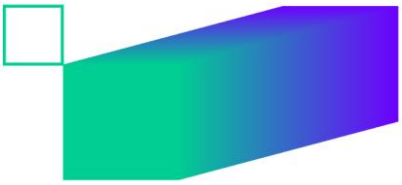
Prior to the delivery of the pilots all trainers will attend a train the trainers session, during which they will be familiarized with the Pattern Project, its pedagogical approach, and other requirements. In addition, after the trainings are completed, and i order to facilitate the greater uptake of the different training modules, trainers will reflect on their piloting activities (the pedagogical approach, things that worked well and less well, and trainees' evaluations of these pilots) in a series of webinars that will be recorded as train the trainer materials and uploaded to OpenPlato alongside the scenarios, their solutions, and other training content. These sessions will standardize the modular approach and align expectations across trainers.Furthermore, Learning Paths will integrate both theoretical (e.g., mental health literacy, stigma reduction) and practical (e.g., case management, referral navigation) components. Delivery methods will range from interactive workshops and peer mentoring exercises to online microlearning content, with OpenPlato and institutional platforms supporting access and tracking. Specifically, trainees will be invited to submit their anonymized scenarios to the Projects platform prior to the train in the post training reflections once it is completed.

Through careful mapping of Cycle 1 outcomes to Cycle 2 learning design, the curriculum will shift from ad hoc training to a holistic, inclusive framework aligned with broader goals in Responsible Research and Innovation (RRI) and researcher well-being.

4.4.6 Strategic Alignment of Future Curriculum Planning with Gaps Identified in D1.1

The initial rollout of Mental Health Leadership training in Learning Cycle 1, spearheaded by SciLink and piloted through sessions such as *" Thriving Together: Enhancing Well-Being in Academia"* and events like *" Empowering Early Career Researchers: Using Job Crafting to Foster Well-Being at Work"*, mark a critical step toward normalizing discussions on well-being in academic research environments. However, D1.1 revealed notable strategic gaps that must be addressed in the next phase of curriculum development to ensure a holistic and impactful learning experience.

One of the most pressing needs identified is the lack of structured training on mentor-mentee relationships. While mentorship is foundational for academic development, emotional support, and career progression, no formal content has been created yet to support either mentors or mentees in navigating expectations, communication styles, or boundaries. Moving into Cycle 2, the curriculum will include targeted modules that explore both sides of the mentoring relationship. These will include



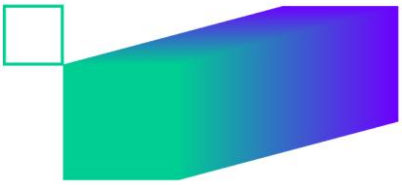
case-based exercises and scenario planning, helping participants build respectful, trust-based connections while addressing challenges such as power dynamics or mental health crises.

Another unmet need is support for researchers in building and maintaining professional networks. Early-career researchers in particular often face isolation or lack access to informal peer support systems. In Cycle 2, networking will be framed not only as a career advancement skill but also as a protective factor for mental well-being. New learning paths will include workshops and self-paced materials on peer mentoring, professional relationship-building across sectors, and strategies for fostering inclusive academic communities.

While the topic of mental health leadership was successfully introduced and piloted in Learning Cycle 1, materials remain limited in terms of format and scalability. To address this, the next phase will include developing a fully structured self-paced course on OpenPlato, designed to be flexible and accessible for different audiences, from PhD students to academic leaders. The course will integrate diagnostic tools, institutional strategies for fostering well-being, and real-world examples of mental health leadership in action. These modules will be positioned within a broader curriculum track on leadership, inclusion, and responsible research culture, offering certification or microcredentials to participants who complete the full pathway.

Together, these additions will strategically close key gaps identified in D1.1, ensuring that the future curriculum embeds mental health as a core leadership competency and a pillar of responsible research practice.

More details are provided to Annex 1 & Annex 3.



5 Conclusions

The first version of the PATTERN curriculum marks a critical transition from isolated syllabus development in Cycle 1 to a coherent, modular, and competency-based educational strategy for Cycle 2. Guided by the findings of Deliverable D1.1 and the extensive feedback gathered during pilot trainings and Open Studio sessions, the curriculum now evolves with a strong focus on addressing identified gaps, supporting diverse learner profiles, and enhancing cross-thematic integration. Thematic leaders have played a central role in this evolution, coordinating updates that not only enrich their respective areas but also strengthen the overall structure by promoting interdisciplinary linkages, community co-creation, and sustainability.

The work completed in Learning Cycle 1 revealed strategic needs across all eight thematic areas Open Access, FAIR Research Data Management, Citizen Science, Gender and Inclusion, Science Communication, Dissemination and Exploitation of Research Results, Research Integrity, and Mental Health Leadership. The transition into Learning Cycle 2 has been structured around clear timelines, with content development concentrated between May and September 2025, piloting and launch activities scheduled from November onward, and full integration into the Open Plato and Projects e - learning platforms to ensure accessibility and adaptability. Each thematic area will build learning paths that combine self-paced modules, blended learning elements, and project-based exercises, ensuring modular growth and learner-centered design.

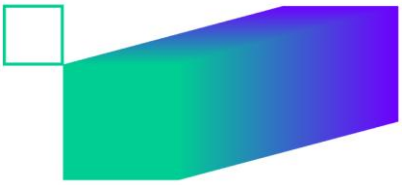
Sustainability and scalability are embedded into the curriculum strategy through multiple layers: alignment with Horizon Europe and institutional frameworks (such as Gender Equality Plans and Open Science mandates), adoption of multilingual and open-access formats, micro-credentialing options, and strong ties to existing European training ecosystems. Future modules will also reflect increasing societal demands, such as addressing inclusivity, citizen engagement, responsible data use, science-policy communication, and mental health in research environments. Thematic leaders will continue to drive these expansions, collaborating with external institutions where needed, and ensuring that Learning Cycle 2 outputs are not only addressing current gaps but setting a new standard for Open and Responsible Research and Innovation training across Europe.

Annex 1 – WP1 Gap Analysis Summary

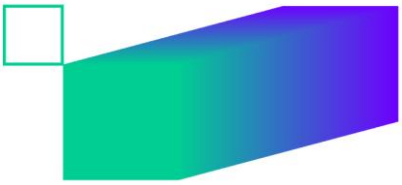
The following tables represent:

- Key findings for the curriculum design.
- Thematic gaps per area.
- Mapping of gaps to learning objectives and modules.

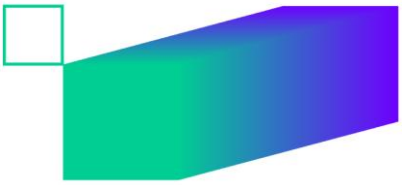
Thematic Area	Gaps and Challenges WP1	Measures taken
Open Access	"Various routes to achieve OA"	Addressed via module "Open Access publishing: overcoming the challenges and busting the myths": This module is designed to demystify and explain the different routes to OA, like Green, Gold, Diamond, Hybrid, etc., using multiple formats and clear explanations.
	"Adherence across research domains, geography, mandates, and other factors"	Addressed via module "Meeting Funder Requirements: navigating Open Access publishing": Provides practical insights on how researchers from different contexts can comply with varied OA policies and funder mandates.
	"Lack of content for intermediate and advanced levels"	The "Mastering Open Peer Review: evaluating and engaging in transparent scholarly discourse" module targets more advanced understanding of OA through topics like open peer review, scholarly transparency, and complex publishing dynamics.
	Mostly generic content covering social sciences and medical science	Addressed via "Integrating Open Access Publishing into my research: putting into practice (PBL approach)": PBL format allows tailoring content to specific research contexts or disciplines, addressing the lack of diversity in existing OA content.
	Lack of Accreditation (including and beyond open badges)	Badges provided via OpenPlato LMS System
FAIR RDM	"Most of the courses do not (clearly) offer a qualification"	While not a formal certification, these "train the trainer" sessions acts as a form of credentialed expertise and recognition of advanced engagement among trainers and pilot organizations.
	"Content themes may be too generic to serve as a	rephrase and expand the current set of content themes, organising them by levels



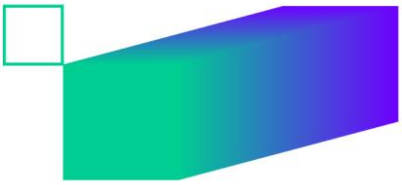
Thematic Area	Gaps and Challenges WP1	Measures taken
	starting point for the curriculum"	(beginner, intermediate and advanced) & PBL study cases.
	"Scarcity of advanced level training materials"	"FAIR RDM Session 4: A deeper dive into putting FAIR RDM into practice. Part 1" and "FAIR RDM Session 5: Part 2" provide rich, advanced-level content, case-based and interactive, to address real implementation challenges. They directly target the higher-level knowledge gap.
	More comprehensive coverage of themes such as controlled vocabularies, metadata standards, file formats, interoperability processes, (trustworthy digital) repositories, and long-term curation	"FAIR RDM Session 4: A deeper dive into putting FAIR RDM into practice. Part 1" and "FAIR RDM Session 5: Part 2": explore technical components in detail (metadata, vocabularies, repositories, and more) offering the kind of thematic depth that fills the existing content gap.
	"Resources targeting citizens are relatively limited"	While not explicitly citizen-focused, the PBL format enables customization for non-expert audiences, and could be adapted for citizen science initiatives.
Citizen Science	Intersectionality with OS, Gender, Inclusion	Both modules, partially developed
	Specialised training for different CS types	Participant Recruitment and Community Engagement, partially developed
	Problem-based, interactive resources	Both modules, fully addressed
	Engaging private sector stakeholders	Participant Recruitment and Community Engagement, partially developed (to be further developed in cycle 2)
	Basic introduction to Citizen Science	Introducing Citizen Science: Fundamental Principles and Interactive Cases, Fully Addressed



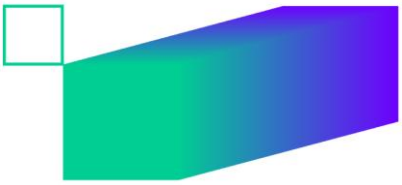
Thematic Area	Gaps and Challenges WP1	Measures taken
	Community building & coordination	Participant Recruitment and Community Engagement, Fully Addressed.
Research integrity	Emerging trends include research environment (hyper-competition, harmful publication pressure, detrimental power imbalances, and conflicts as well as FAIR and inclusion)	*Research Environment* module fully addresses real-life pressures affecting research ethics, including the impact of toxic environments and systemic issues on integrity.
	No courses cover Intellectual Property and Research Collaborations	This is partially addressed in “Supervision” and “Research Environment”.
	Limited training on privacy and confidentiality, vulnerable participants, and Open Science	Currently Not Addressed
	Artificial intelligence and emerging technologies addressing power dynamics in research collaborations	Future activities will focus on integrating the newly developed trainings from the iRECs project, covering AI applications in four emerging technologies, with the integration expected to be completed by the end of 2025
	More discipline-sensitive approach, especially by providing skills and resources for non-life and health sciences	There is generic content with some case studies and although existing case studies are adaptable, they are still skewed toward biomedical/life sciences.
Gender, non discrimination and inclusion in research	The categories of ‘intermediate’ (for trainings) and ‘advanced’ (for non-course material) are less common	The PBL modules and data workshops lean toward intermediate content, but advanced-level, discipline-specific or trainer-focused resources are still missing.
	Most of learning material and resources are for general audiences; lack of material for target audiences (doctoral/PhD students', 'post-doctoral researchers', 'students',	Most content is general-purpose; mentored group projects and PBL sessions are adaptable, but more explicit targeting is needed.



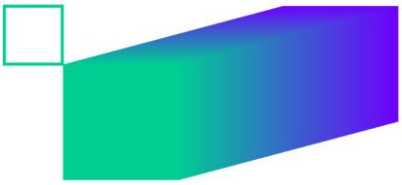
Thematic Area	Gaps and Challenges WP1	Measures taken
	'research support', and 'trainers/teachers/lecturers')	
	Lack of resources for engineering and technology, medical and health sciences, and social sciences	Partially Addressed through workshops involving data from NGOs, international development, and health activism contexts.
	There are no resources identified for natural sciences, humanities and agricultural sciences	Currently Not Addressed
	The great majority of collected resources do not specify qualifications	Currently Not Addressed
	Very limited replication potential and adaptability due to lack of continuous update, length and insufficient outreach	Partially Addressed via PBL and mentored group projects, which are inherently adaptable.
	Need of inclusion topics such as gender-based violence which remains one of the major problems	Currently Not Addressed
	Need for more targeted and advanced-level training materials tailored for trainers, teachers, and lecturers	Currently Not Addressed
	Qualification issues	
Dissemination and exploitation of results	Shortage of resources that target the intermediate and advanced learners	Lessons 1.1, 2.1, and 2.2 offer structured, practical training for beginner to intermediate learners. Advanced resources are being expanded through updated modules, self-paced courses, and new project-based case studies.
	Types of training resources collected tend to be generic, but some of the	PBL proposals adapt to different project themes and domains, supporting discipline-



Thematic Area	Gaps and Challenges WP1	Measures taken
	courses target the natural sciences, engineering & technology, medical and health Sciences; lack of resources for the other disciplines	sensitive learning, though explicit inclusion of humanities, arts, agriculture is still minimal.
	Several course-type trainings provide a completion certificate and some ECTS, which indicates they are part of formal education; there is a need to promote what added values PATTERN training could provide	Certificates provided via OpenPlato LMS System
	There are notable gaps in the representation of certain themes, particularly those related to exploitation and limited focus on social impact	In Lesson 2.2 (Exploitation & IPR) Exploitation is addressed, but social impact still needs more depth.
Science communication	Courses are mainly designed for students at a beginner level and most activities have paid access	The modules provide foundational training for students and early-career researchers, though the advanced-level content and open-access availability combined with blended training delivery approaches.
	Courses in museums and science centers are present, but not widespread	Not Addressed because priority had been given to more foundational topics,, more useful for reasearchers.
	Most courses are aimed at beginners and cover different topics at an introductory level. They are not only courses for researchers but for target audiences with different learning objectives	SC courses are focused on research audiences and their needs.



Thematic Area	Gaps and Challenges WP1	Measures taken
	How to engage with policy makers is rarely covered in courses	The "Policy Makers" module directly trains participants in policy-targeted communication, meeting a major unmet need.
	Science Communication courses related to transversal topics covered by PATTERN, such as diversity and inclusion, are not yet widespread	Not Addressed in depth because priority had been given to more foundational topics
	It is increasingly crucial to teach how to communicate the uncertainty of science and its limitations	This concept had been addressed in the introductory module where students are encouraged to reflect and discuss
	Courses on data visualisation and graphics are missing	Not Addressed because priority had been given to more foundational topics related to the public communication of science
Mental Health Leadership	Lack of resources published as open access	Published as Open Access
	Most resources are categorised as generic; Lack of more domain-specific courses	Developing resources focused on Mental Health as main domain as it is a relevant societal challenge
	More resources are required for mentor-mentee relationships	Currently Not Addressed
	Additional materials to help researchers connect with peers, mentors, and industry professionals	Currently Not Addressed
	Lack of accreditation and certification	Certificates provided via OpenPlato LMS System
Open Science and General RRI training	Lack of resources for advanced learners	Emerging Trends in Open RRI: Driving Innovation in Sustainable Materials and Engineering: Online workshop: https://shorturl.at/IBmpF
	Lack of more domain-specific courses such as Research Integrity, Train	

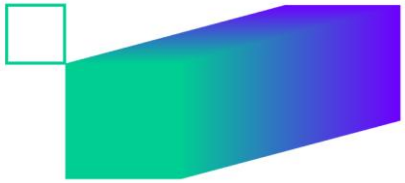


Thematic Area	Gaps and Challenges WP1	Measures taken
	the trainers, Exploitation and IPR, Reproducibility in research, Diversity and inclusion, among others (P67, P68)	

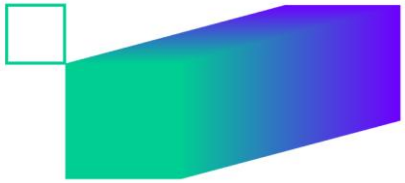
Annex 2 From Syllabus to Curriculum Through Learning Paths: Bridging Cycle 1 Implementation with Cycle 2 Strategy per Thematic Area

Open Access

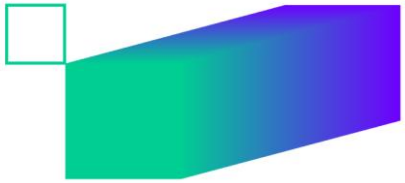
Module Title	(K) Knowledge	(KH) Know-How	(P) Practice	Learning Outcomes	Delivery Method	Tools & Materials	Assessment & Evaluation	Existing Material / References	New Material Required
1. OA Publishing: Challenges & Myths	Understanding OA principles; OA vs closed models	Explain OA benefits; debunk myths	Identify OA-friendly journals	Learners will differentiate publishing models and select appropriate OA venues	2h Self-paced	13 Word Docs, 1 PPT, 1 PDF, 10 images	Quiz, Reflection prompt	Reused: OpenAIRE guides, SPARC factsheets	Mobile-compatible quiz interface
2. Empowering Researchers: Retaining Copyright &	Copyright basics; Creative	Apply copyright retention	Prepare a copyright statement	Learners will manage	1.5h Webinar (WIP)	4 Word Docs, 2 PPTs, 1 PDF	Polls, Case analysis	Reused: DORA, cOAlition S resources	Interactive CC-license simulator



Maximizing Impact	Commons licenses	strategies		their rights effectively					
3. Meeting Funder Requirements: navigating Open Access publishing	Horizon Europe OA mandates	Describe funder guidelines	Match funder with compliance strategies	Learners will align publications with mandates	2h Face-to-face	2 Word Docs	Workshop scenario	National funder guides	Needs: Localized funding use cases
4. Trusted vs Predatory Publishers/ Trusted Publishers for my research: decoding good practices & overcoming predatory publishers	Criteria for trustworthy publishing	Detect predatory practices	Evaluate a journal's credibility	Learners will distinguish credible OA publishers	2h Face-to-face	5 PPTs, Mentimeter, Exercises	Group task, Evaluation form	ThinkCheckSubmit, COPE	More multilingual case examples
5. Mastering Open Peer Review: evaluating	OPR models and benefits	Navigate peer-	Submit/Review an article	Learners will engage in transparen	1h Self-paced (WIP)	4 PPTs, 6 Word Docs, 13 PDFs	Embedded quiz	Reused: F1000, Peer Community In	Interactive role-play simulation



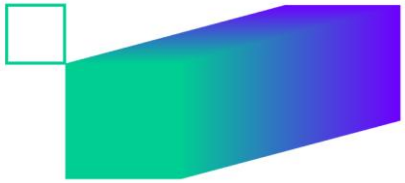
and engaging in transparent scholarly discourse		review platforms		t peer review					
6. **Integrating Open Access Publishing into my research: putting into practice**	understanding of Open Access Publishing principles, routes, and best practices	Map OA to proposal stages	Draft OA sections in research projects	Learners will embed OA into project plans	PBL Summer/Winter School	Slides, exercises, tools to explore,	Case studies, quizes, evaluation forms	Reuse the materials already created in the previous courses and adpat	Short tutorial vídeos
7. Designing my research project Open Access strategy: meeting funder requirements	understanding of OA principles, mandates, and requirements,	Reflect on gained insights gained, and how to apply them effectively in future	Participants outline their research project and identify areas where Open Access compliance is necessary	Learners will embed their project OA strategy into project plans	PBL Summer/Winter School	Slides, exercises, tools to explore,	Case studies, quizes, evaluation forms	Reuse the materials already created in the previous courses and adpat	Short tutorial vídeos



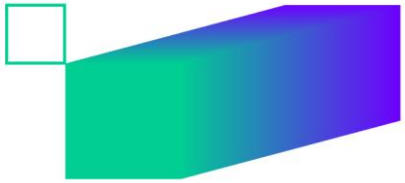
		research projects							

FAIR RDM

Module Title	(K) Knowledge: Key topics or Content Highlights	(KH) Skills: Know-How	(P) Skills: Practice	Learning outcomes	Delivery Method	Tools and Materials required	Assessment and Evaluation	Existing Material Reusability & References	New Material
Session 1: What is FAIR RDM and why should we do it?	Introduction to FAIR principles and RDM basics	Understand the FAIR principles and their application	Self-assess FAIR knowledge, navigate FAIR tools	Understand and communicate FAIR principles	Self-paced / Face-to-face (Session 1)	PPTs, exercises, demo course on Open Plato	Quizzes, reflective questions	OpenPlato self-paced demo, DANS materials	Interactive demo course for Session 1
Session 2:Planning for FAIR: Introduction to RDM and DMPs	Planning for FAIR: RDM and Data Management Plans	Develop and evaluate a Data Management Plan (DMP)	Create DMP sections for a sample project	Produce a basic but complete DMP	Face-to-face (Session 2)	PPTs, case-based exercises	DMP review exercise	Translated session slides, case exercises	Contextual DMP templates

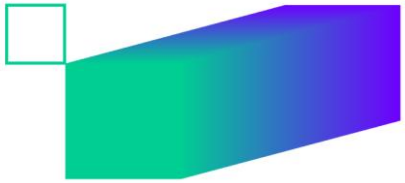


Session 3: Getting started with putting FAIR RDM into practice	Putting FAIR into practice: Metadata, repositories, file formats	Apply best practices in metadata creation and file organization	Identify appropriate metadata standards, use repository platforms	Apply metadata and file organization standards	Face-to-face (Session 3)	PPTs, exercises, metadata tools	Metadata mapping task	Platform-agnostic materials, multilingual	Repository search exercises
Session 4:A deeper dive into putting FAIR RDM into practice. Part 1.	Advanced FAIR: Interoperability, reuse, licensing	Implement FAIR principles in research workflows	Apply licensing tools and plan for data reuse	Enhance research outputs with FAIR-aligned practices	Face-to-face (Sessions 4 & 5)	PPTs, FAIR tools, licensing templates	Reuse scenario planning	Games and exercises from Session 5	Interactive FAIR game
Session 5: A deeper dive into putting FAIR RDM into practice. Part 2.	Training strategies and pedagogical approaches for FAIR	Design and deliver FAIR RDM training sessions	Facilitate exercises and interactive sessions on FAIR	Develop trainers' capacity in FAIR RDM	Train-the-Trainer recordings / Workshop	Training guide, recordings, facilitation templates	Trainer feedback forms, peer assessment	Recordings and TtT guide in Open Plato & Study Cases in Projects platform	Customizable trainer slide deck



Citizen Science

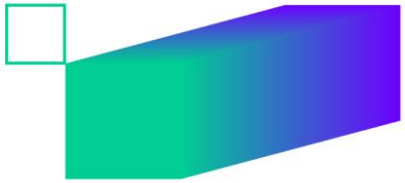
Module Title	(K) Knowledge: Key topics or Content Highlights	(KH) Skills: Know-How	(P) Skills: Practice	Learning outcomes	Delivery Method	Tools and Materials required	Assessment and Evaluation	Existing Material Reusability & References	New Material
Introducing Citizen Science: Fundamental Principles and Interactive Cases	Introduction to Citizen Science; fundamental principles; RRI, ethics, and Open Science	Understanding Citizen Science methodology and ethical implications	Designing a basic Citizen Science project plan	Learners will be able to describe core CS concepts and design an entry-level CS project	Virtual (webinars); Face-to-face (workshops)	Slide decks, lectures, case study descriptions	Participant reflection sheets, evaluation form	Online training session (Feb 2025); Introduction to Citizen Science Workshops	Train-the-Trainer module will be developed for this
Participant Recruitment and Community Engagement	Community engagement, inclusivity and communication strategies	Applying recruitment and retention techniques	Facilitating public dialogue; managing volunteer roles	Learners will manage and evaluate engagement strategies in CS	Virtual (webinars)	Case study descriptions, reflection questions	Completed reflection questions, evaluation form	Online Participant Recruitment & Community Engagement session (Feb 2025)	Train-the-Trainer module will be developed for this



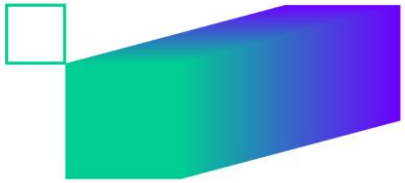
Module Title	(K) Knowledge: Key topics or Content Highlights	(KH) Skills: Know-How	(P) Skills: Practice	Learning outcomes	Delivery Method	Tools and Materials required	Assessment and Evaluation	Existing Material Reusability & References	New Material
[Case studies used when relevant in above modules]	Case studies: Stall Catchers, FoldIt, Lingscape, Pisuna and others	Analyzing project impact and scalability	Customizing project plans to local settings	Learners will interpret case study insights to local contexts	Projects platform (case-based learning); PBL	Online repository with editable case files	Project analises	14 case studies on Projects	New case studies to be developed

Science Communication

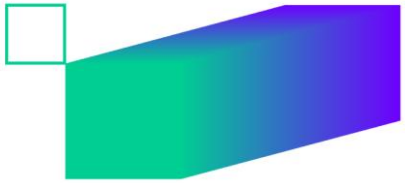
Module Title	(K) Knowledge: Key topics or Content Highlights	(KH) Skills: Know-How	(P) Skills: Practice	Learning outcomes	Delivery Method	Tools and Materials required	Assessment and Evaluation	Existing Material Reusability & References	New Material
Science Communication towards media and	Modes and models of science communicatio	Understanding the role of science communicatio	Analysis of personal experiences, objectives and audiences in	Better understanding on the role	Live sessions with frontalmlectures and	1 PPT, 1 Word doc with Trainer Guide	Reflection and group discussion	Trainer guide and material all available	



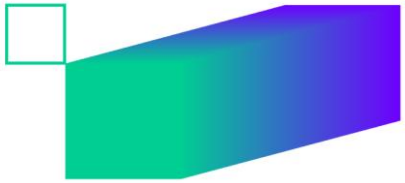
policy makers: Intro	n. Audience analysis, objective and content selection	n ion and its models	science communicatio n	and models of science communicatio n Reflection on the wider social and cultural environment in which they work Reflect on the different roles that audiences can take when they meet science. .	parctical activities	and script	during activities Survey and miro board for the evaluation process	on Sharepoin t	
Writing for the media	Writing scientific content for public understanding	Understandin g the media logic and what the news values are	Drafting a short press release or popular summary from their own	Transform complex research into accessible written content .	Face-to-face pilot & flipped classroom	1 PPT, 1 Word doc with trainer guide	Short writing task with peer to peer and trainers' feedback	Trainer guide and material all available on	



			research projects	Understand the process that transforms scientific results in news and the roles of intermediaries. Think about the key messages to convey, when dealing with the media or non-experts. Structure the writing in formats used by the media and press officers.		and script	Survey and Miro board for the evaluation	Sharepoint	



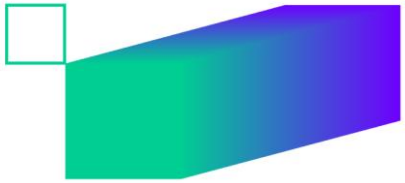
Talking with the media	Handling interviews	Understanding media logic; ;	Handling interviews; formulating key messages;	understand the dynamic of an interview organize responses speak clearly.	Face-to-face pilot & flipped classroom	1 PPT, 3 Word doc with trainer guide and scripts	Mock interview with peers' and trainer feedback	Trainer guide and material all available on Sharepoint	TDB
Social Media for Scientists	Optimizing research visibility and personal branding on social media platforms	Build and maintain a personal branding	Writing posts for different platforms	Understand the use of social media in science build and maintain a personal brand build online communities	Face-to-face pilot & flipped classroom	1 PPT, 1 Word doc with trainer guide	Writing posts with trainer's and peers' feedbacks	Trainer guide and material all available on Sharepoint	Templates for different social platforms
Communicating with Policy Makers	Engaging policy makers; communicating policy relevance	Understanding who are the policymakers and what is the potential	Practincing the elevator's pitch	Understand the process of policymaking and its	Face-to-face and & flipped classroom	1 PPT, 1 Word doc, example briefs	Briefing document and pitch presentation	Trainer guide and material all available	TBD



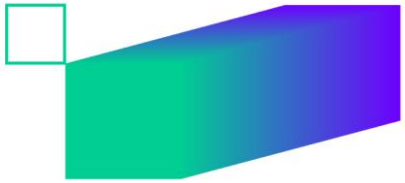
		role of scientists		relationship with science Practice a communication tool which can ease the communication with policymakers and other stakeholders				on Sharepoint	

Gender, Non-discrimination and Inclusion

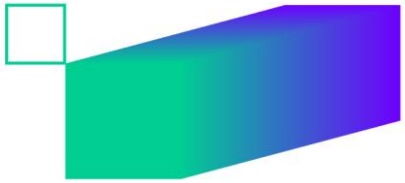
Module Title	(K) Knowledge: Key topics or Content Highlights	(KH) Skills: Know-How	(P) Skills: Practice	Learning outcomes	Delivery Method	Tools and Materials required	Assessment and Evaluation	Existing Material Reusability & References	New Material
Blocking Toxic Speech Online	Toxic speech, online behavior, suppression techniques	Recognizing toxic patterns, applying counterspeech	Practice counterspeech scenarios, group reflections	Participants apply counterspeech strategies to	Online seminar + hybrid PBL workshop	PPTs, counterspeech guides, roleplay materials	Mentored reflection + badge or ECTS	UniSR slides, techniques, LPI PBL designs	Counterspeech simulation toolkit



				toxic online content					
A Social-cognitive Perspective on Gender Bias	Social cognition, bias formation, stereotypes	Identifying and deconstructing stereotypes	Bias reflection exercises, social context analysis	Participants recognize how gender bias operates in cognition and society	Online seminar	PPTs, cognitive theory literature	Participation + knowledge quiz	UniMiB slides, social cognition sources	Gender bias cognition workbook
Risks of Informal relationships in the workplace	Informal workplace dynamics, unconscious bias	Assessing team dynamics, promoting inclusion	Roleplay and reflection, organizational auditing	Participants evaluate risks in informal relationships and promote equity	Online seminar	PPTs, self-assessment forms	Scenario analysis + feedback loop	OSR/UniSR case examples, LPI roleplay design	Inclusive workplace culture audit
Gender and Data in Research Work: Choose your career pathway	Gender statistics, interdisciplinary data use	Analyzing gender data, choosing methods	Hands-on group projects with real datasets	Participants apply gender data methods in real-world contexts	Hybrid workshops + group projects	PPTs, statistical datasets, case templates	Group project presentation + peer review	Data Pop Alliance, EU statistics portals	Gender data use case repository
Linking CARE & FAIR in Power	Gender-sensitive methodologies,	Developing inclusive data models	Case study evaluation,	Participants align research practices with	On-site workshop	FAIR/CARE guidelines, data ethics sheets	Workshop output + self-evaluation	Wiphala, FORRT,	Power and privilege

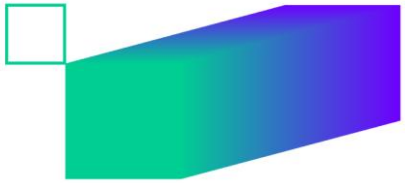


Systems: collectivist and activist development approaches linking the Global South and the Global North	FAIR/CARE principles		methodology design	inclusion frameworks				CARE/FAIR frameworks	mapping templates
Open Scholarship and participatory approaches to Neuro-diversity	Neurodiversity, inclusive research environments	Designing neuroinclusive participation models	Inclusive design workshop activities	Participants co-design inclusive environments considering neurodiversity	Online workshop	Neurodiversity toolkits, case scenarios	Participation feedback form	FORRT open resources, LPI guides	Neuroinclusive training slides
Gender Dimension in research funding application	Funding bias, inclusive proposal design	Embedding gender analysis in funding applications	Writing inclusive funding proposals	Participants embed gender perspectives in grant applications	On-site seminar	Proposal templates, evaluation checklists	Checklist submission + trainer feedback	ESF templates, Horizon Europe gender toolkit	Inclusive funding call assessment form



Research Integrity

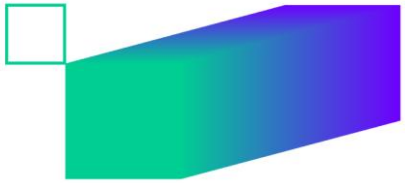
Module Title	(K) Knowledge: Key topics or Content Highlights	(KH) Skills: Know-How	(P) Skills: Practice	Learning outcomes	Delivery Method	Tools and Materials required	Assessment and Evaluation	Existing Material Reusability & References	New Material
Introduction to research integrity and the virtue-based approach	Introduction to Research Integrity and Good Scientific Practice	Understand core principles of responsible research	Apply institutional and EU guidelines to ethical dilemmas	Participants will explain principles of good scientific practice and research ethics	Hybrid (live webinar + self-paced modules)	5 PPT presentations, discussion prompts, OpenPlato access	Reflection quiz and feedback form	EARMA training deck (Dec 2024), Research Ethics guidelines	SCORM module development (OpenAIRE, Q2 2025)
Good scientific practice: Authorship	Authorship and Contribution Ethics	Identify proper authorship practices and misattribution risks	Draft an authorship policy or declaration	Participants will assess authorship scenarios and propose ethical solutions	Live workshop (PhD session), self-paced on OpenPlato	SCORM module via Articulate, real-life case studies	Scenario-based exercises and peer assessment	Authorship module piloted with UHelsinki PhD students	Trainer guide for authorship ethics + case library
Good research practice:	Conflict of Interest and	Recognize and manage conflict of	Develop action plans to address	Participants will evaluate research	Live or recorded session,	Templates, sample policies, EU	Checklist and group	RI template files, EARMA &	Interactive module on COI with



principles, guiding documents Questionable research practices and research misconduct	Research Transparency	interest scenarios	transparency issues	settings for transparency risks	case-based learning	ethics guidelines	discussion outputs	OpenAIRE policy briefs	tailored scenarios

Dissemination & Exploitation

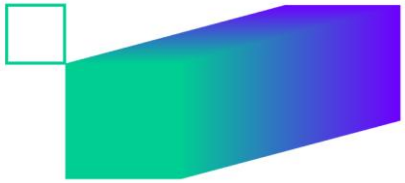
Module Title	(K) Knowledge: Key topics or Content Highlights	(KH) Skills: Know-How	(P) Skills: Practice	Learning outcomes	Delivery Method	Tools and Materials required	Assessment and Evaluation	Existing Material Reusability & References	New Material
Horizon Europe Proposal stage	Communication, Dissemination and Exploitation (CDE) in Horizon Europe	Understand HE requirements and terminology for D&E	Map stakeholders and define dissemination channels	Learners will explain D&E principles and HE expectations	Live Online (1.5h Webinar)	1 PPT presentation	Self-assessment quiz	Slide deck available on Projects; static resource on Zenodo – *in progress*	V2 slide deck; Open Plato self-paced module - *in progress*
Horizon Europe Implementation stage, Lesson 2.1 -	Managing Communication and Dissemination activities,	Design and manage communication plans and reporting	Manage content calendars, engage with	Learners will prepare a communication and	Live Online (1.5h Webinar)	4 PPTs, 4 sample reporting tools	Reporting plan peer review	Slide deck available on Projects; static	V2 slide deck; Open Plato self-



Managing Communication and Dissemination activities in HE projects	including social media strategy		online audiences	dissemination plan				resource on Zenodo – *in progress*	paced module - *in progress*
Horizon Europe Implementation stage, Lesson 2.2 – Exploitation of scientific results and IPR	Exploitation of Scientific Results and IPR	Identify and protect research outputs via IPR	Draft data management and IPR strategy	Learners will identify IPR opportunities and risks	Live Online (1.5h Webinar)	1 PPT, IPR templates	IPR mapping exercise	Slide deck available on Projects; static resource on Zenodo – *in progress*	V2 slide deck; Open Plato self-paced module - *in progress*
Horizon Europe Implementation stage, Lesson 2.3 – Creating Actionable Knowledge: how to visually pitch your research results	Visual Pitching of Research Results	Use storytelling for research communication	Create pitch decks and infographics	Learners will present research visually for multiple audiences	Live Online (1.5h Webinar)	1 PPT, pitch templates, visual tools	Pitch presentation feedback	Slide deck available on Projects; static resource on Zenodo – *in progress*	V2 slide deck; Open Plato self-paced module - *in progress*
PBL Proposals	Cluster-specific PBL Proposals (e.g., Health, Climate, Security)	Apply CDE strategies in proposal and project writing	Simulate D&E strategies using real-world scenarios	Learners will complete a mock proposal with integrated D&E plan	PBL Workshops (Hybrid/Online)	PDFs & Word templates per proposal cluster	Proposal rubric and peer review	Projects Platform - PBL Case Files	New cases study based on FP10 topics - *long-term planning*

Mental Health Leadership

Module Title	(K)Knowledge: Key topics or Content Highlights	(KH) Skills: Know-How	(P) Skills: Practice	Learning outcomes	Delivery Method	Tools and Materials required	Assessment and Evaluation	Existing Material Reusability & References	New Material
Nurturing work life-balance	Mental health in academic careers; Leadership & culture change; Preventing burnout; Supporting peers	Understand systemic causes of mental health issues in academia	Apply mental health leadership principles in real scenarios	Participants can describe key stressors in academic environments and identify systemic strategies to mitigate them	Self-paced module (Q1 2025); Face-to-face training (May 2025)	Video case studies, reflection prompts, downloadable checklists	Self-assessment quiz + optional journal entry	Based on SciLink draft module, pilot tested in Malta workshop	Final SCORM-ready OpenPlato module in development
Growing psychological capital and self-compassion	The role of institutions and leadership in promoting well-being	Recognize leadership responsibilities in fostering inclusive research environments	Facilitate peer discussions on emotional well-being	Participants will be able to evaluate their leadership role and implement	Interactive group workshop; live discussions	Workshop guide, post-it notes, breakout group tools (Zoom, Miro)	Peer feedback & short group presentations	Informed by UCL Mental Health Leadership Toolkit	Localized workshop toolkit to be made open-access



				inclusive practices					
Coping with precarity	Mental health risk indicators; warning signs; resilience strategies	Identify and respond to mental health risks among peers and within teams	Design action plans for institutional change based on participant feedback	Participants will develop personal and team-based well-being plans	Conference-based peer learning and reflection session	Event presentation slides, mental health policy templates	Post-event survey and optional submission of personal leadership commitment	Inspiration from Hot Potato #2 conference material (May 2025)	Annotated case studies and self-paced version of peer reflection

PATTERN.

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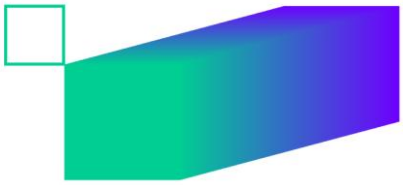
Annex 3 – Summary of Monday Meetings, Working Groups and Train-the-Trainer Support Sessions

To support the effective implementation of the PATTERN curriculum methodology for Open RRI and Open Science, a systematic coordination process has been established through weekly Monday consortium meetings. These meetings, running regularly each week since the M1 of the project. Here is an overview for the latest gatherings during December 2024 through April 2025, ensure alignment across pilot organizations, thematic leaders, and work packages (WPs), while also enabling agile responses to emerging needs and feedback from training implementations.

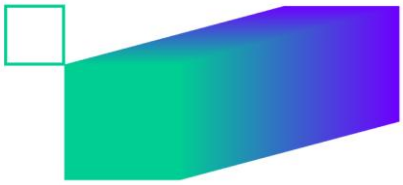
All consortium partners regularly participate in these sessions, where they:

- Share updates on pilot training events, including attendance numbers, tools used, and audience reactions.
- Evaluate what pedagogical and engagement methods worked well or didn't (e.g., flipped classrooms, case studies, digital tools).
- Reflect on gaps initially detected in D1.1 and assess whether training content has adequately addressed them.
- Monitor KPI metrics, including the number of participants, geographical spread, engagement patterns, and platform usage (OpenPlato, Projects).
- Discuss dissemination strategies, localization efforts (e.g., translations), and progress toward the co-creation of materials for Learning Cycle 2.

Date	Key Themes	Key Contributions	Methodologies Discussed	Gaps/Issues Identified	Actions Agreed
12/9/2024	Pilot Training Reports	RBI and HEAL-Link presented on Science Communication and FAIR RDM pilots	Flipped classrooms, interactive sessions, localization of materials	Lack of engagement in recorded sessions, need for regional adaptation	Digital certificates, material categorization for learners/trainers, documentation for KPIs
12/23/2024	International Collaboration	Open Access & Science promotion in Azerbaijan & Greece, pilot feedback	Peer review planning, platform use refinement	Need for Turkish translations, certification format clarity	Template revision, documentation in dissemination tracker



1/13/2025	Open Studios Planning	ESF presented online & physical Open Studio structure	Breakout sessions, reflective group work	Need for coordination on participant engagement and structure	Program overview, session planning for March, outreach strategy
1/20/2025	Tool Integration & Checklists	Checklist introduction, dashboard proposal, training tracking	Platform integration, certification workflows	Checklist adaptation, course access strategy	Dashboard by March, pilot material planning with REMAKE
1/27/2025	Pilot Engagement & Communication	Citizen Science and Science Communication pilot updates	Adapted delivery models, short course formats	Low turnout rates, unclear dissemination workflows	Flyer promotion, toolkit planning, additional piloting cycles
2/3/2025	Training Material Structure	Translation updates, certificate automation discussion	Platform-based vs manual certification	Adaptation tracking, automation challenges	Zenodo metadata integration, platform linking strategies
2/10/2025	Pilot Lessons & Online Format	Break out room facilitation & registration analysis	Interactive models, case-based training	Attendance inconsistency, facilitation limitations	Improve confirmation flow, define case selection logic
2/17/2025	Evaluation Tools & Platform Use	Feedback on Miro tool, platform usability, certificate process	Interactive tools, alternative feedback channels	Tool usability issues, low active participation	Evaluation strategy updates, cycle 2 improvements
2/24/2025	Open Studios & Pilot Coordination	Final pilot planning, breakout group configurations	Synergy-focused training, internal audit	Data registration inconsistencies, evaluation load	Clarify facilitator roles, consolidate input templates
3/10/2025	Final Preparations for Braga	Training expectations, Cycle 2 brainstorming	Interactive toolkit, stakeholder engagement	Digital ecosystem strategy clarity, guidance gaps	Toolkit preparation, pilot documentation examples



3/24/2025	Cycle 2 Training Plan Finalization	Figma board presentation, Open Studio coordination	Persona profiling, digital user journey design	Category confusion, dissemination readiness	1-on-1 follow-ups, stakeholder documentation gathering
3/31/2025	Final Deliverable Coordination	UNESCO contact strategy, AI feature discussion, dissemination toolkit	Flipped classroom, peer assessment, case-based modules	AI feasibility, accessibility strategy gaps	Steering input integration, pilot content alignment

To reinforce this work, WP2 and WP3 leaders organize additional coordination meetings every two weeks, serving to:

- Align the pedagogical and methodological frameworks.
- Identify parts of the curriculum that still require support or further development.
- Review evolving learning paths and their translation into digital ecosystems.
- Cross-reference feedback loops with evaluation instruments, Open Studios, and policy-related outputs.
- The alignment and further development of the Digital Ecosystem (Projects Platform , Open Plato Platform & PATTERN's website.

Date	Key Topics Discussed	Methodological Insights	Actions Taken	Follow-up Items
10/23/2024	Open Plato features; Master Pilot Plans; platform interoperability; study cases	Integration of evaluation and interoperability between platforms	Develop internal audit; finalize Master Pilot Plan	Complete internal audit criteria; finalize Master Plan by Feb 28, 2025
11/8/2024	Platform linkage with OpenPlato; dashboard architecture; training audit table	Developed audit scoring for delivery mode, audience level, LMS compatibility	Set up internal audit table; evaluate pilot sessions with defined criteria	Review audit scores; refine quality standards

2025-02-01 to 2025-04-01	Digital ecosystem; student engagement; integration of courses into academic curricula	Competency-based framework; project-based learning; trainer's guide co-creation	Developed transformation plan; structured evaluation protocol	Workshops; pre-registration of training methodologies; GDPR consent forms

Annex 4 – Brand & Template Assets

- Visual identity of modules: icons, templates, structure.
- Screenshot examples of module branding.
- Template examples from LOBA (infographic formats, course cards).

Open Access self-paced course with translated versions (via Open Plato e - learning platform)

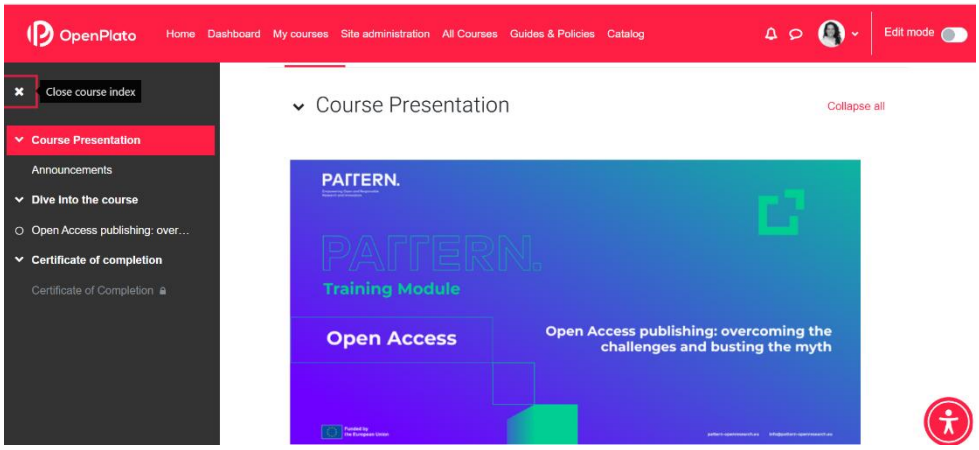


Figure 3 - Open Access self paced course : OPEN ACCESS PUBLISHING: OVERCOMING THE CHALLENGES AND BUSTING THE MYTHS (English version)

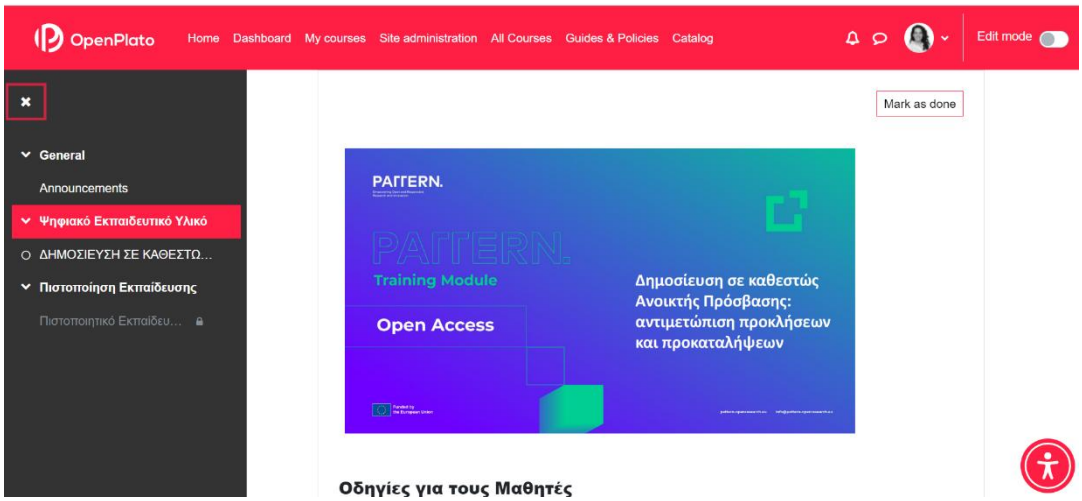


Figure 4 - Open Access self paced course (Greek version)

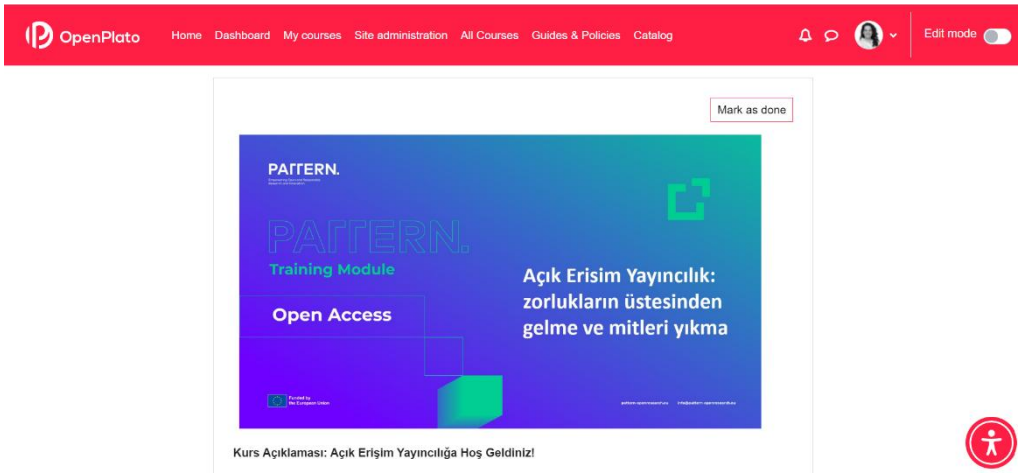


Figure 5 - Open Access self paced course (Turkish version)

Figure 6 - Open Access self paced course (Portuguese version)

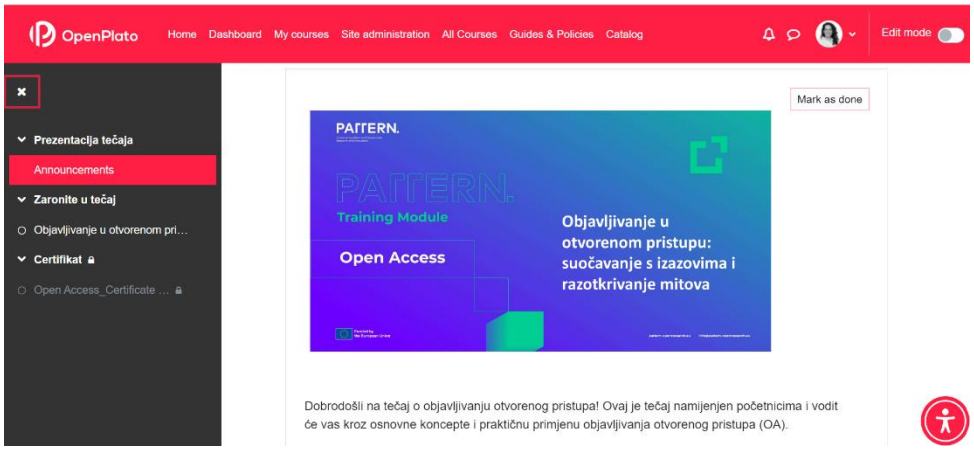


Figure 7 - Open Access self paced course (Croatian version)

Projects e-learning Platform: PATTERN's portal

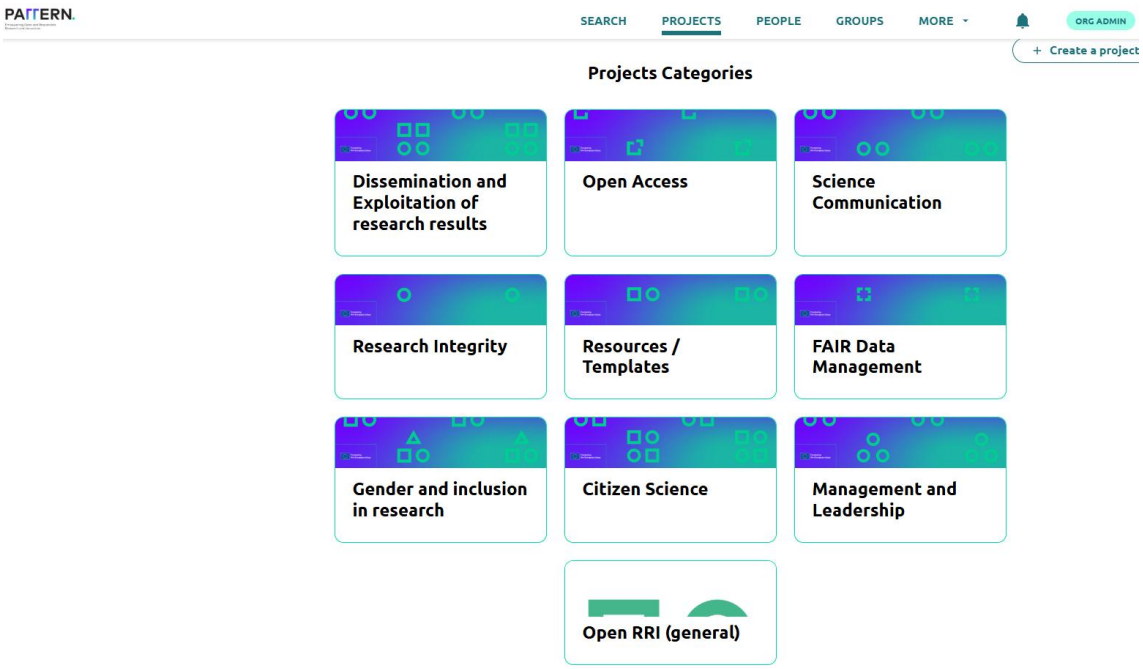


Figure 8 - PATTERN's portal scope with all thematic areas/categories with deafferented graphics per each

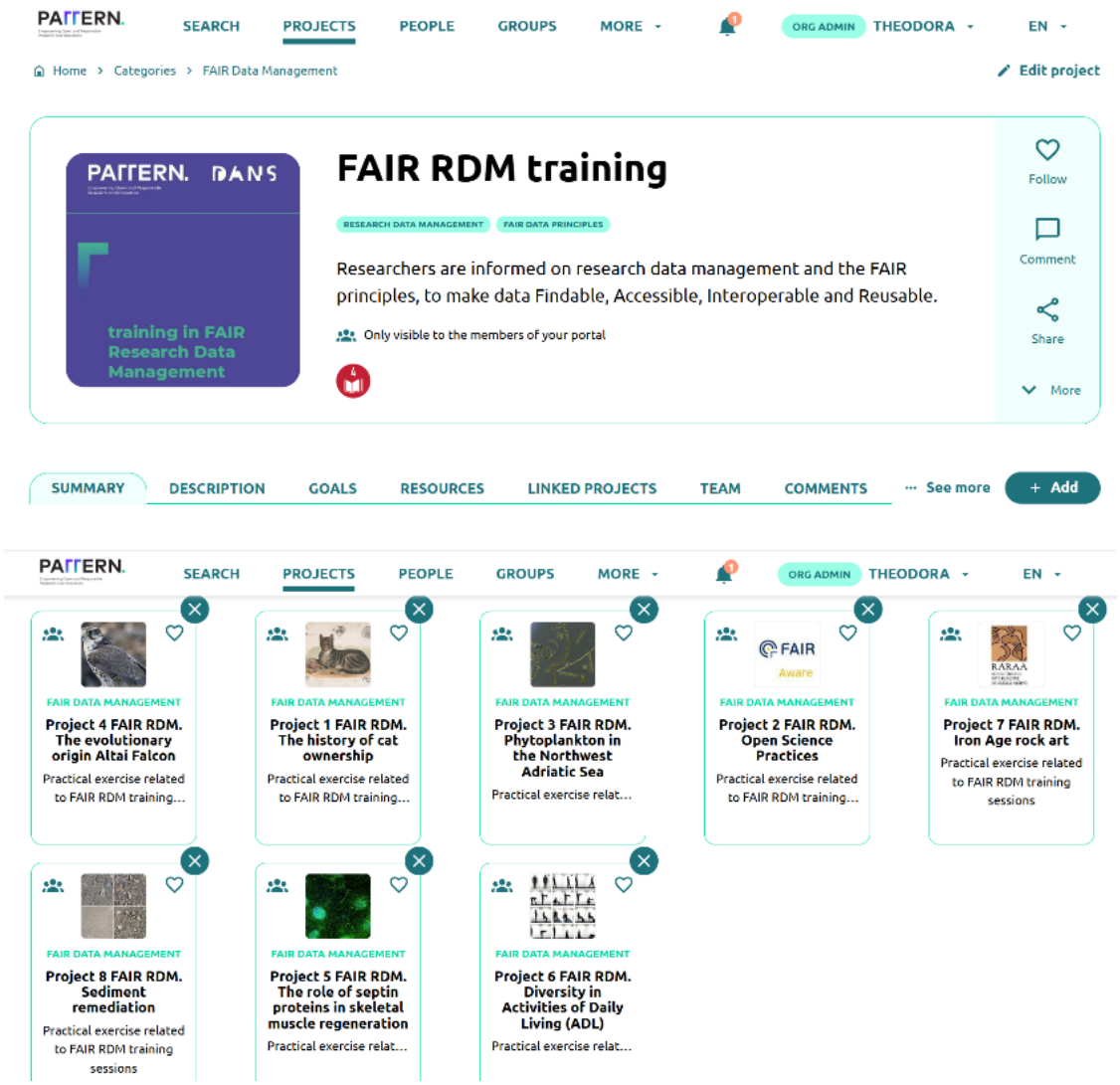


Figure 9 - FAIR RDM Training for researchers with PBL approach and different study cases

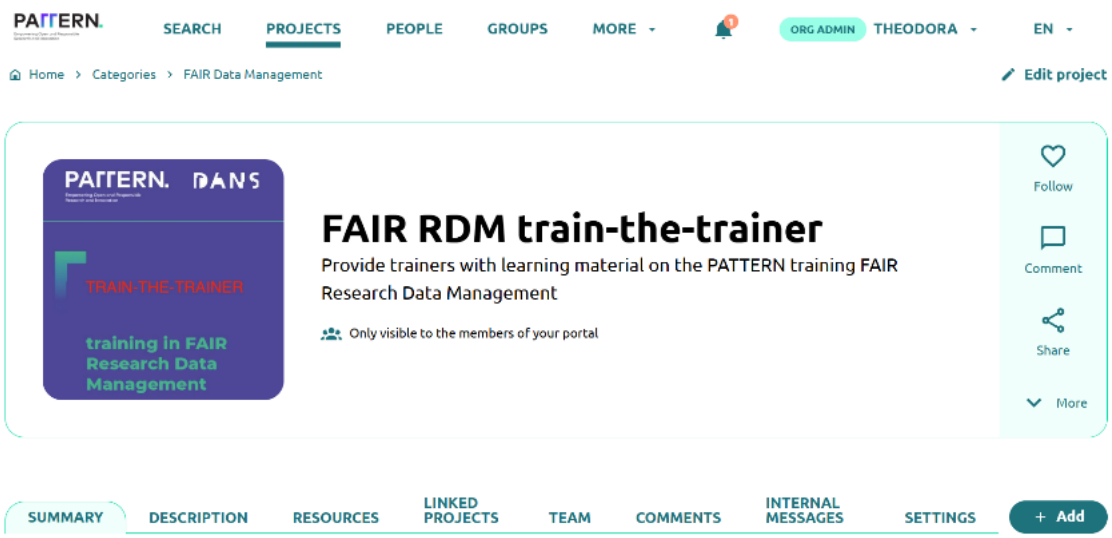


Figure 10 - FAIR RDM Train the Trainers Material