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PATTERN.
Empowering Open and Responsible Research and Innovation

D3.1

First version of PATTERN training plans in Pilot Organizations

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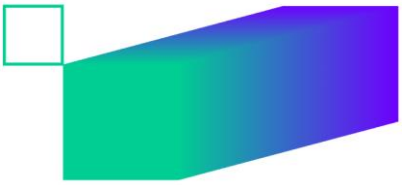
Start of Project	1 January 2023
Duration	42 months

OUR CONSORTIUM

Funded by the European Union



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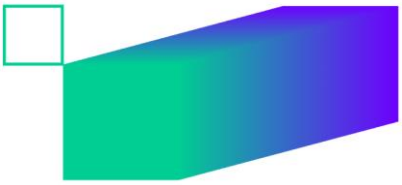

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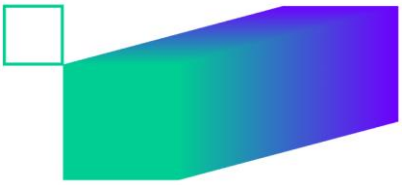
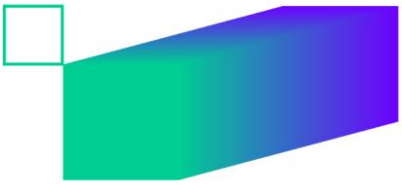


Table of Abbreviations and Acronyms

Abbreviation	Meaning
AI	Artificial Intelligence
AU	Aarhus Universitet
CC	Creative Commons
CC BY	Creative Commons Attribution Licence
CDEP	Communication and Dissemination Plan
CS	Citizen Science
DE	Dissemination and Exploitation
DMP	Data Management Plan
ECR	Early Career Researchers
EOSC	European Open Science Cloud
ERA	European Research Area
ESCO	European Skills, Competences, Qualifications and Occupations
EU	European Union
FAIR	Findable, Accessible, Interoperable, Reusable
GDPR	General Data Protection Regulation
GEP	Gender Equality Plan
GNI	Gender, Non-Discrimination and Inclusion
GSP	Good Scientific Practice
IPR	Intellectual Property Rights
IZTECH	Izmir Institute of Technology
KNAW	Royal Netherlands Academy of Arts and Sciences
KPI	Key Performance Indicator
LLL	Lifelong learning
LMS	Learning Management System
LPI	Learning Planet Institute
LX	Learning Experience
MEL	Monitoring, Evaluation and Learning
ML	Mental Health and Leadership
MOOC	Massive Open Online Course
OA	Open Access
OpenAIRE	OpenAIRE A.M.K.E.
OPR	Open Peer-Review
OS	Open Science
PATTERN	Piloting open and responsible Activities and Trainings Towards the Enhancement of Researchers Networks
PBL	Project Based Learning
PI	Principal Investigator
PID	Persistent Identifier
RBI	Ruđer Bošković Institute
RDF	Researcg Development Framework
RDM	Research Data Management
RI	Research Integrity
RPO	Research Performing Organisation
RRI	Responsible Research and Innovation
RRS	Rights Retention Strategy



RVA	Recognition, Validation and Accreditation of Non-formal and Informal Learning
SC	Science Communication
SciLink	SciLink Research and Development Center
SCORM	Sharable Content Object Reference Model
SISSA	International School for Advanced Studies
SMART	Specific, Measurable, Attainable, Realistic, and Time-bound
STEM	Science, Technology, Engineering and Mathematics
TCD	Trinity College Dublin
TG	Target Group
UD	University of Debrecen
UH	University of Helsinki
UMinho	University of Minho
UX	User Experience
UniSR	Università Vita-Salute San Raffaele
WP	Work Package

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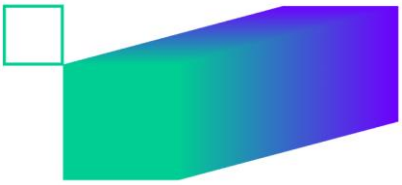

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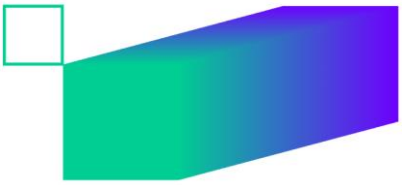

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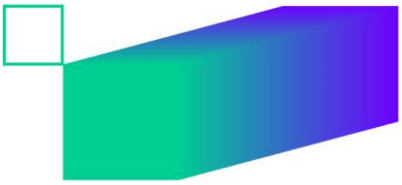


1 Executive Summary

This document titled 'First Version of PATTERN Training Plans in Pilot Organisations' is a comprehensive report developed within the framework of the PATTERN project, funded by the European Union's Horizon Europe Research and Innovation Programme (Grant Agreement No 101094416).

The core aim of this initial report is to lay out preliminary training plans that address identified gaps and leverage opportunities within Open Science (OS) and Responsible Research and Innovation (RRI) skills training across the fourteen pilot organizations around Europe involved in the PATTERN project.

This deliverable follows the Report on the analysis of existing training activities and quality assessment[1] (deliverable D.1.1.), which served to map over 500 training resources and identify gaps and opportunities in OS and RRI training along with its trends and practices in the eight transferable skill areas of this project.

The current deliverable presents the implementation plan of the training on Open RRI and OS in the fourteen pilot organizations of the PATTERN Open Research project. Although this plan is directly linked with the Development of Training Modules in WP2.1. and the creation of a Digital Learning and Working Ecosystem in WP2.2. for the Consortium and Pilot Organizations, this document seeks to show the training plan delivery as well as continues Monitoring, Evaluation and Learning (MEL) systems that will be put into place to ensure cohesion between the WP2 Development of training modules and platform and their implementation in the field.

1.1 The Link between the Development of Training Modules (WP2) and Training Plans for Pilots (WP3)

PATTERN focuses on defining training materials and activities that emphasise transferable skills within the framework of Open and Responsible Research. It aims to serve researchers at all career stages, with a notable emphasis on early-stage researchers, including undergraduate and doctoral students, while also catering to the needs of post-doctoral researchers and experienced researchers, particularly those in supervisory roles in the topic of Mental Health in Management and Leadership. These modules are tailored to address their distinct needs and impact on the career paths of younger researchers.

The training development process is involving all consortium members and pilot organizations in a co-creation process to harness collective expertise and will extend to relevant external actors through targeted activities.

The fourteen Pilot Organizations will test these trainings within their respective settings, targeting researchers at various career stages. This effort will be broadened in Work Package 3 (Tasks 3.1 and 3.3), involving local stakeholders such as

[1] For more information, please see Lagido, C., Kragh, G., & Nielsen, K. (2024). D1.1 Report on the analysis of existing training activities and quality assessment (2.0). Zenodo. https://doi.org/10.5281/zenodo.10640916

researchers, vice-rectors, vice-deans, and educational directors in the co-development of personalized training plans (Task 3.1).

The first version of the PATTERN training modules is scheduled to be ready by Month 16 (M16 – May 2024) under Task 2.1 and will undergo testing through a range of tailored activities such as webinars, workshops, and summer/winter schools, as outlined in the personalized training plans of the Pilot organizations.

1.2 WP3 Training Plans Implementation

Work Package 3 (WP3) focuses specifically on conducting training activities within Pilot Organizations, based on participants from the early stages of the development feedback and the insights and lessons learned from previous EU-funded projects. The implementation phase includes two learning cycles, which will allow for the evaluation of learning outcomes and necessary adjustments to refine the training modules, ensuring they meet the intended educational objectives effectively and adapt to changing needs.

Intervention Logic

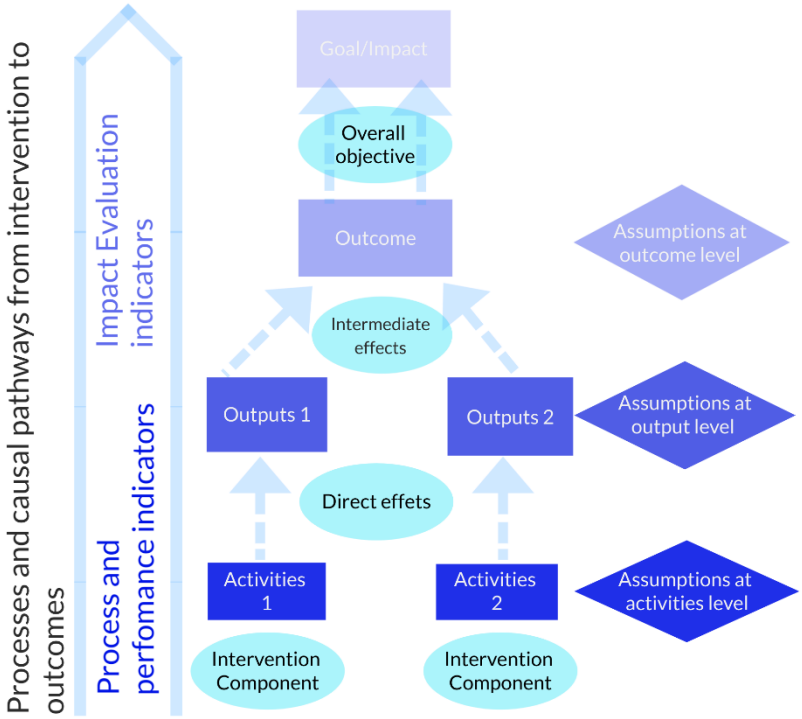


Figure 1 – The Implementation phase Logical Framework

The accompanying infographic illustrates the Training Plans Implementation process, highlighting the flow from resources to long-term goals. It begins with Input, detailing the resources utilised such as funds, staff, equipment, curriculum, and materials. This leads to Activities, which encompass the actions undertaken as part of the programme. Outputs follow, representing tangible products or services produced by these activities. Intermediate Outcomes then capture essential

changes such as short-term behavioural modifications, shifts in attitudes and capacities, and new decisions and actions that are pivotal for achieving the final outcomes. The process culminates in the Goal, which reflects the long-term changes and ultimate results of the programme.

Timeline

This testing phase will consist of two learning cycles, each lasting 12 months, with evaluations conducted at the end of each cycle (Months 28 and 40, Task 3.3). More specifically, the learning cycles will take place as initially planned:

Phase One: Scheduled from May 2024 to April 2025, focusing on initial implementation and gathering preliminary feedback.

Phase Two: Running from May 2025 to April 2026, aimed at expanding the reach and depth of the training, incorporating lessons learned from the first phase.

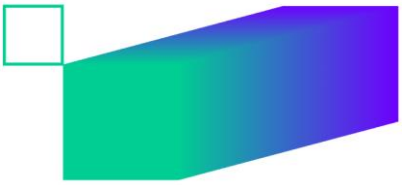
Monitoring, Evaluation and Learning (MEL):
This activity and this project have been designed following the framework on comprehensive evaluations developed by Rossi, Freeman, and Lipsy[2], with a review done by the MIT's J-PAL Lab in order to ensure that the design of the project would have positive impact during its implementation by the ability to respond to the problems or challenges faced throughout its implementation. For this reason, the main axes of the project's Monitoring cycle(s) are the following(1) Strategic planning, (2) needs assessment, (3) Literature reviews (background research), (4) process evaluation, (5) impact evaluation, (6) cost-effectiveness or cost-benefit analysis, (6) goals, outcomes, and measurement.

In terms of evaluation, the impact evaluation is divided into two main processes[3]: process evaluation or KPIs, which measures the performance of the project, and impact evaluation[4], which measures the impact of the outcomes.

Outreach Programme

A significant component of WP3 is the development of an outreach and onboarding programme. This programme is designed to extend the impact of the training beyond the immediate participants, reaching a broader audience within and possibly beyond the Pilot Organisations. The outreach efforts will disseminate key

[2] Lipsey, Mark. (2007). Peter H. Rossi: Formative for Program Evaluation. American Journal of Evaluation. 28. 10.1177/1098214007299518.
[3] Process evaluations are useful for programme managers and measure whether the milestones and deliverables are on schedule. A system to track processes should be established to track processes. It responds to the following questions: Whether services and goals are properly aligned; whether services are delivered as intended to the appropriate recipients; how well service delivery is organised; the effectiveness of programme management; how efficiently programme resources are used.
[4] Impact evaluations gauge the success of a programme—where success can be broadly or narrowly defined. They help us weed out less effective interventions from successful ones and help us improve existing programs. For example,
randomized evaluations (highly recommended for this project) particularly assess how a social programme works in a real-world setting. An important focus is often on human behaviour and participants' responses to the implementation of the programme.



findings, share best practices, and promote the adoption of effective RRI and OS training methodologies across wider academic and research communities.

Moreover, WP3 also builds on WP4 which focuses on exploring how policies at European, national and institutional levels could enhance the provision of training aimed at researchers and frame relevant strategy to facilitate institutional capacity building. Results of extensive policy mapping at three levels as well as concrete points for pilot institutions co-created via Open Studio exercises, support the delivery of the training in line with key OS and RRI policy recommendations and requirements.

By ensuring that WP3 activities are interconnected with the groundwork laid in WP2 and WP4, the PATTERN project aims to create a robust mechanism for not only delivering high-quality training but also for refining these efforts based on direct feedback and real-world application within the pilot settings. This iterative process fosters Open RRI competencies that are both effective and adaptable to changing research landscapes.

1.3 PATTERN's digital ecosystem

The PATTERN platform will merge resources from two innovative sources to create a robust digital ecosystem. The first component is a digital suite developed by the LPI, which includes tools tailored to the project's specific needs, such as an AI recommendation system that leverages data on competencies, learning opportunities, thematic synergies, and shared Sustainable Development Goal (SDG) challenges. The second component is a Learning Management System (LMS) and catalogue known as OpenPlato, developed by OpenAIRE and based on Moodle. This platform is set to enhance accessibility and dissemination of educational content across the research community.

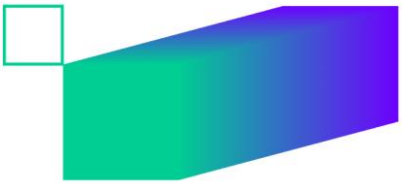
Together, LPI's and OpenAIRE's contributions will form a unified platform offering a comprehensive suite of services. This will include a public interface, access to the LMS, AI-enhanced resource and training modules visualisation with WeLearn, collaborative project spaces, and a dynamic view of the R&D community's members and news.

1.3.1 OpenPlato

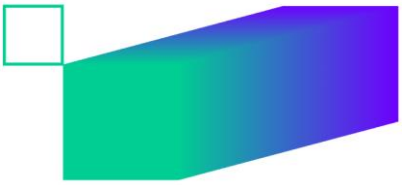
Training modules created under PATTERN will be integrated into the OpenPlato platform, optimised for FAIR compliance through strict adherence to metadata standards to ensure visibility and discoverability online. Additionally, the platform will support the construction of personalised learning paths and the deployment of these curricula, incorporating learner assessments.

Crucially, in the latest development stage of Task 3.1, the OpenPlato platform has been expanded to include a dedicated section for the PATTERN project along with specific share points for each of the eight thematic areas or transferable skills[5]. Each training module is being meticulously designed on digital platforms like Articulate

[5] Appendix I: PATTERN's Training Material at OpenPlato Platform



before being uploaded to ensure high-quality, interactive educational experiences. The initial version of this integrated platform is scheduled to launch at M12, featuring the first set of training materials, with subsequent updates planned for M30 and M42 to enhance and expand the offerings based on user feedback and evolving project needs.



2 Introduction

The European Research Area (ERA) is dedicated to transitioning Europe into a sustainable, digital, and resilient society. Grounded in the European Union's (EU) core values, research and innovation focus on excellence, ethics, gender equality, inclusiveness, and societal responsibility, among others. A critical aim of the ERA is to foster a stronger connection between science and society, enhancing public trust in science while preparing researchers with vital skills for today's labour market. This involves significant emphasis on upskilling and reskilling, aligned with the Horizon Europe framework and the European Skills Agenda, which underscore the importance of transferable skills to support intersectoral mobility and knowledge transfer.

The PATTERN project plays a pivotal role within this framework, aiming to embed inclusive and sustainable practices in Open Science (OS) and Responsible Research and Innovation (RRI). The project is guided by the principle of Responsible Research and Innovation (RRI), which involves collaboration among societal actors throughout the research and innovation process to ensure alignment with societal values, needs, and expectations. This includes a focus on public engagement, gender equality, ethics, Open Science, and more, encapsulating the ethos of 'as open as possible, as closed as necessary'.

PATTERN emphasises eight key transferable skills critical to OS and RRI: Open Access, FAIR Research Data Management, Citizen Science, Research Integrity, Gender, Non-discrimination and Inclusion in Research, Dissemination and Exploitation of Results, Science Communication, and Management and Leadership. The project begins with a comprehensive mapping and quality assessment of existing training opportunities (Work Package 1, WP1), alongside an analysis of policies at institutional, national, and European levels (WP4). These efforts aim to pinpoint gaps and bolster capacity within the ERA to tackle societal challenges and enhance dialogue between science, policy, and society.

The European Research Area is committed to guiding Europe towards a sustainable, digital, and resilient future, underpinned by the EU's (EU) fundamental values and principles in research and innovation. These principles include the pursuit of excellence, value creation, ethics, gender equality, inclusiveness, and societal responsibility. A primary focus within the ERA is to enhance the interface between science and society, thereby increasing public trust in science.

The PATTERN project is strategically positioned within this framework to promote inclusive and sustainable practices in Open Science and Responsible Research and Innovation (RRI). The project adheres to the concept of RRI, which involves collaborative cross-sectoral efforts among various societal actors throughout a research and participatory innovation process involving educational, policy, institutional and civil society systems-This collaboration ensures that the processes and outcomes are closely aligned with the values, needs, and expectations of society. Core aspects of RRI promoted by the project include public engagement, gender equality, social justice, ethics, science education, Open Science, governance, and sustainability, with the guiding principle of maintaining openness in science as much as possible.

2.1 Lifelong Learning and Training Development in Research fields: enhancing skills and knowledge continuously

The strong correlation between lifelong learning principles and the development of training materials for research encompasses various beneficial aspects. Lifelong learning emphasizes continuous education and adaptability, urging the inclusion of the latest scientific discoveries, methodologies, and technologies in training materials to keep researchers abreast of evolving fields. These materials should be personalized to cater to different career stages and learning styles, enhancing engagement and efficacy. Moreover, lifelong learning advocates for continuous improvement and interdisciplinary approaches, encouraging researchers to integrate knowledge from various fields to foster innovation. Training should be accessible to all researchers in diverse formats and should include mechanisms for feedback and reflection, promoting personal growth and community learning. By incorporating these principles, training materials can effectively support ongoing skill and knowledge development, adapting to the changing needs of the research community and ensuring a competent, innovative research workforce ready to tackle global challenges.[6]

Lifelong learning represents the continuous, voluntary, and self-motivated pursuit of knowledge, which serves not only personal but also professional development. This concept is crucial for enhancing social inclusion, active citizenship, and self-development, while also boosting competitiveness and employability. The significance of lifelong learning is growing due to several key factors: the increase in life expectancy, the rising old-age dependency ratio, the desire to improve quality of life, and the effort to maintain good physical and mental health. These factors collectively underscore the growing importance and relevance of lifelong learning in today's society.

Lifelong learning (LLL) has emerged as a crucial concept in both international and national education policies, signifying that learning is a continuous process extending across an individual's lifespan —early childhood, primary, secondary, and tertiary education along with adult and vocational training — and not merely confined to formal educational settings. This concept reflects the understanding that learning does not end with formal education but encompasses both formal and informal environments such as workplaces, communities, family environments, cultural institutions like libraries and museums, and digital learning environments. This inclusive approach builds adaptive pathways based on learners' needs. including people with disabilities, migrants, and indigenous peoples.[7]

By prioritizing comprehensive education reforms, the United Nations' Sustainable Development Goal 4 (SDG 4) expands significantly upon previous international education commitments. It emphasizes the importance of how education policies are developed and implemented.

6 Kelly, Diana K.. "Adult Learners: Characteristics, Theories, Motivations, Learning Environment." Retrieved 4 Dec. 2008 at http://www.dit.ie/media/documents/lifelonglearning/adlearn_chars.doc
7 Modernisation of Higher Education in Europe: Access, Retention and Employability 2014, Eurydice, May 2014, http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/165EN.pdf

It advocates for a perspective that connects policies with the ongoing educational and personal growth of learning communities and individuals, emphasizing the promotion of inclusive education. In line with this approach, PATTERN seeks to connect and prepare communities and individuals with adaptive skills and competencies that align with evolving labour markets.

Figure 2 – Essential elements of Lifelong Learning policy

2.2 Best Practices for promoting Lifelong Learning and developing learning materials

To effectively promote lifelong learning within formal education institutions, it is crucial to develop and champion a lifelong learning strategy at the institutional level. This strategy should serve as a transformational framework and involve a participatory process engaging senior leaders and all departments to ensure comprehensive involvement. Establishing a dedicated unit to operationalise this strategy can further enhance its effectiveness. Additionally, fostering partnerships is vital. Creating enabling conditions for partnerships across various levels of formal education institutions can facilitate meaningful collaborations. It is also important to encourage dialogue between institutions, local governments, civil society, and the private sector, highlighting the diverse opportunities these partnerships can provide to educational institutions.

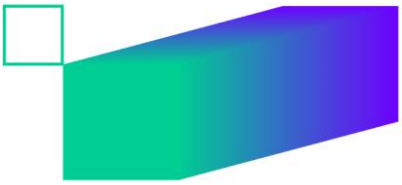
2.3 Strategies for enhancing teaching, learning and institutional support in Lifelong Learning

Teaching and learning processes

To invigorate teaching and learning processes, it is essential to develop national frameworks that foster innovative methods, promoting autonomy and self-motivation among learners. Institutions should be guided to adopt process-oriented approaches and allow national curricula the flexibility to be shaped by learners' experiences and motivations.

Learner Support Systems and Services

Strengthening ties between academia and the labour market is vital, especially for researchers and academics. This can be achieved by enhancing career guidance



services within academic institutions and developing support systems for researchers who may face challenges, such as career interruptions or adapting to new research environments. Tailored support, including language and professional development courses, should be provided to meet the specific needs of researchers, including those from international or vulnerable backgrounds.

Staff Development

Investing in the continuous professional development of researchers and academic staff is essential for enhancing the quality of education and research. This involves providing leadership and management training for senior researchers and ensuring that staff development priorities are integrated into national academic training programmes.

Organisation of Learning Spaces

National policies should recognise that learning transcends traditional classroom boundaries, advocating for the diversification of learning environments within educational institutions. Resources should be allocated to reorganise existing spaces and create new ones that accommodate new pedagogies, blended learning, and the expanded use of technology, thus supporting a more flexible and inclusive learning framework.

2.4 Strategies for implementing Lifelong Learning in non-formal or semi-formal education

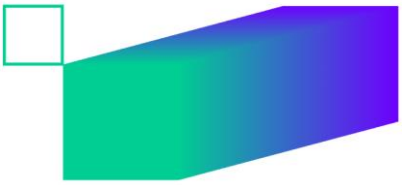
Non-formal and semi-formal learning mean the same but non-formal education is mainly used in vocational training whereas semi-formal education is used in Higher Education. Both align to a common focus and framework: a way of learning that is acquired either in addition or alternatively to formal learning, which is structured by recognised educational systems such as official curricula, qualifications or certification requirements (UIL, UNESCO. 2012).

Relevance

To enhance the relevance of non-formal education within lifelong learning strategies, it's crucial to ensure programmes serve as effective pathways for personal and social transformation. This involves recognising the impact of relevant learning opportunities on enhancing participation and inclusion. Tailoring programmes to the specific competencies needed by learners at various levels and actively involving representatives from target groups in programme development are essential steps. Additionally, non-formal learning methodologies should be critically evaluated to ensure they meet the learners' needs and aspirations effectively.

Quality Assurance

Focus on the professionalisation of non-formal educators to ensure high-quality learning experiences. This extends to the training and development of leaders and managers of non-formal learning institutions. Implementing standardised monitoring and evaluation (MEL) frameworks will further enhance the quality and effectiveness of non-formal education.



Learning Outcomes

Assessing the effectiveness of non-formal learning is vital. This includes evaluating the learning outcomes and the resources required to achieve these outcomes. Understanding the role of learning outcome measurements can help improve quality, accountability, and financing. The Recognition, Validation and Accreditation of non-formal and informal learning outcomes (RVA) are important for making diverse learning experiences visible and valued. Enhancing the formative aspects of assessment can also motivate learners by providing them with constructive feedback.

Research

Invest in research to identify factors that significantly impact the quality of non-formal learning. Utilising best practices and evidence from research can improve quality management across non-formal education settings. Integrating action research into professional development programmes can also bolster quality assurance efforts, creating a continuous improvement cycle that benefits both educators and learners.

3 Developing effective educational planning for adaptive Adult education

This chapter outlines strategic methodologies and tools essential for creating effective educational environments tailored to adult learners, which directly supports WP3's objectives of developing, delivering, refining, and evaluating personalised training programmes.

In the context of WP3, the insights and methodologies discussed in Chapter 3 will guide the refinement of co-created training materials and aid in the piloting of these materials through OpenAIRE's network of partners. The chapter's detailed exploration of adaptive learning, course design, and educational planning provides a foundational approach that will enhance the curation of the training platform outlined in Task 2.3.

Additionally, the operational and strategic planning tools presented, such as the phase model and key performance indicators, will facilitate the rigorous evaluation of training materials. This ensures alignment with both internal standards and external evaluation criteria. Furthermore, the approaches to understanding and engaging diverse stakeholder groups, as discussed in the chapter, will support WP3's goal of building an effective outreach programme and aligning with external networks and projects.

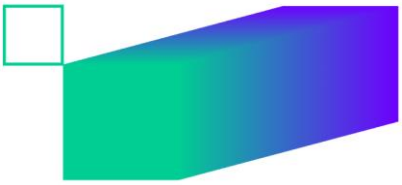
Thus, Chapter 3 serves not only as a guide for developing adaptive educational plans but also as a strategic resource for WP3, ensuring that the training delivered is effective, well-monitored, and aligned with broader project goals.

3.1 Co-creating the content, structure and pathways with the OS Community

A collaborative co-design workshop[8], co-organised by the LPI and AU and co-facilitated by seven topics leaders, served as pre-test for the co-creation methodology which will be used to co-create the content, structure and learning pathways for PATTERN Curriculum. This workshop also, aimed at identifying and addressing gaps and opportunities across various thematic areas and transferable skills in the framework of Digital Skills for FAIR and Responsible OS.

More than a hundred and twenty participants from the OS Community gathered around this co-creation method that linked a pedagogical approach inspired by the "Double Loop Learning" (Eberle and Childress, 2005) with the fishbone design thinking tool. The Miro board was utilised to facilitate an interactive and efficient mapping process (for more information, here). This brought together diverse expertise and perspectives to meticulously map out the needs and potential enhancements in the training landscape. The insights gathered during this

[8] Lazzeri, E., Lagido, C., Giraldo Sevilla, A., & Hasani-Mavriqi, I. (2023, octobre 3). Digital Skills for FAIR and Responsible Open Science: Co-creating the Content, Structure and Pathways. Zenodo. https://doi.org/10.5281/zenodo.8401778



workshop, aided by the visual and collaborative features of Miro, have been instrumental in shaping the initial training modules.

In this deliverable, we present the initial designs of the training modules in Chapters 4 and 5. These modules have been specifically crafted to effectively bridge identified gaps and leverage opportunities, enhancing learning outcomes in the process. The consortium is committed to developing well-rounded, impactful training solutions that are informed by a comprehensive understanding of the requirements and challenges faced by researchers and educators in today's dynamic research environment. This collaborative effort ensures that the training modules are not only relevant but also equipped to meet the evolving needs of the academic and research community[9].

3.1.1 Best practices and types of learning materials

When creating educational content for adult learners, especially for teaching foreign languages in short-term courses, it is essential to tailor the materials to meet distinct learning goals, with a focus on facilitating peer review processes and enriching the resources for researchers and academics. The selection and development of these materials should be based on scientifically proven methods that enhance the learning experience and meet educational goals effectively. Here are some key types of materials and their objectives.[10]

A. Motivational Materials

- Objective: To create initial motivation and interest among learners.

- Examples: Songs, posters, dramas, videos. These elements are designed to engage learners emotionally and spark their interest in the subject matter.

B. Participatory Materials

- Objective: To ensure active participation and engagement from learners.

- Examples: Games, dialogues, role plays. These interactive materials facilitate hands-on learning experiences, promoting deeper understanding through active involvement.

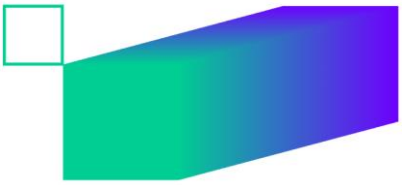
C. Instructional Materials

- Objective: To provide clear instructions and foundational knowledge.

-Examples: Primers, leaflets, charts, instructional videos. These resources are essential for conveying core concepts and procedures in a structured and understandable manner.

D. Follow-up Materials

9 Chapter 4: Gaps and Opportunities
10 : https://files.eric.ed.gov/fulltext/EJ1157810.pdf



-Objective: To reinforce learning, enhance literacy skills, and provide additional knowledge.

-Examples: Books, booklets, leaflets, newsletters, magazines, videos. These materials support continuous learning and reinforcement of concepts covered during training.

E. Methodological Considerations in Material Design

The design of educational materials for adult learners must consider the optimal ways of learning that address both the educational tasks and the unique needs of adults. This includes:

i. Intensive Learning Techniques: Developing new, intensive methods for short-term language courses that can effectively impart knowledge within limited time frames.
ii. Scientific Basis: Ensuring that the material design and teaching methods are backed by scientific research and best practices in adult education.
iii. Communication and Professional Competence: Materials should not only facilitate language learning as a means of communication but also integrate it into general professional competencies.

F. Study Objectives and Outcomes

The primary aim of this approach is to establish a scientific foundation for creating effective language teaching techniques for adults, identifying strategies that lead to real success in language mastery. This involves a methodical organisation of training materials that are not only educationally sound but also tailored to the specific needs of adult learners.

By focusing on these aspects, educators can enhance the effectiveness of language learning in adult education settings, making the process both rewarding and successful.

3.2 Pedagogical approaches for Digital Learning

3.2.1 Adaptive learning: understanding Adult education and self-learning models

The concept of Andragogy was initially introduced by Alexander Kapp, a German educator in 1833, and was later popularised in the United States by Malcolm Knowles. Andragogy, or adult education, emphasises the development of the individual, both internally and externally, focusing on self-reflection, life experience, and character development as central elements of learning. This method contrasts with traditional Pedagogy, which is typically centred on the directive teaching of children, where the educator controls the learning process and content.

Andragogy asserts that adults are self-directed learners who are motivated by internal drives, and they learn most effectively when:

- They understand the reason behind their learning.
- They can direct themselves and take responsibility for their learning.
- They bring valuable experiences that enhance their own and others' learning.

- They recognise a need to learn to improve effectiveness in various aspects of their lives.
- Their learning is task- or problem-centred, focused on real-world applications.
- Their motivation is primarily internal rather than driven by external factors.

The benefits of blended learning models, which combine face-to-face instruction with online learning, are also explored. These models cater to the diverse needs of adult learners, offering flexibility, accessibility, and a variety of learning modalities that enhance engagement and retention.

By integrating Andragogical and Heutagogical principles, blended learning models can significantly enrich the educational experiences and outcomes for adult learners.[11]

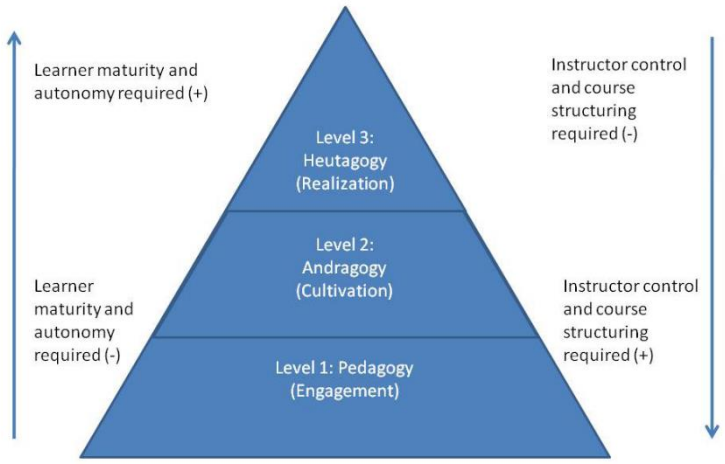


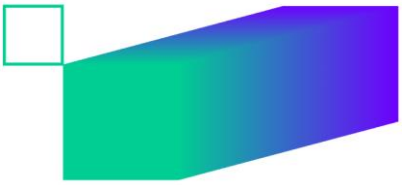
Figure 3 – Progression from Pedagogy to Andragogy and to Heutagogy[12]

The main pedagogical objective of PATTERN is that participants move towards a greater autonomy in terms of familiarisation and assimilation of the content and methods, as well as moving from a self-directed learning (Andragogy) to a self-determined learning (Heutagogy).

In order to achieve this, the content development should follow the following criteria: (1) that the pedagogical methods and tools could combine a balance between theory and practice of 32% and 68% respectively. This is the reason why throughout the learning material development a balance between theory and practice is requested so the passage between andragogy to heutagogy could be ensured. Besides, to facilitate the transition from a lecturer centred approach to a learner centred approach, we include an engagement process at the first level (pedagogy) where there is a high facilitation for learners to get used to the digital learning environment and the introduction to the topic, before the cultivation level (andragogy) where they should apply this knowledge to their background. Finally,

11 Halupa, Colleen. (2015). Pedagogy, Andragogy, and Heutagogy. 10.4018/978-1-4666-8571-0.ch005.

12 (source: Canning, 2010, as shown in Blaschke, 2012)



the main learning outcome should reflect the realization of a Project which includes what they learned applied to their own sector (s) or discipline(s).

Andragogy: Level 1 (involvement) and level 2 (cultivation):

According to Malcom Knowles (1984) and Kearsley (2010), andragogy will be based on four principles applied to adult learning:

- Adults should be involved in the design and development of their learning experience. For this reason, there will be a set of co-creation methods such as the one explained in item 3.1. to facilitate this task.
- Experience should be at the core of all learning tasks and activities.
- Real-life applications and benefits should be linked to the learning course.
- Give participants the opportunity to absorb information, rather than memorise. To this end, adult learning focuses on problems rather than content (Kearsley, 2010).

Knowles (1984) provides an example of applying the principles of andragogy to training design:

- They understand the reasons for teaching specific things (e.g., certain commands, codes, functions, operations, etc.) need to be explained.
- Instruction should be task-oriented rather than promoting memorisation: learning activities should be in the context of common tasks to be performed by others.

Instruction should consider the wide variety of backgrounds of the individuals involved; learning materials and activities should allow for different levels/types of prior experience with computers. Since adults are self-directed, instructions should enable learners to discover their expected outcomes without relying on the training facilitation. However, learners should be offered guidance and help when there is any doubt or problem in a set of catch-up sessions or via a slack, discord or WhatsApp channel with their peers, mentors and/or facilitators.

The objective of self-directed learning is, among others, to help learners develop the capacity for self-direction to support transformational learning as well as “emancipatory learning and social action” (Merriam, 2001, p. 9) while the learners mature and reflect on life experiences in relation to their respective roles.

3.2.2 Heutagogy and Project Based Learning: level 3 (realization)

Heutagogy, or self-determined learning, further extends the principles of Andragogy by emphasising learner agency, capability, and the production of not just knowledge but also personal skills in self-directed and self-determined contexts. This approach is particularly beneficial for adult learners who can manage their learning and apply it innovatively and adaptively.

As in an andragogical approach, the facilitator also helps and orients the learning process through coaching and resources. However, the facilitator cedes full ownership of the learning path and process to the learner, who negotiates what they

should learn and how it will be learned in order to finalise their project (Hase and Kenyon, 2000) (Eberle, 2009).

For this reason, it is highly recommended to use practical case studies, projects or activities by which they could apply their background to the recently acquired knowledge and skills.

PATTERN Digital Ecosystem **A. OpenPlato (Moodle): a Teachers Hub and Learning Management System**

Online education platforms offer diverse methods for course material delivery, utilising both proprietary software like WebCT/Blackboard and open-source solutions like OpenPlato (Moodle), allows customisation to meet specific needs of trainers and course developers. These platforms facilitate the creation of virtual learning environments that can be as immersive as the technology permits. However, the selection of these platforms often depends on the institution and comes with certain limitations as this offers a Hub for “teachers” but not for participants.

B. Projects: a learners’ hub empowered with AI recommendations

In order to fulfil the need for interactivity, interaction and autonomy, Projects provides a hub for participants to work collaboratively, connect with other researchers and projects as well as provide suggestions based on their knowledge, skills and courses or resources using AI.

Effective communication between students and instructors is crucial in online learning. To facilitate this, a variety of synchronous and asynchronous communication tools are used to ensure all students can interact regardless of their time zone. For instance, email serves as an asynchronous tool, while chat functions offer synchronous interaction.

C. Linking Moodle with Projects and Upcoming functionalities

To ensure these tools meet educational needs, this tools will be tested in the real scenarios (identified here) identified in WP2.2..

This will help in assessing the students' ability to navigate and utilize the PATTERN platform and tools effectively, as well as ensuring the User Experience (UX) and Learning Experience (LX) are smooth as well as prioritizing upcoming features and functionalities. The LPI is already setting clear communication schedules and a roadmap that will be constantly updating in order to adapt to learning and facilitation needs. Additionally, establishing a resource center with tutorials, conduct guidelines and addressing conflicts promptly are critical to maintaining a conducive learning environment .

D. Deployment methodology

The deployment methodology related to linking Moodle with projects and upcoming functionalities involves integrating Moodle, a leading learning management system, with various project management tools. This integration aims to streamline educational processes by enhancing Moodle's capabilities to manage and track project-based learning activities. The upcoming functionalities might

include advanced tracking of learner progress, improved collaborative tools, and seamless synchronization between Moodle courses and real-time project updates. This methodology ensures that learning environments are more connected and responsive to the needs of both educators and learners, facilitating a more efficient and interactive educational experience.

3.2.3 Course design for synchronous and asynchronous delivery

General Course Structure

In both synchronous and asynchronous settings, courses should start with clear and accessible introductory materials. This includes the course description, syllabus, instructor contact information, office hours, and objectives. A comprehensive calendar of assignments and topics should be prominently posted for easy reference, helping students manage their schedules and expectations effectively[13].

Showcasing Student Work

Displaying exemplary student work within the course platform serves as a benchmark for quality and expectations, providing motivation and concrete examples of desired outcomes. It's crucial to obtain consent from students before showcasing their work to respect privacy and intellectual property.

Content Modules

Content modules should be rich in media and interactive elements, whether delivered synchronously or asynchronously. These modules should include text, links, and multimedia resources to cater to diverse learning preferences and reinforce material comprehensively.

Synchronous Delivery

For synchronous sessions, real-time interactions like webinars, live discussions, and instant feedback play a crucial role. Tools like Zoom or Microsoft Teams enable direct communication and foster a dynamic learning environment where students can engage with instructors and peers in real-time.

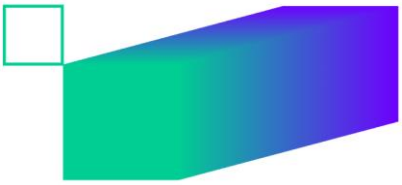
Asynchronous Delivery

In asynchronous courses, flexibility is key. Materials should be accessible at any time and include recorded lectures, digital readings, and interactive forums where students can post and respond at their convenience. This method should emphasise self-paced learning with regular milestones to ensure progress.

Interactive Tools for Both Modalities

Both synchronous and asynchronous courses can benefit from interactive tools such as discussion boards, wikis, and blogs. These platforms support collaborative learning and community building, allowing students to contribute content, share

13 https://ec.europa.eu/programmes/erasmus-plus/project-result-content/6fc940f9-0e08-4304-80a1-c340478be2d5/03%20EVA%20EN%20elearning%20Part%20181125_final.pdf



insights, and provide peer feedback. RSS feeds can notify students of updates, ensuring they stay informed about course changes or new postings.

Technology and Accessibility

Both delivery methods should ensure that all students can access course materials on various devices. Online content should be compatible with mobile and desktop platforms, and materials like PDFs should be viewable online and downloadable for offline study.

Feedback and Assessment

Regular feedback mechanisms should be integrated into both synchronous and asynchronous courses. Synchronous interactions allow for immediate feedback during live sessions, while asynchronous courses can utilise automated quizzes and moderated forums to provide timely responses.

By designing courses with these elements, educators can cater to a range of learning styles and logistical needs, ensuring that all students have a robust and engaging educational experience regardless of the delivery method.

3.2.4 The course outline template[14]

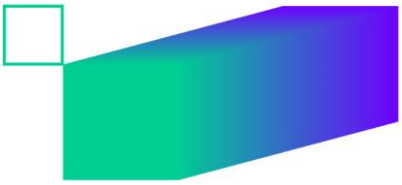
This document is adapted from the "Design your training" form[15] originating from the EOSC Synergy[16] project, part of the EU H2020 programme, and incorporates elements from the EU-Citizen-Science[17] platform tailored to project and challenge-based learning. It features a training title and a direct link to the final masterfile for streamlined access to materials.

The course template offers an in-depth analysis for each designed course under the principles and purpose of each of the eight transferable skills. This course template delves into the historical context and current developments relevant to its focus area, addressing specific challenges such as data quality, stakeholder engagement, and practical applications. It demonstrates how to integrate these aspects into relevant professional contexts. Designed to be completed in 1.5 hours, the course provides a specialised enrolment key for participants. This format is adaptable to all transferable skills, ensuring each module is relevant to its respective discipline.

The training course plan is aimed at including target audiences such as researchers at different stages of their careers and is structured to address gaps and societal challenges identified in previous project work packages. Each section of the template is adjustable to align with the principles and objectives associated with the eight transferable skills identified by the project: Open Access, the FAIR principles, Gender Equality, Dissemination and Exploitation, Citizen Science, Science Communication, Research Integrity, and Management and leadership.

Learning outcomes are carefully outlined for various researcher levels, emphasising the enhancement of pertinent skills and knowledge. The course layout is suitable for

[14] Appendix II: The course outline template
15 https://www.eosc-synergy.eu/
16 https://www.eosc-synergy.eu/
17 https://eu-citizen.science/



asynchronous/self-paced learning, featuring pre-learning activities, diverse engaging learning activities, and options for both asynchronous and synchronous interaction. This flexible structure allows for modifications to cater specifically to the principles and aims of each transferable skill, ensuring a comprehensive and contextually relevant learning experience. Each module progresses logically, leading to a defined project outcome and evaluation, assessed through established methods and accreditation standards to provide a coherent and impactful educational journey.

3.3 The development of the Training Plans for Pilots

3.3.1 Planning and organizing with the Phase Model

The Phase Model[18] is a structured framework used to guide the stages of a training or educational programme from planning through to long-term impacts. It consists of five critical phases:

Input: This initial phase focuses on preparation, involving the selection and quality assurance of various elements such as the qualifications of the trainer, the availability of necessary devices at the venue, and the training materials to be used.

Throughput: This phase occurs during the training itself and includes the trainer's ability to manage group dynamics, the size of the group, and other in-session elements. Although some aspects may be pre-planned, this phase is distinct for its focus on real-time adjustments and responses to spontaneous events within the training environment.

Output: Here, the immediate results of the training are evaluated. This involves assessing what participants have learned, the skills they have acquired, and any changes in their attitudes. It's a critical phase for understanding the effectiveness of the training content and delivery.

Outcome: This phase looks at the application of what was learned in practical settings outside of the training environment. It assesses how participants use their new skills and knowledge in real-world scenarios, such as a craftsman using newly learned business skills to set up a workshop.

Impact: The final phase measures the broader effects of the training on the community and society, such as contributions to GDP, societal improvements, or increased tax revenues resulting from participants' enhanced skills and professional activities.

By utilising the Phase Model, planners and educators can ensure a comprehensive approach to training, from meticulous planning and effective delivery to practical application and far-reaching impacts. This model helps trace the journey from

18 https://repositorio-aberto.up.pt/bitstream/10216/102477/2/179006.pdf

educational input to societal impact, highlighting the transformative potential of well-structured educational programmes.[19]

	Description	Indicators	Means of Verification	Risks / Assumptions
Goal				
Outcomes				
Outputs				
Activities				
Inputs				

Figure 4 – Planning and organizing with the Phase Model

3.3.2 Operational planning for educational measures

During the operational planning session, participants will evaluate their current approaches to educational planning and explore improvements. The session outlines effective strategies for structuring training plans, particularly focusing on synchronous and asynchronous delivery modes:

Synchronous Training

Time Allocation: Keep sessions short, ideally 1-2 hours, to maintain engagement and avoid fatigue. Include breaks in longer sessions and consider spreading sessions over several days or weeks.

Number of Participants: Manageable group sizes (10-30 participants) are recommended for effective interaction. For larger groups, use small group discussions (in person)/breakout rooms (online) and additional facilitators to manage discussions.

Asynchronous Training

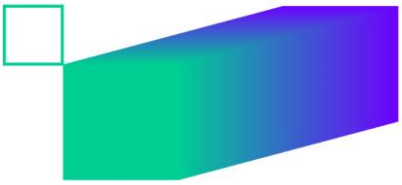
Time Allocation: Allow participants to access training flexibly, with no fixed scheduling. Break content into short modules (15-30 minutes each) and suggest a timeline for completion.

Number of Participants: This mode can support large numbers of participants due to its flexible nature. Utilise discussion boards and forums for interaction.

General Recommendations

19 Fleming, Ted. (2020). Models of Lifelong Learning: An Overview. In M. London (Ed.), The Oxford Handbook of Lifelong Learning, 2nd Edition (pp. 1-26). Oxford University Press.. 10.1093/oxfordhb/9780197506707.013.3.

https://ec.europa.eu/programmes/erasmus-plus/project-result-content/6fc940f9-0e08-4304-80a1-c340478be2d5/03%20EVA%20EN%20elearning%20Part%20181125_final.pdf



- Interactive Elements: Incorporate quizzes, videos, and assignments to enhance engagement.
- Feedback Mechanisms: Offer immediate feedback in synchronous settings and timely responses in asynchronous settings.
- Technology Use: Ensure all participants can access and use the required technology comfortably.
- Accessibility: Adhere to accessibility standards to accommodate all participants.

This part aims to refine educational planning by considering various delivery modes, participant engagement strategies, and the integration of interactive and accessible content. These elements are crucial for the effective delivery of educational measures tailored to diverse learning environments and participant needs.

3.3.3 Setting Key Performance Indicators (KPIs) to understand your audience better

Establishing clear and measurable Key Performance Indicators (KPIs) is crucial when designing training plans for a diverse audience including researchers, academics, citizens, policymakers, administrators, and other stakeholders. Here's a guide on essential KPIs for evaluating training effectiveness across different groups[9]:

Completion and Participation Rates

Purpose: Measures engagement and effectiveness of training content and delivery.

Knowledge Gains

Purpose: Assesses the increase in knowledge from pre- to post-training assessments.

Skill Application

Purpose: Gauges the real-world application of skills through follow-up surveys or evaluations.

Feedback and Satisfaction Scores

Purpose: Reflects participants' perceptions of the training's relevance and quality through post-training surveys.

Behavioural Changes

Purpose: Monitors changes in behaviours in workplace or academic settings, indicating the training's impact.

Policy Impact (for Policymakers)

Purpose: Evaluates how training influences policy development or revision.

Community Engagement (for Citizens)

Purpose: Assesses mobilisation towards community involvement or activism post-training.

Research Output (for Academics and Researchers)

Purpose: Measures contributions to the field through publications or innovations post-training.

Professional Advancement

Purpose: Gauges career advancements or promotions facilitated by the training.

Organisational Impact (for Administrators)

Purpose: Evaluates benefits to organisational operations like improved efficiency or enhanced team performance.

Long-Term Retention

Purpose: Tracks long-term retention of knowledge and skills, identifying needs for ongoing learning.

Adaptation and Flexibility

Purpose: Measures participants' ability to adapt to new challenges or changes post-training.

These KPIs allow for a systematic evaluation of a training programme's success, offering insights for enhancements. Aligning these indicators with the specific training goals and the unique needs of each audience group ensures their relevance and effectiveness.

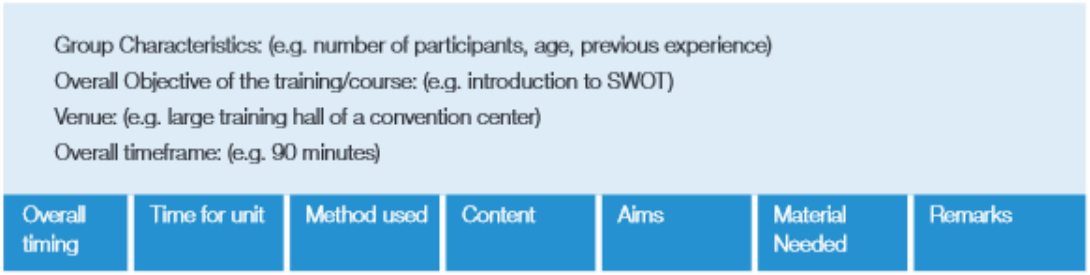


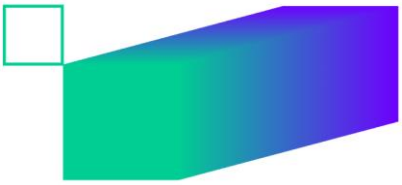
Figure 5 – Training design structure

3.3.4 PATTERN's target groups include a diverse array of stakeholders

Researchers (TG1): This group encompasses researchers at various stages of their careers, from undergraduate and doctoral students to post-doctoral fellows, both within and outside the European Research Area (ERA). They will directly benefit from the trainings provided.

Higher Education Institutions (TG2): These institutions are not only the deliverers of training but also include key personnel responsible for the training of researchers, such as directors, heads of doctoral schools, research centres, vice-rectors, vice-deans, and educational directors.

Policymakers (TG3): This group includes authorities and institutions responsible for research and higher education at local, regional, national, European, and



international levels. They play a crucial role in influencing the organisation and structuring of trainings in higher education institutions.

Civil Society (TG4): Comprising associations, interest groups, science communicators, and science journalists, this group engages with researchers who have been trained through the PATTERN programme, fostering broader societal interaction with the scientific community.

3.3.5 Evaluation in Adult Learning and Education

Evaluation in adult learning utilises SMART objectives to clarify goals in a measurable way. SMART, an acronym for Specific, Measurable, Attainable, Realistic, and Time-bound, helps in setting clear and trackable objectives.

Specific objectives clarify the "who, what, how, where" details.

- Measurable refers to quantifying goals to track progress effectively.
- Attainable means the goals are achievable within available resources and time.
- Realistic ensures the objectives fit within the broader aims of the programme.
- Time-bound specifies when the objectives should be met.

Applying SMART objectives in education often presents challenges:

Competencies like learning or knowledge are inherently difficult to measure directly and may require indirect indicators (e.g., "XY% of participants can define SMART").

Setting attainable and measurable goals can be subjective and depends on making educated guesses about what is achievable (e.g., deciding whether a 50% or 100% target is appropriate).

Without a baseline, it's hard to demonstrate that progress is a result of the training. Solutions include setting objectives that show progress relative to a baseline or accepting some assumptions as reasonable.

The nature of SMART objectives can also lead to a "technification" of learning goals:

- They may not capture the full scope of learning aims (e.g., knowing party leaders' names vs. empowering participants).
- There's a risk of focusing too much on easily measurable input-related objectives rather than impact outcomes. To mitigate this, it's beneficial to link objectives to broader impact indicators.

Lastly, while SMART objectives are valuable for making achievements visible to stakeholders, it's crucial to balance the effort spent on measuring success against actually achieving it. Sometimes, it’s practical to stick with a reasonable objective, even if it's not perfectly measurable.

In essence, while SMART objectives provide a structured approach to evaluating educational outcomes, their application requires flexibility, thoughtful consideration, and an understanding of the broader educational context.

By the end of this session	90%	of the Participants	are able to formulate	SMART objectives for successful attainment of learning outcomes in their courses
Time Bound	Measurable	Specific (who)	Specific (how)	Specific (what)

Figure 6 – Evaluation process

3.3.6 Enhancing monitoring acceptance in Training

Trainers should recognise that participants may already have intuitive methods for monitoring the progress of their courses, which they might prefer over formalised tracking systems. Rather than attempting to persuade participants to adopt new monitoring techniques outright, trainers should focus on highlighting the benefits of these procedures. By demonstrating how monitoring can effectively communicate learning progress to both participants and external stakeholders, trainers can show the tangible advantages of these systems. This approach not only respects the existing methods of participants but also encourages openness to integrating more structured monitoring tools by showcasing their value in enhancing transparency and accountability in the learning process.

	Input	Throughput	Output	Outcome	Impact
Monitoring					
Feedback					

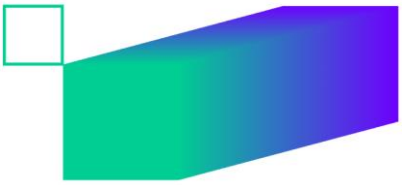
Figure 7 – Monitoring process for each stage of development

3.3.7 The initial analysis template

The Initial Training Analysis template[20] is an essential tool designed to guide the early planning stages of training development. Adapted from the EOSC Synergy project's 'Initial Training Analysis' form[21], this document helps trainers define clear objectives, identify the target audience, and outline preliminary course content. It facilitates the selection of appropriate delivery methods and the planning of development and delivery timelines.

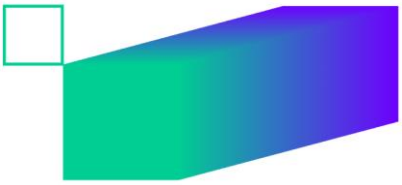
Purpose of the Initial Training Analysis Template:

20 Appendix III: The Initial Training Analysis Template
21 https://moodle.learn.eosc-synergy.eu/course/view.php?id=15&section=4



- **Training Goals**: Helps trainers specify what successful outcomes will look like, such as skill development, knowledge enhancement, attitude changes, or increased service usage.
- **Target Audience**: Assists in identifying the intended audience, which could range from researchers and students to professionals with specific training needs. This ensures the content is relevant and engaging.
- **Course Content Structure**: Trainers can draft the course structure, including topics, durations, and formats, preparing for more detailed design in later stages.
- **Delivery Methods**: The template considers potential delivery methods, whether through live sessions, self-learning, or a combination, taking into account possible constraints.
- **Development and Delivery Planning**: Encourages planning who will develop and deliver the training, what tools and software will be needed, and how to manage the training timeline.
- **Material Reusability**: Promotes the efficient use of existing materials and discusses the reusability and sharing of newly developed materials.

By utilising this template, trainers ensure a methodical approach to training planning, enhancing effectiveness and adaptability to meet learner needs and organisational goals.



4 Methodology & Results per thematic area

Chapter 4 [22]of the document focuses on the methodology and results for each thematic area within the training programme. This chapter meticulously details the development of training modules, pinpointing gaps and opportunities, and presenting comprehensive syllabi for various thematic areas such as Open Access, FAIR Research Data Management, Citizen Science, Research Integrity, Gender, Non-discrimination and Inclusion, Science Communication, Mental Health Leadership, and Dissemination and Exploitation.

The primary purpose of this chapter is to outline the structured approach taken in crafting the training modules, starting with an analysis of existing gaps and leveraging potential opportunities to enhance educational content. Each section of the chapter provides a summary of course content and pilot phases, alongside a detailed syllabus that guides the training delivery. This systematic presentation helps in understanding the strategic development of the courses and the expected impact on various stakeholders. This chapter serves as a crucial link in ensuring that the training materials are effectively aligned with the needs and goals of the thematic areas covered, aiming to improve knowledge, skills, and practices among the participants.

4.1 The development of the Training Modules

4.1.1 Open Access (OA)

Gaps and opportunities

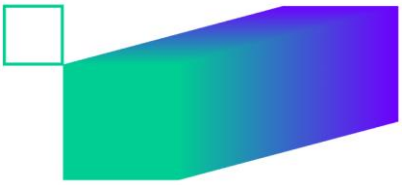
In the thematic area of Open Access (OA) within the PATTERN project, efforts are being focused on updating and adapting existing educational resources to reflect the current standards and requirements of the Open Science framework. This includes the integration of Plan S and the Horizon Europe framework, which have significantly influenced the landscape of Open Access since the creation of earlier resources.

Key Resources for Adaptation

FOSTER and FIT4RRI Projects: These projects initially produced a comprehensive set of learning resources, which, although somewhat outdated, are in the process of being updated by OpenAIRE. These resources are published in SCORM format, facilitating their easy integration into learning platforms like OpenPlato. Their Creative Commons licences allow for non-restrictive use and adaptation, making them valuable for PATTERN's purposes.

S-LéGAMI! Open Access - User Manual for Researchers: This Italian document is thorough in covering all Open Access issues under the Open Science umbrella. It provides accurate and current information that could be translated and made more interactive by PATTERN, with potential enhancements demonstrating project results.

[22] Summarization on Appendix IV



The Contemporary Open Access Ecosystem: The Good, The Bad and The Ugly: This resource effectively covers the basics of OA and addresses issues related to predatory journals, a notable concern within the OA community.

EuroDoc - Ambassador Training M2 - Open Access: This training covers essential OA topics and provides historical context on scholarly communication, addressing concerns related to research assessment.

Open Science Training Handbook - Open Access to Published Research Results: While comprehensive and user-friendly, this handbook requires updates to include developments in Open Science since its publication in 2018.

Additional Resources

RETAIN Project (SPARC Europe): Though these resources were not assessed in time for the initial quality evaluation, they are recommended for consideration in future stages of the PATTERN project.

Annual Open Access Week and Various Independent Guides: Events like Open Access Week and guides produced by institutions such as Jisc offer valuable information on Open Access and broader Open Science aspects.

EU Projects EHRI3 and Blue-Cloud 2026: These projects are actively developing and implementing training modules in data management and Open Access, contributing further to the available resources.

Focused on

Underrepresented Themes: There is a notable gap in training materials that address funders' requirements, repositories, and predatory journals. These topics are crucial for practical application, particularly for early career researchers.

Specific Routes of OA: Training on different models of Open Access, such as gold and diamond routes, and understanding regional and European Commission-funded programmes are insufficiently covered.

Promotion of Plan S: There is a need for increased emphasis on educating researchers about Plan S and its implications for Open Access publishing.

Prioritisation from Miro Board

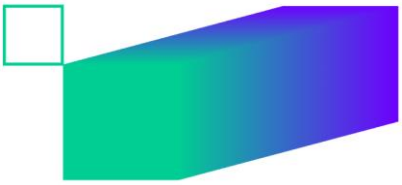
Specific Routes of OA: Focusing on different OA models and their implications.

Preprints and Open Peer Review: Highlighting these aspects as integral components of modern scholarly communication.

OA Policies: Detailed training on OA policies from funders, governments, and institutions is essential.

Copyright and Licences: Enhancing understanding of copyright issues and licensing options within OA.

Funders Requirements, Repositories, and Predatory Journals: Addressing these critical areas to equip researchers with the necessary knowledge to navigate the OA landscape effectively.



The PATTERN project aims to address these gaps by enhancing and expanding the available Open Access training materials, ensuring they are comprehensive, up-to-date, and tailored to meet the evolving needs of researchers and the broader academic community.

Syllabus

This specialised training programme is meticulously crafted to deepen researchers' understanding and engagement with Open Access publishing and peer review processes. The curriculum includes three targeted courses: "Meeting Funder Requirements: Navigating Open Access Publishing," "Mastering Open Peer Review: Evaluating and Engaging in Transparent Scholarly Discourse," and "Empowering Researchers: Retaining Copyright and Maximising Your Impact in Open Access Publishing." Each course is strategically designed to address the critical elements of Open Access, from ensuring compliance with funding mandates to actively participating in and shaping the peer review landscape. Tailored for a diverse academic audience, including early career researchers and senior principal investigators, the programme combines theoretical insights with practical tools through interactive webinars and digital platforms. This approach not only enhances participants' ability to increase the visibility and dissemination of their research but also supports the broader adoption of Open Access principles across the scholarly community.

4.1.2 FAIR RDM

Gaps and opportunities

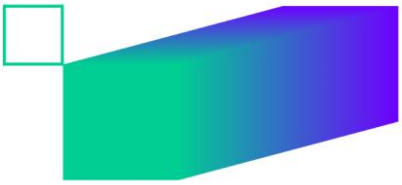
In the thematic area of FAIR Data Management within the PATTERN project, the focus is on enhancing the understanding and implementation of the FAIR principles—Findable, Accessible, Interoperable, and Reusable data aimed at researchers This area is integral to Responsible Research and Innovation (RRI) and is frequently incorporated into Research Data Management (RDM) training but also merits dedicated resources.

Overview of Current Resources and Framework

A comprehensive mapping exercise has classified high-quality, English-language resources on FAIR data to build upon. These resources are organised according to a standard FAIR training curriculum, which categorises content based on user level (beginner, intermediate, advanced) and audience type (student, researcher, trainer, infrastructure/support, citizens). This framework is dynamic and will be updated with newer resources identified under the PATTERN project's Work Package 2 (WP2).

Key Resource

"How to be FAIR with your data: A teaching and training handbook for higher education institutes" (Engelhardt et al., 2022), available under a CC BY licence, stands out as an especially useful resource. It provides detailed lesson plans and comprehensive guides for trainers, covering essential tools, links, and examples necessary for developing effective FAIR data training. Although it primarily supports synchronous training, it also aids in creating self-paced learning materials. Notably,



the handbook requires supplementary effort to develop specific training materials or to locate reusable materials referenced within (https://doi.org/10.17875/gup2022-1915)

"How to FAIR", a self-paced course under a CC BY licence, serves as an excellent introductory resource. Though it doesn't cover as extensive a range of topics as the handbook, it effectively imparts the core FAIR principles using a mix of text, videos, and quizzes (https://doi.org/10.5281/zenodo.3712065).

Additional Noteworthy Resources

FAIR Cookbook: Contains practical 'recipes' for applying FAIR principles to research objects, serving as a resource for developing more advanced training or as a reference (https://faircookbook.elixir-europe.org/content/home.html)

FOSTER Open and FAIR Research Data: a short course to take learners through the differences and similarities between the FAIR principles and Open Science and their underlying data and how this can benefit them (https://openplato.eu/blocks/catalog/detail.php?id=62)

MANTRA- FAIR Sharing and Access: a unit that outlines the benefits and challenges associated with sharing research data openly (https://mantra.ed.ac.uk/fairsharingandaccess/)

Gaps and Opportunities

While high-quality materials for beginner levels are available for reuse, resources at intermediate and advanced level are much sparser. In addition, resources that address areas of RDM and FAIR data sharing with a *domain-specific focus* are required at all levels. Gaps were identified for:

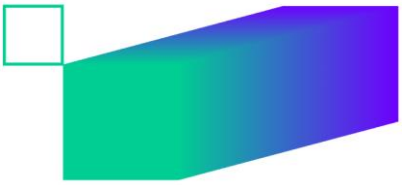
- Controlled Vocabularies and Metadata Standards: While generic training exists, there is a significant gap in discipline-specific training that is crucial for making research data FAIR across various scientific fields.
- Fostering a Culture of Reusability: Training needs to go beyond making data FAIR; it should also promote data reuse to become a commonplace practice across disciplines.
- Data Sensitivity: Increased demand exists for training that addresses not only GDPR regulations but also broader issues like IPR and data sensitivity related to commercial interests or national security.

Prioritisation from Miro Board

Emphasis on Standards, Processes, and Curation: Focus on establishing and adhering to standards and processes that facilitate data curation and long-term management.

Encouraging Data Reusability: Highlighting the importance of making reusable data a standard practice in more fields.

Addressing Data Sensitivity: Prioritising the development of training modules that cover various aspects of data sensitivity comprehensively.



Syllabus

The project partners involved in the FAIR RDM theme are working towards the "FAIR Research Data Management Fundamentals" course, which offers a detailed introduction to the principles of Findable, Accessible, Interoperable, and Reusable (FAIR) data, emphasising their application in Research Data Management (RDM). Designed for a broad range of learners from beginners to intermediates, it targets master students, early career researchers, and beyond. The course, spread over 12.5 hours, includes sessions on understanding the FAIR principles RDM, creating Data Management Plans, and practical steps for publishing and archiving data. In addition, the "FAIR Research Data Management Masterclasses" provide advanced insights on standardisation, sensitive data handling, and FAIR software for seasoned researchers.

The audience spans from early career to established researchers, all looking to integrate FAIR principles in their data management.

Upon completion, participants will be proficient in articulating the benefits of FAIR principles, designing effective DMPs, and implementing FAIR RDM actions. The course blends online self-learning with in-person sessions for a rich educational experience.

The content is crafted from existing materials and new content as needed, with a focus on project-based learning (PBL) and a transition towards competency-based evaluation, reflecting a balance of theoretical knowledge, practical skills, and critical analysis.

This Fundamentals course consists of five sessions, three at the beginner level and two at the intermediate level. Each of the workshops consists of a lecture (interspersed with discussions and other interactive activities), use cases in the different domains, and an activity (exercise/learning by doing, etc). Incorporated into each session is project work, which will culminate in a project related to FAIR Research Data Management in the learner's chosen domain(s) (project-based learning).

The course and individual sessions can be delivered and experienced as in-person/online synchronous learning, or through asynchronous 'self-paced' learning. This is because all materials and project work will be openly available and structured using OpenPlato and the Project Platform.

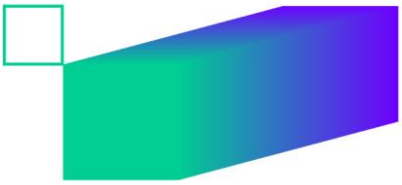
4.1.3 Citizen Science (CS)

Gaps and opportunities

The mapping and quality assessment of Citizen Science training conducted in Work Package 1 of our project has revealed some gaps and opportunities for enhancing researcher training in Citizen Science.

These span various strategic areas:

Intersectionality with other research domains: there is a need for training in CS that intersects with other key skill areas such as Open Science/Access, Gender, and non-



discrimination and inclusion in research. Incorporating carefully selected case studies from real projects can ensure topical relevance across multiple domains.

Training in diverse knowledge domains: while there is a wealth of projects in domains like environmental science, biodiversity, and astronomy, CS has much to offer in other research areas. Researchers from various domains can be empowered to effectively contribute to or implement CS projects.

Problem and project-based learning: Problem and project-based resources foster active learning and interactivity. PATTERN is collaborating with the EU project European Citizen Science Academy and Circle U network to provide a problem-based learning approach to CS training.

Private Sector Engagement: private companies are stakeholders, actors, or service providers in Citizen Science projects and researchers can learn to leverage these partnerships for mutual benefit.

Implementation Roadmaps in institutions: Although identified as a gap in WP1, the trainings from Time4CS are now publicly available and will be reused here.

Policy development and funding: Developing robust policies, guidelines, and fundraising strategies is essential for enhancing the framework for CS. This is the focus of PATTERN's Work Package 4. These themes are pertinent to researchers who which to implement or scale up CS projects.

Prioritisation from Miro Board Co design Workshop results:

- Enhancing intersectionality between Citizen Science and other areas to ensure projects are adaptable and relevant.
- Conducting proficiency gap analyses to identify where additional training or resources are needed.
- Addressing training needs of researchers in various research domains.
- Facilitating community and broad engagement, including corporate collaborations as appropriate, to enhance the scope and impact of Citizen Science projects.

Syllabus

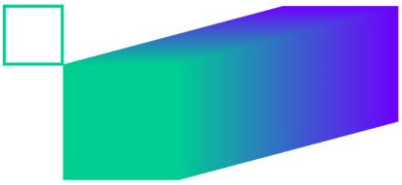
Training Goals:

By the end of the CS101 module, participants should be able to:

- describe the relevance of CS to reaching their research objectives.
- explain the role of CS in creating societal impact and change.
- put CS in perspective in the broader context of Open Science (OS);
- apply practical tools and resources to navigate their CS journey.

By the end of the participant coordination module learners should be able to:

- apply practical skills in participant coordination, to foster engagement and collaboration, while also paying attention to their training needs within Citizen Science projects.



- explain ethical principles related to participatory research and the need for ethical review processes for Citizen Science projects.
- plan for effective communication in projects, focusing on two-way dialogue, to enhance participant experiences and contributions.
- discuss the challenges and the strategies for inclusiveness when working with specific communities, such as indigenous or marginalised communities.

Audience & Research Themes:

Researchers at all stages, addressing learning needs and WP1 gaps.

Topics intersect with research integrity, inclusion, and science communication.

Knowledge & Skills Development:

Identifying selected CS projects in the participant's field of interest; elaborating on the different levels of participation and the ten principles of Citizen Science.

Understanding and applying ethical principles in Citizen Science.

Developing and maintaining equitable partnerships with volunteers.

Crafting inclusive communication plans and engaging diverse communities.

Projects & Outcomes:

Developing of project ideas in Citizen Science.

Discussion of community agreements and ethical research applications.

Assessing participant motivations and sustaining engagement.

Production of communication materials reflective of Citizen Science projects.

Learning Methodologies:

Utilises active and project-based learning, facilitated through domain-specific case studies and group work.

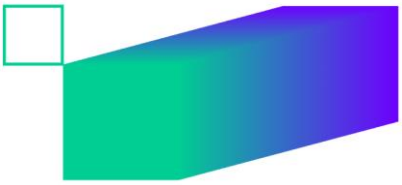
Encourages reflective practice and discussions to deepen understanding of ethical and inclusive research.

Progressive Engagement by Research Level:

R1 Researchers focus on applying principles to their interests.

R2 Researchers explore a deeper dive into topics and apply learnings to their own projects.

R3 Researchers contribute advanced insights, applying training to broader research programmes and mentoring.



4.1.4 Research Integrity (RI)

Gaps and opportunities

In the thematic area of Research Integrity within the PATTERN project, several well-designed resources have been identified as potentially valuable for adaptation in WP2. These resources cover a range of topics crucial for fostering a comprehensive understanding of research integrity and ethics within the research community.

Highlighted Courses and Resources

The Dilemma Game[23]: Offers a dynamic and engaging approach to learning about research integrity and ethics. It is designed for use in a group setting to facilitate discussion and deepen understanding of complex issues including authorship in research collaborations, power dynamics, and privacy concerns. It is also available as an app, for self-reflection and self-paced exercise and group works.

Moral-compass: Virtues-based Trainings: These trainings are geared towards trainers in a "train-the-trainer" format and utilise a blended-learning approach. They are ideal for diverse groups, including senior researchers and leaders, covering virtues-based ethical training effectively.

Embassy of Good Science: This platform serves as a comprehensive resource for research integrity, offering guides, materials, and a community that supports ongoing training in research integrity and ethics. It features wiki functionalities that enhance flexibility, allowing trainers to directly access, modify, and share training materials online.

The Lab: Developed by the U.S. Department of Health and Human Services and the Office of Research Integrity, this resource provides immersive learning experiences that simulate the real-world challenges faced by various stakeholders in academia. It covers topics such as scientific misconduct and power dynamics, with materials available in multiple languages.

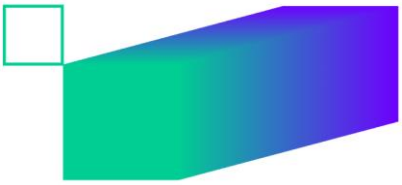
Additional Resources

VIRT2UE Toolbox: Available on The Embassy of Good Science, this toolbox is open source and supports the training of research integrity and ethics through a variety of e-learning and face-to-face resources.

Guidance for Implementation of Ethics and Integrity Training: Provides a comprehensive checklist for developing training programmes, with examples spanning key themes in research integrity.

Toolbox for Research Integrity: Useful for institutions planning, implementing, or reviewing research integrity plans and regulations. It addresses comprehensive areas including data management, training, environment, and breaches of research integrity.

[23] https://www.eur.nl/en/about-eur/policy-and-regulations/integrity/research-integrity/dilemma-game



Upright Web-based Educational Tool: Covers a broad range of topics including intellectual property and privacy, with links to further resources. A dynamic version is available for integration into Learning Management Systems.

Gaps and Opportunities

Intersectionality in Research Integrity: There is a need to integrate research integrity with other research dimensions such as Open Science, inclusion, and environmental impact, as well as the social consequences of research misconduct.

Domain-Specific Needs: Most existing resources focus on life, biomedical, and health sciences. There is a significant gap in training that covers other domains, which could benefit from case studies and training materials that foster critical thinking and adaptability.

Emerging Topics: Topics such as artificial intelligence, cultural competence in research, and the needs of citizen scientists are emerging areas that require development in research integrity training.

Prioritisation from Miro Board

Intersectionality: Focus on the intersection of research integrity with various research dimensions to ensure comprehensive training.

Intellectual Property and Power Dynamics: Enhance training on intellectual property rights, authorship, research collaborations, and supervision dynamics.

Privacy and Confidentiality: Address the increasingly important issues of privacy and confidentiality in research.

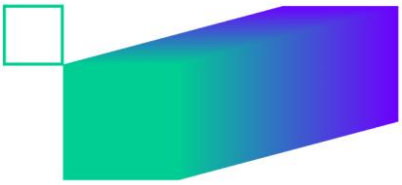
Broadening Domain Coverage: Expand training to include domains beyond life, health, and biomedical sciences.

Addressing Emerging Topics: Incorporate training on AI and other emerging technologies, cultural competence, and the needs of diverse research participants.

In summary, while there are valuable resources available for research integrity training within the PATTERN project, there is a clear need for updating existing materials and developing new resources that address current gaps and emerging topics in the field. This will ensure that research integrity training remains relevant and effective in fostering ethical research practices across all domains and disciplines.

Syllabus

This syllabus presents a course structured to enhance understanding and application of research integrity and GSP. Targeting a broad audience within academia, it's designed as a "Train-the-Trainer" programme to foster a culture of ethical research practice. The course is rich with current topics and practical exercises, enabling participants to navigate complex ethical scenarios effectively and uphold integrity in their research endeavours. The course will be adaptable, suitable for various learning environments, with ongoing assessments to ensure comprehensive understanding and practical application of research integrity principles.



Training Goals:

Instil a deep understanding of research integrity and Good Scientific Practice (GSP).

Prepare participants to train others, reinforcing a culture of ethical compliance and integrity in research.

Audience:

PhD candidates, researchers, research supervisors, managers, and any individual interested in research integrity.

Course Summary:

A comprehensive programme highlighting principles of research integrity, data management, and ethical publishing.

Skills for upholding GSP, with a focus on Open Science practices and conflict resolution in academia.

Learning Outcomes:

Master the principles of GSP and apply them within personal and institutional research.

Develop critical thinking for ethical Open Science practices and responsible research data management.

Prepare to guide others in understanding and practicing research integrity.

Content Highlights:

Delving into research misconduct, data management, citation ethics, publication standards, and responsibilities across research roles.

Inclusive approach, addressing issues in responsible Open Science and global cooperation.

Teaching methodologies designed to promote active learning and reflection.

Delivery Approach:

Hybrid format, encouraging self-paced and asynchronous learning for sustainability and adaptability beyond the project's scope.

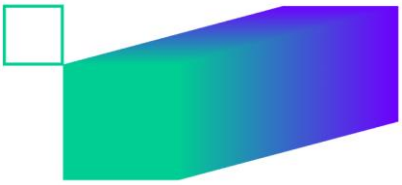
Emphasises self-reflection and a virtue-based approach to foster personal growth in ethical research practices.

Institutional Delivery:

Led by EARMA, with a consortium of partners, combining expert knowledge and experience for rich learning.

Tools & Materials:

Software and tools for facilitating virtual meetings and collaborative sessions, to be confirmed (TBD).



4.1.5 Gender, non-discrimination and inclusion (GNI)

Gaps and opportunities

In the thematic area of Gender, Non-discrimination, and Inclusion in research within the PATTERN project, significant efforts are directed towards addressing and enhancing training resources to foster more inclusive research environments. This focus is essential in developing practices that not only respect but actively promote diversity within academic and research settings.

Key Resources and Their Adaptations

"Creating a Gender Sensitive Institution" (TCD, SAGE SwafS project): This action-oriented online course is exemplary in addressing institutional gender equality and unconscious bias. It's structured to enhance user-friendliness with segmented learning stages, from introduction to knowledge extension. Despite its comprehensive resources and interactivity, it lacks a focus on intersectionality, highlighting a potential area for further development.

GEAM Tool (ACT project): Primarily a monitoring tool, this e-learning module available in multiple languages acts more as a reflective instrument than a direct training tool. It encourages discussions on institutional biases, gender-based violence, and the broader individual contexts affecting research environments.

Gender Equality Academy Training Resources (GE Academy project): Provides asynchronous training materials on gender equality plans and related topics, equipped with handouts and templates adaptable for various training needs.

Tools and Resources in Gender Sensitive Teaching Methods: Focuses on integrating gender dimensions into higher education, particularly in STEM fields. These resources vary in format, including interactive and regularly updated materials.

UniSAFE Toolkit: A recent addition offering comprehensive strategies and frameworks to address gender-based violence in research and academia effectively.

Gaps and Opportunities

Beyond Gender Equality Plans: There is a noticeable gap in addressing topics such as gender-based violence comprehensively within the existing training frameworks.

Advanced Training and Trainer Resources: Advanced materials specifically designed for trainers, teachers, and lecturers, including those focusing on the monitoring and evaluation of Gender Equality Plans (GEPs) implementation, are scarce.

Broader Dimensions of Diversity and Inclusion: Current resources often overlook the intersectionality between gender and other dimensions of discrimination, such as the needs of migrants and other vulnerable social groups.

Enhancing Self-Awareness of Bias and Privilege: There is a need for materials that not only raise awareness of bias and privilege but also provide practical tools for action.

Recommendations for Improvement

Integration of Intersectionality: Training materials should incorporate a broader perspective that includes various dimensions of diversity, not limited to gender, to ensure all forms of discrimination are addressed.

Development of Comprehensive Resources: Expanding the range of training materials to include more interactive and comprehensive tools that cover the theoretical foundations of critical race theory, social identity theory, and other relevant frameworks.

Engagement with New Projects: PATTERN may benefit from collaborating with initiatives like EOSC FUTURE and Blue-Cloud 2026, which are developing training modules focused on gender and inclusion.

The PATTERN project is uniquely positioned to influence and shape the discourse around gender, non-discrimination, and inclusion in research by addressing these gaps and prioritising the development of comprehensive, interactive, and inclusive training resources.

Syllabus

This course aims to culturally shift academic and research sectors towards embracing gender equality and inclusive practices. Through an in-depth exploration of the relevant themes, participants will be able to critically reflect upon and improve their work environments, team collaboration, research proposals, and overall productivity. The flexible delivery model ensures broad accessibility, empowering a diverse audience to integrate these essential principles into their professional activities and academic endeavours.

Course Objectives:

Enhance researcher competence in gender equality, non-discrimination, and inclusion.

Provide practical skills and knowledge for fostering inclusive Research Performing Organisations (RPOs).

Equip researchers to improve funding success through comprehensive diversity strategies.

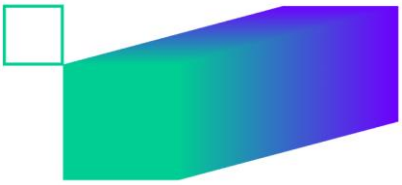
Audience:

A wide range of researchers across career stages, from Master students to established researchers at UniSR, UH, and LPI.

Course Overview:

Online modules and in presence lectures spanning crucial topics such as understanding gender equality in research, non-discrimination, and inclusive practices.

The application of inclusive policies and preparation techniques for funding success in research proposals.



Learner Outcomes:

Heightened awareness of power dynamics and biases.

Practical tools for embedding gender dimensions in research.

Enhanced methodological skills for data exploitation and analysis.

Pre-requisites:

Research background recommended for full course engagement.

Content:

Focus on unconscious biases, inclusive language, and gender-responsive research.

Emphasis on gender and inclusion in research funding applications.

Strategies for creating inclusive work environments and data hygiene practices.

Delivery Method:

Flexible and adaptable, with self-directed online modules and in-person material options.

Utilises platforms like OpenPlato and Miro for a dynamic learning experience.

Timeline:

Delivery scheduled from January 2025 to April 2026, accommodating institutional academic calendars.

Development & Delivery:

Course led by UniSR, with the contribution of ESF and LPI, specialising in gender inclusivity in STEM and data & gender issues.

Tools & Infrastructure:

OpenPlato for content management, alongside collaborative tools for interactive sessions.

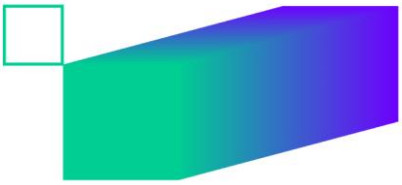
Materials for Re-use:

Quality-checked materials, Miro workshop resources, and successful projects from other communities will be repurposed.

Assessment & Evaluation:

Bloom's taxonomy framework with a focus on continuous assessment and a shift towards competency-based evaluation.

A blend of knowledge, understanding, application, and analysis/synthesis in coursework.



4.1.6 Science Communication (SC)

Gaps and opportunities

In the thematic area of Science Communication within the PATTERN project, there exists a distinct preference for face-to-face training formats, which has resulted in a limited availability of reusable resources suitable for WP2's needs. Despite this, several notable courses and initiatives provide foundational elements that can inspire PATTERN's curriculum development.

Highlighted Resources and Inspiration

UWE Bristol: 'Science Communication: Masterclass': Although traditionally conducted in-person, this well-regarded course was adapted successfully for online delivery during the COVID-19 pandemic. While not directly reusable for PATTERN's needs, it serves as a valuable model for effective science communication training.

University of Torino and Universidad Autónoma de Madrid - FutureLearn Course: The 'Science Communication and Public Engagement' course, available on FutureLearn, offers open-access learning, though certification requires a fee. This format could inspire PATTERN's approach to offering accessible yet certifiable online training.

SciComm4all Initiative: This series of ten short videos introduces key concepts in science communication, such as preparing for a video interview. While comprehensive, the series lacks a general introduction to media logic versus scientific logic. These videos, under a CC BY-ND licence, offer an opportunity for PATTERN to provide additional contextual resources.

Greg Foot's Science Communication Training: Available on YouTube, this course features high-quality, concise videos that cover fundamental topics in science communication, including media interviews. While not modifiable, these videos could complement PATTERN's training materials or serve as additional study resources.

Quest Project 'Educational Toolkits for Science Communication': Offers a diverse range of formats and topics suitable for researcher training, including modules on social media and artificial intelligence. Although the Quest project has concluded, its successor, project COALESCE, continues to develop resources that PATTERN could utilise.

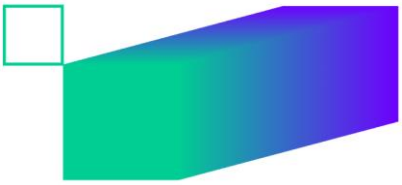
Gaps and Opportunities Identified

Inclusivity: Addressing the challenge of reaching diverse audiences in science communication.

Communicating Uncertainty: Training researchers on how to communicate the current limits of scientific knowledge effectively.

Engagement with Policymakers: Developing strategies for effective communication with policy influencers.

Social Media Utilisation: Providing training on the use of social media platforms, including search engine optimisation and analytics.



Data Visualisation: There is a noted lack of training focused on effective data visualisation in digital and social media.

Addressing Misinformation: Teaching strategies to combat misinformation and ensure clear communication in a crowded information space.

Foundational Training for All Researchers: Ensuring that every researcher is equipped with basic science communication skills.

Theoretical Dimensions of Science Communication: Integrating comprehensive discussions on the role of science in society into training programmes.

Dialogical Approaches: Moving beyond the deficit model to embrace two-way communication in science outreach.

Prioritisation from Miro Board

Basics of Science Communication: Focusing on fundamental skills and knowledge.

Uncertainty and Limits of Scientific Knowledge: Enhancing researchers' ability to communicate complex and evolving scientific information.

Engagement with Policymakers: Developing targeted strategies to effectively communicate scientific findings to influence policy.

The PATTERN project aims to address these gaps by developing a robust curriculum that not only covers essential topics in science communication but also adapts to emerging needs and technologies. By leveraging both existing resources and developing new modules, PATTERN can significantly enhance the effectiveness and reach of science communication training.

Syllabus

This syllabus outlines a course tailored to imparting science communication skills crucial for researchers. The course offers a blend of foundational knowledge and hands-on practice, with an emphasis on strategic communication to enhance the societal impact of research. Participants will gain the ability to present their findings to non-scientific audiences effectively and utilise communication as a strategic element in research, all delivered through a flexible and dynamic approach.

Course Goals:

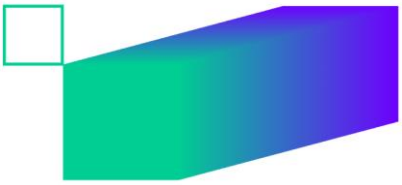
Equip researchers with the skills to effectively communicate complex scientific concepts to media and policymakers.

Develop strategic communication competencies to influence decision-making and public understanding.

Target Audience:

Designed for PhD students, postdocs, and Master students preparing to enhance the visibility and impact of their research.

Course Summary:



An introduction to crafting and conveying messages tailored to media, social media, and policymakers.

Techniques for writing press releases, handling interviews, and engaging policy discussions.

Strategies for utilising social media to communicate scientific information effectively.

Learning Outcomes:

Learn media operations and tailor scientific messages for broader dissemination.

Master communication skills to articulate research to various audiences.

Acquire strategies for effective policy communication and engagement.

Content Highlights:

Fundamentals of science communication, including audience analysis and media writing skills.

Interactive exercises for interview preparation.

In-depth exploration of social media strategies and policy communication tactics.

Delivery Approach:

A blend of live, interactive sessions available both in-person and online.

Comprehensive materials and digital resources provided for flexible and engaging learning experiences.

Institutional Delivery:

Sessions developed by SISSA and RBI.

Internal institution options for tailored delivery and focus.

Tools & Materials:

Online platforms like OpenPlato for content access.

Interactive tools such as Miro for collaborative learning.

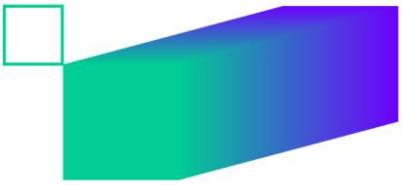
Assessment & Evaluation:

Structured around Bloom's taxonomy with a progression toward competency-based assessment.

Emphasis on practical application and analysis of communication strategies.

4.1.7 Mental Health Leadership (ML)

Gaps and opportunities



In the thematic area of Mental Health and Leadership within the PATTERN project, addressing the availability and applicability of training materials presents a significant challenge. Many resources are restricted by access issues, and open-access materials often provide static content with limited contextual applicability, particularly for Research and Innovation Responsibly (RRI) purposes. Consequently, there is a discernible scarcity of readily reusable materials for Work Package 2 (WP2).

Highlighted Courses and Resources

Career Management & Entrepreneurial Mindset Course: Designed for doctoral students and early career researchers, this course offers practical insights into career development and entrepreneurship. It leverages the European Entrepreneurship Competence Framework (EntreComp) and includes diverse learning resources like expert interviews, making it highly applicable both within and outside academia.

Personal Effectiveness and Leadership Course (Doc Talent4EU): This course aims to develop key skills in doctoral candidates, such as self-awareness, productivity, resilience, teamwork, and leadership. It is structured with detailed information on lesson lengths and ESCO SKILLS, facilitating easy adaptation for future training initiatives.

Researcher Management and Leadership Training (University of Colorado on COURSERA): This extensive online course covers a broad spectrum of management and leadership topics suitable for principal investigators. It includes over 13 hours of video content, addressing areas such as mentorship, financial management, and administrative duties. While it offers in-depth resources, the course's copyrighted nature and paywalled certification limit its adaptability.

Excluded Resources

Several resources were excluded from direct adoption due to poor accessibility:

The University of Edinburgh's Leadership Courses: Despite their comprehensive structure and tailored content, access restrictions limit their direct usability.

IREX and EARMA Leadership Curriculums: These courses provide valuable frameworks and toolkits but are similarly restricted by accessibility issues.

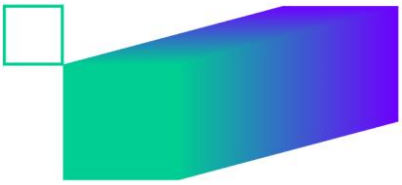
Static Resources

Vitae's Leadership Development for Principal Investigators: Offers an in-depth look at management and leadership with practical examples but requires significant adaptation for integration into the PATTERN framework.

Researcher Development Framework (RDF): Stands out as a planning tool that articulates the knowledge, behaviours, and attributes of successful researchers at various career stages.

Innovative Approaches

Project BEYOND: Mentioned during an interview, this project is developing training materials focusing on supervision and mentoring through gamification, suggesting



potential innovative methodologies that could be integrated into future PATTERN training materials.

Gaps and Opportunities

Mentor-Mentee Relationships: There is a gap in training that effectively supports these relationships, crucial for career development and mental health.

Networking Gaps: Training that facilitates building connections within academic and professional communities is crucial for advancing researchers' careers and mental health.

Moving Forward

To address these gaps, there is a need to develop more dynamic and adaptable training materials that not only focus on leadership and mental health but also integrate mentorship and networking skills. These materials should be designed to be easily accessible and adaptable to meet the diverse needs of researchers at different stages of their careers, supporting not just skill development but also fostering a supportive research culture.

Syllabus

This syllabus outlines a course designed to empower early career researchers with mental health leadership skills. The curriculum covers mental health basics and systemic change strategies, aiming to enhance personal well-being and advocate for supportive academic environments. The course will be delivered in a hybrid format to accommodate diverse learners, with an emphasis on active participation and practical application. Using a combination of established resources and new content, the programme is set to promote significant.

Training Goals:

Equip researchers with the knowledge and tools to address mental health in academia.

Develop strategies for personal well-being and systemic change in academic mental health.

Audience:

Early career academics, including PhD candidates and postdoctoral researchers.

Supervisory and senior academic roles, as well as administrative staff.

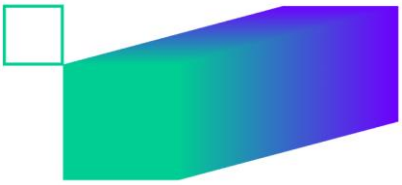
Course Summary:

A free, face-to-face course structured into three half-day modules.

Covers mental health basics, challenges in academia, and strategies for creating a supportive environment.

Learning Outcomes:

Understanding mental health fundamentals and their relevance in academia.



Implementing strategies for maintaining personal mental health.

Advocating for mental health policy changes at institutional and national levels.

Content Highlights:

Mental health concepts, the academic mental health landscape, and self-care techniques.

Institutional support services, stigma reduction, and supervisor responsibilities.

Legal frameworks, policymaker engagement, and designing healthy research environments.

Delivery Approach:

Launches with a two-day hybrid workshop for immediate and remote participation.

Adapts for self-learning with comprehensive materials for ongoing access.

Institutional Delivery:

SciLink and Learning Planet Institute to host initial workshops.[24]

Curriculum development informed by needs and experiences of potential participants.

Tools & Materials:

Moodle as the primary platform for hosting and interactive learning.

Incorporates an exercise booklet from prior training as a starting point.

Assessment & Evaluation:

Uses Bloom's taxonomy for structured learning progression.

Assesses knowledge, understanding, and application through project-based tasks.

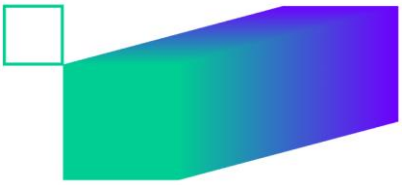
4.1.8 Dissemination and Exploitation (DE)

Gaps and opportunities

In the thematic area of Dissemination and Exploitation, our assessment identified several challenges due to the restricted accessibility of many relevant courses and materials, resulting in a limited scope for our quality evaluation. Nevertheless, a few notable open-access static resources are identified as beneficial for reuse with up-to-date content:

Toolkit for Researchers on Legal Issues: This resource acts almost as an e-learning module with regular updates, offering essential guidelines on copyright of data, datasets, databases, intellectual property rights (IPR), and personal data protection.

[24] Event to be held in Budapest on 14th May at the CEU. SciLink is local organiser of the ReMO 2024 Conference (ReMO COST Action event) and is renting an auditiorum and two meeting rooms at the venue.



It is designed to help researchers and institutions open their data while complying with legal standards.

Dandelion - Promoting EU Funded Projects: This guideline document provides effective communication strategies tailored for diverse audiences including the general public, policymakers, media, and academia. It addresses audience needs, communication dos and don'ts, and offers methods for impactful dissemination.

Successful Valorisation of Knowledge in Horizon Europe: This guide is crucial for researchers aiming for Horizon Europe funding, highlighting the EU's knowledge valorisation policy and providing detailed insights into communication, dissemination, and exploitation activities. However, it suggests improvements like enhanced navigation and a more concise presentation format.

From Ideas to Social Enterprise: This guide focuses on using university intellectual property for social benefit, particularly within the UK context. It discusses distinctions between for-profit and social enterprises, types of IPR, and legal structures for social enterprises, also providing practical tools for social impact measurement and business planning.

Despite these resources, gaps remain in training for exploitation, particularly in creating social impacts as a form of research result exploitation. Further opportunities for development could be explored through existing private providers or additional mapped collections. The training area could benefit significantly from enhanced collaboration with ongoing EU projects like BY-COVID, which are also developing training in this field.

Syllabus

Training Goals:

This training module is designed to maximise the impact of Horizon Europe projects by employing effective communication, dissemination, and exploitation strategies. By the end of the training, learners will be equipped with the tools and knowledge necessary to create impactful Communication and Dissemination Plans (CDEP) from the proposal stage through project implementation, focusing on enhancing visibility and the practical application of research findings.

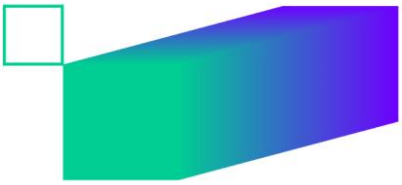
Audience:

Primary: Late-career researchers involved in Horizon Europe proposal writing, including doctoral students and post-doctoral researchers.

Secondary: Early-career researchers and master students interested in or involved in Horizon Europe projects.

Course Summary:

This is a free, modular course totalling 9.5 hours, designed for researchers preparing Horizon Europe proposals or managing ongoing projects. It covers the essentials of communication, dissemination, and exploitation within the Horizon Europe framework and provides practical tools for increasing project impact.



Participants will learn to develop effective CDEP, manage communication activities, and exploit research results. Prior knowledge of the Horizon Europe Framework Programme is recommended, and completion of the PATTERN Science Communication module is beneficial. By the end of this training, participants will:

- Understand the roles of communication, dissemination, and exploitation in maximising research impact.

- Be able to develop and implement effective CDEP.

- Know how to enhance project visibility and exploit research results practically.

Benefits/Outcomes for Learners:

Familiarity with Horizon Europe's CDEP requirements and practical applications.

Capability to develop strategic communication and dissemination plans.

Skills to effectively communicate and maximise the impact of research findings.

Enhanced ability to secure funding by aligning proposals with Horizon Europe's impact expectations.

Pre-requisites:

Basic understanding of Horizon Europe's structure and its second pillar clusters.

It's beneficial to complete a prior course on Science Communication.

Content and Resources:

The course is structured into two stages, covering both the proposal and implementation phases of Horizon Europe projects:

Proposal Stage:

Understanding CDEP in Horizon Europe.

Implementation Stage:

Managing communication and dissemination activities.

Focusing on the exploitation of scientific results and IPR.

Visual pitch training for research results.

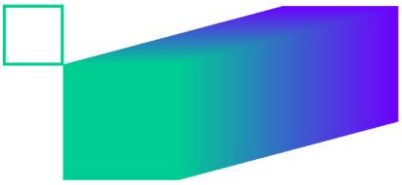
Delivery Method:

Combines live sessions and online self-learning to accommodate different learning preferences.

Uses interactive tools like Miro and Mentimeter to enhance engagement.

Timeline and Delivery:

To be coordinated with pilot schedules. Initial sessions planned at SISSA from October 2024 and UniSR from late 2024 for researchers.



Development and Delivery:

Developed by APRE and LOBA, delivered by trainers from pilot organisations during live sessions.

Software, Tools, Infrastructure Required:

Platforms like MS Teams for webinars and Miro for interactive sessions.

PATTERN online ecosystem for course management and delivery.

Materials to Re-use:

Includes video recordings, slides, and supporting documents. Materials will be uploaded to the PATTERN ecosystem for easy tracking and reuse.

Project-Based Learning Elements:

Learners work on real EU proposals or develop CDEP for their research projects, applying knowledge in a practical, project-based context.

Assessment and Evaluation:

Based on Bloom's taxonomy, transitioning towards a competency-based framework.

Covers knowledge acquisition, practical application, and critical analysis/synthesis of projects, with continuous assessment and feedback.

This course prepares researchers to strategically use communication, dissemination, and exploitation to enhance the impact of their research under the Horizon Europe framework, equipping them with the necessary skills and knowledge to succeed in competitive research environments.

5 Pilots per Organization

5.1 The development of the Training Plans for Pilots

The Training Coordination Plan for Pilot Organisations questionnaire was designed to gather detailed information from various organisations regarding their completed training pilot plans. This comprehensive questionnaire aimed to assist in organising, preparing, and delivering tailored educational content effectively across multiple disciplines and topics. It focused on capturing essential details such as pilot titles, main topics, course descriptions, targeted audiences, expected participant numbers, and delivery methods.

This plan served as a crucial tool for ensuring all participating organisations were aligned with their training objectives and logistical requirements. It also helped in identifying the specific needs and preferences of different target groups, ranging from researchers, academics, students, to stakeholders involved in the projects.

By completing this questionnaire, organisations provided valuable insights into:

- Completed Training Pilots: Titles and descriptions of the training sessions that were delivered.
- Target Audiences: Specific groups that benefited from the training.
- Training Delivery Methods: Preferences for synchronous or asynchronous delivery that were implemented.
- Material Requirements and Reuse: Details on the materials used and potential for reuse to optimise resource allocation.
- Pilot Scheduling: Detailed timelines for each phase of the pilot training programmes that were followed.

This structured approach not only facilitated efficient planning and implementation of training sessions but also enhanced the overall impact of educational endeavours within the collaborative framework of pilot organisations.

In the following paragraphs there is a short analysis and graphics according to the provided responses.

The Thematic Areas & Transferable skills

The Pilot Training Plan within the PATTERN project encompasses a multifaceted educational initiative designed to address a variety of thematic areas and transferable skills critical to the modern research environment. This comprehensive training scheme is structured to cover key aspects such as Citizen Science, Science Communication, Research Integrity, Open Access, FAIR/RDM (Findable, Accessible, Interoperable, and Reusable Data Management), Gender, Non-Discrimination, Inclusion, Management, Leadership, and Dissemination & Exploitation. Each thematic area is carefully crafted to provide relevant and impactful learning experiences tailored to meet the needs of participants at various stages of their academic and professional careers.

The array of pilot training courses and modules within the PATTERN project spans several crucial thematic areas and transferable skills, emphasising the diversity and

depth of the educational initiatives undertaken. Here's an overview of how many courses and modules appear under each specified thematic area:

1. **Citizen Science**: This area includes a comprehensive module, CS101, which covers a broad spectrum of topics from the history of Citizen Science, methodologies, principles, and practical tools to inclusive practices and community engagement. Additionally, it intersects with gender and inclusion themes in another course.
2. **Science Communication**: This thematic area is thoroughly addressed through multiple modules that include introductory aspects, media interaction, and the utilisation of social media, aiming to enhance the communicative capabilities of researchers.
3. **Research Integrity and FAIR/RDM**: These crucial topics are integrated across several modules, reflecting their importance in maintaining high standards within research practices and data management. Specific courses address Open Access, data integrity, and the application of FAIR principles.
4. **Open Access, FAIR/RDM, and Dissemination & Exploitation**: Several courses focus on Open Access strategies, practical implementation of FAIR/RDM principles, and methods for effective dissemination and exploitation, crucial for maximising research impact.
5. **Gender, Non-Discrimination, and Inclusion**: These essential topics are not only standalone themes but also integrated into courses related to Citizen Science and research integrity, indicating a cross-disciplinary approach to fostering inclusivity in research environments and the data cycle.
6. **Management & Leadership**: Targeted modules in this area focus on managerial and leadership skills, specifically tailored to address the dynamics within academic settings, promoting effective supervision and institutional change.
7. **Dissemination & Exploitation**: Although directly mentioned in fewer instances, the importance of this area is underscored through its integration with science communication and Citizen Science, ensuring that research findings reach broader and more diverse audiences effectively.

The following graphic tracks the coverage of each thematic area:

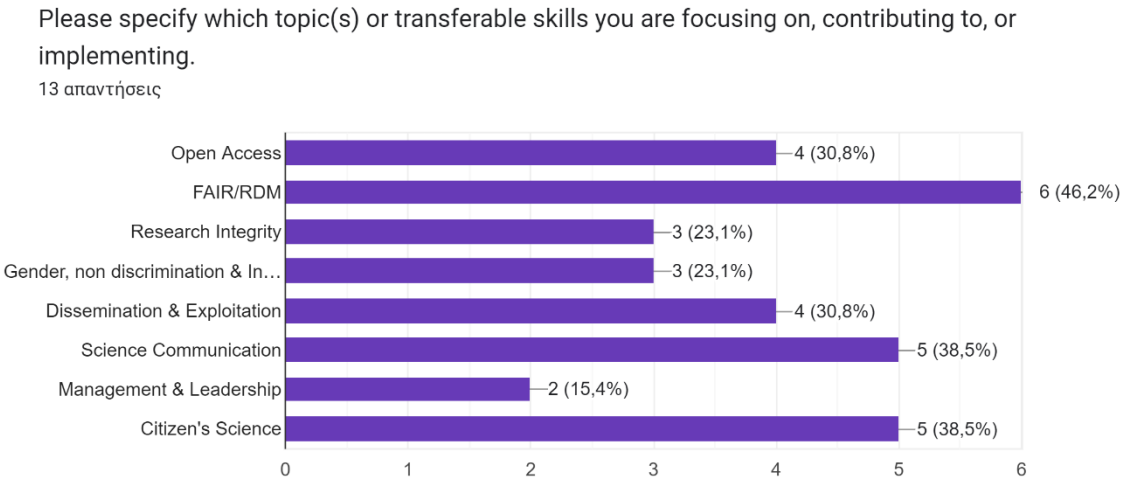


Figure 8 – The coverage analysis of each thematic area/transferable skill

The Pilot Organisations

The pilot organisations identified in the training coordination plan span a diverse and esteemed collection of academic and research institutions across Europe and beyond.

These organisations refer to:

Open Access Infrastructure for Research in Europe (OpenAIRE).

Aarhus Universitet (AU), a leading public university located in Denmark, known for its strong research programmes and international collaborations.

International School for Advanced Studies (SISSA), based in Italy, recognised for its research and education in physics, neuroscience, and mathematics.

Izmir Institute of Technology (IZTECH) in Turkey, focusing on science and technology research.

Ruđer Bošković Institute (RBI), Croatia's top research institution specialising in natural sciences and biomedicine.

Trinity College Dublin (TCD), Ireland's premier university, renowned for its research in humanities, science, and technology.

Royal Netherlands Academy of Arts and Sciences (KNAW), which promotes a robust interdisciplinary research environment in the Netherlands.

University of Minho (UMinho), recognised for its significant contributions to research and education in Portugal.

Learning Planet Institute (LPI), fostering innovation in education and sustainable development globally.

Università Vita-Salute San Raffaele (UniSR), an Italian university known for its intensive research and teaching in medicine, psychology and philosophy.

University of Helsinki (UH), Finland's largest and oldest university, leading in a wide array of scientific disciplines.

University of Debrecen (UD), one of Hungary's foremost institutions in higher education and scientific research.

SciLink Research and Development Center, a dynamic new player dedicated to bridging the gap between scientific research and the marketplace.

These organisations are instrumental in shaping the landscape of global research and education, with their involvement in the pilot indicative of their commitment to advancing training and development in various scholarly and scientific domains.

Thematic Leaders and Professional experts

The professionals who responded to the Training Coordination Plan for Pilot Organisations questionnaire are a diverse group of experts deeply involved in various facets of educational project management and execution. Their roles include Thematic Leaders, Team or Project Managers, Course Designers, Facilitators or Trainers, and specialists in Pedagogical Engineering. These individuals bring a wealth of expertise from conceptualising thematic frameworks to managing and implementing complex training projects. Their responsibilities span across critical areas such as course design, ensuring educational content is both engaging and pedagogically sound, and course implementation, where they apply strategic oversight and hands-on guidance to bring educational initiatives to fruition. This group's comprehensive skill set underscores their capability to adapt and effectively deliver training tailored to specific organisational needs and learner outcomes, ensuring the successful execution of training pilots across various disciplines.

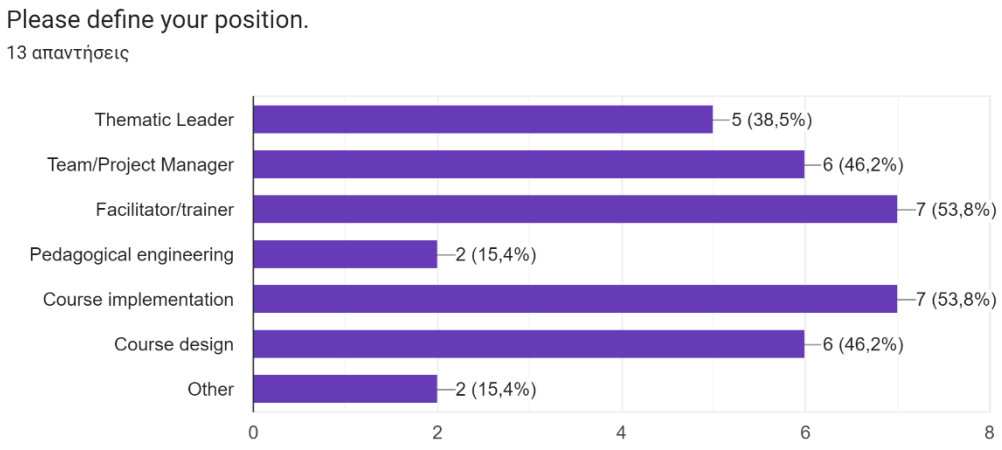
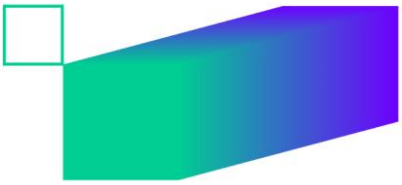


Figure 9 – Thematic Leaders and professional experts



The topics of the Training Plans

The training plans are designed to address a broad spectrum of topics across several key areas of research and science communication, structured into several comprehensive modules:

Citizen Science 101 (CS101)

- History and Current Landscape: Explores the evolution and contemporary scope of Citizen Science across various fields.
- Methodologies by Levels: Discusses different levels of participation and methodologies within Citizen Science.
- Core Principles: Introduces the ten core principles of Citizen Science as a framework for project suitability.
- Role in Open Science: Examines Citizen Science as a pillar of Open Science.
- Practical Tools: Guides on getting started with Citizen Science tools, platforms, and community practices.
- Community Engagement and Research Ethics:
- Community-based Co-Researchers: Focus on involving research participants as active co-contributors.
- Ethical Practices: Covers the ethical principles and review processes in participatory research.
- Engagement Strategies: Strategies for recruitment, sustained engagement, and understanding participant motivations and training needs.
- Communication Techniques: Effective communication methods within Citizen Science projects.
- Inclusiveness: Tackles the challenges of working inclusively with specific communities, including indigenous and marginalised groups.

Science Communication

- Introduction to Science Communication: Fundamental concepts and importance of communicating science.
- Media Engagement: Writing for and speaking with the media and using social media effectively.
- Policy Engagement: Techniques for effectively communicating research to policymakers.

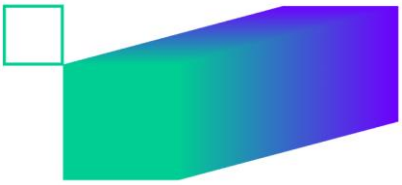
FAIR Data Management

- Open Access and Responsible Data Management (RDM): Principles and practices of Open Access publishing, data management, and FAIR data guidelines.

Research Integrity

- Best practices in maintaining integrity throughout the research process.

Diversity and Inclusion in Research



- Unconscious Biases: Identifying and mitigating biases in research settings.
- Inclusive Language and Environment: Strategies for fostering an inclusive research environment and using language that supports diversity.
- Diversity and Inclusion in FAIR Data: Addressing gender dimensions in data analysis and
- Funding and Gender: research funding applications.

Mental Health in Research

- Protecting Mental Health: Strategies to safeguard mental health within academic and research environments.
- Problem-Based Learning: Using a PBL approach to address and redress mental health challenges in research contexts.

These modules are structured to equip researchers, from early-career to established professionals, with the knowledge, skills, and tools necessary to effectively communicate, manage data, engage with diverse communities, and uphold ethical standards in their work. The training seeks to create a comprehensive learning experience that spans the practical, theoretical, and ethical aspects of modern research practices.

The target groups and beneficiaries of the Training Plans

The target groups for the pilot training delivery general plan span a broad spectrum of academic roles and career stages, ensuring a comprehensive inclusion of various stakeholders across the academic and research communities. The training is designed to accommodate:

Researchers

Including Master students, PhD candidates, postdoctoral researchers, and established researchers across all levels. This wide-ranging audience ensures that the training caters to the needs of those at different stages of their research careers.

Academics

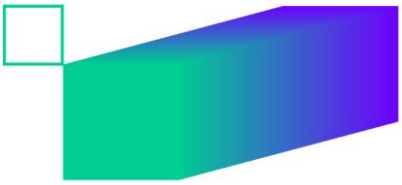
Early Career Academics, Principal Investigators (PIs), and academics involved in both teaching and research. The training is aimed at enhancing their skills in navigating the complexities of academic responsibilities and research.

Students

Specifically targeting Master students and PhD candidates. The focus here is to provide them with the necessary tools and knowledge to start their research careers on solid ground, equipped with the latest methodologies and ethical standards.

Stakeholders

This includes research organisations, educational organisations, and administrative and management staff at universities. Special consideration is given to Turkish librarians from research-intensive universities, highlighting the training's relevance to those managing research outputs and data.



Additional Groups

The training also mentions the inclusion of all stages of researchers, emphasising a versatile approach that accommodates both beginners and those with more advanced knowledge. This inclusive strategy ensures that no participant's needs are overlooked, whether they are newly introduced to the field or are looking to deepen their existing expertise.

This diverse targeting strategy ensures that the training not only reaches a broad audience but also addresses the specific needs and challenges faced by different groups within the academic and research communities. The approach is tailored to foster a robust understanding of the subjects covered, supporting the professional growth of individuals and the advancement of institutional goals.

The accompanying graphic clearly illustrates the prioritisation of target groups aligned with the main objectives of the PATTERN project.

d. Please select which of the following target groups/audiences will benefit from your pilot training delivery.

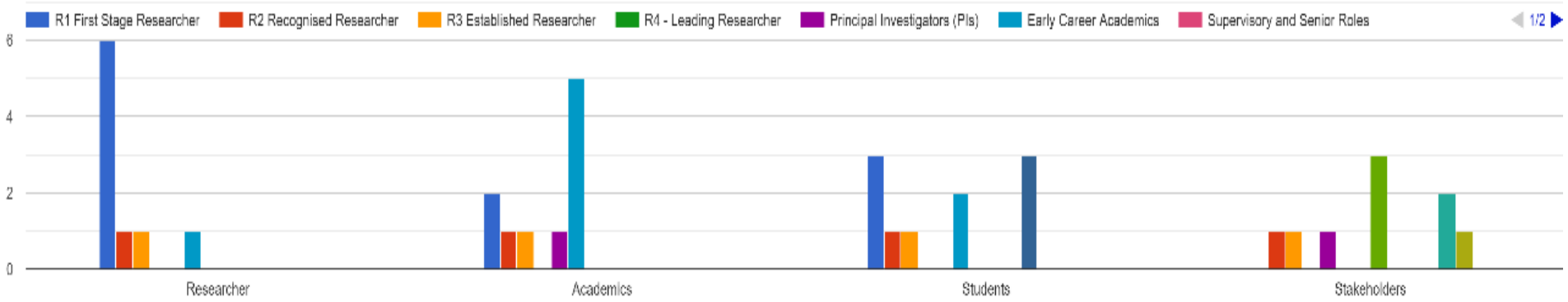


Figure 10 – Target Groupes & Audiences

Number of participants per Training Plan

Analysing the data on the expected number of participants for various pilot training plans, the participant ranges can be grouped and summarised as follows:

20 - 40 Participants: This range appears most frequently, with six instances indicating a preference for moderately sized training groups, which may facilitate more personalised interaction and learning.

50 - 100 Participants: Four entries fall into this category, suggesting that some training courses aim to reach a larger audience, potentially reflecting broader topic coverage or less intensive training sessions.

100+ Participants: Four instances indicate plans for large-scale training sessions. This could imply high demand for these topics or a strategic focus on maximising outreach and impact.

There is one entry that indicates a combination of participant ranges (20-40, 50-100), and another entry lists 50-100 alongside 100+, which suggests flexibility in scaling the training according to demand or available resources.

Overall, the data suggests a varied approach to training scale, with a considerable number of trainings opting for a focus on small to medium-sized groups, likely to optimise engagement and effectiveness.

The following graphic clearly illustrates the distribution of expected participant numbers across various pilot training plans, highlighting trends in training scale from small to large group settings.

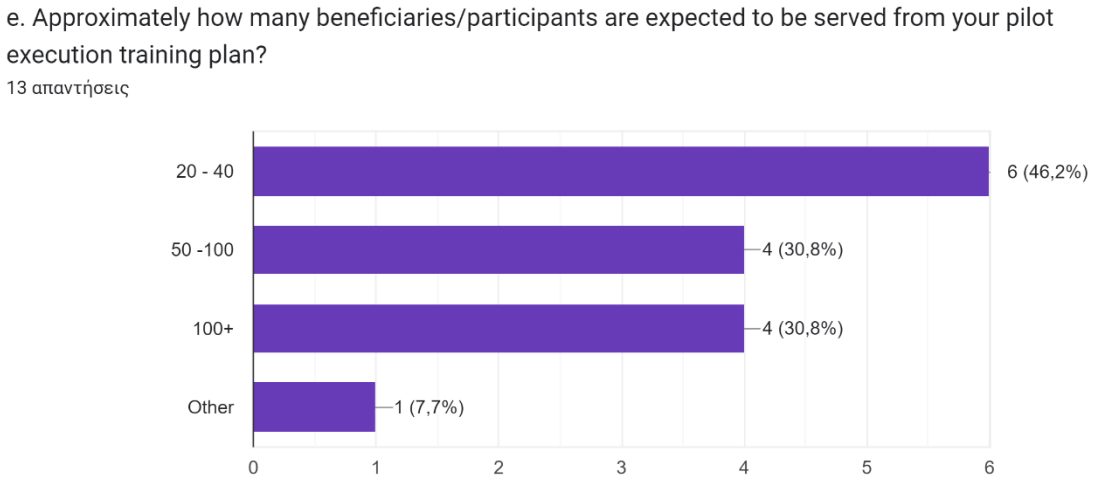


Figure 11 – Estimated amount of Beneficiaries

Analysis of the Training Material

Analysing the provided data about the number of activities, workshops, sessions, masterclasses, and courses planned as part of various pilot training plans, a clear trend emerges:

- Activities: Every organisation planning a pilot includes 5 or more activities, indicating a robust engagement strategy in the training modules.
- Workshops: Similarly, all entries that specify workshops indicate that there are 5 or more planned, suggesting a consistent emphasis on interactive, hands-on learning experiences across different pilots.
- Sessions: Almost all plans that detailed their session count also specify 5 or more sessions, highlighting a commitment to providing multiple opportunities for engagement and learning.
- Masterclasses: Where masterclasses are mentioned, they consistently have 5 or more planned. This indicates a focus on providing specialised, high-level training.
- Courses: In cases where courses are mentioned, they too consistently have 5 or more planned, which points towards substantial educational offerings within each pilot.

The widespread adoption of a minimum of 5 instances across each training component suggests a comprehensive approach to training, designed to ensure varied and extensive learning opportunities for participants. This scale of planning reflects a robust commitment to educational outreach in these pilots.

The following graphic illustrates the comprehensive distribution of planned activities, workshops, sessions, masterclasses, and courses across various pilot training plans, each consistently featuring five or more instances to ensure a robust and engaging educational experience.

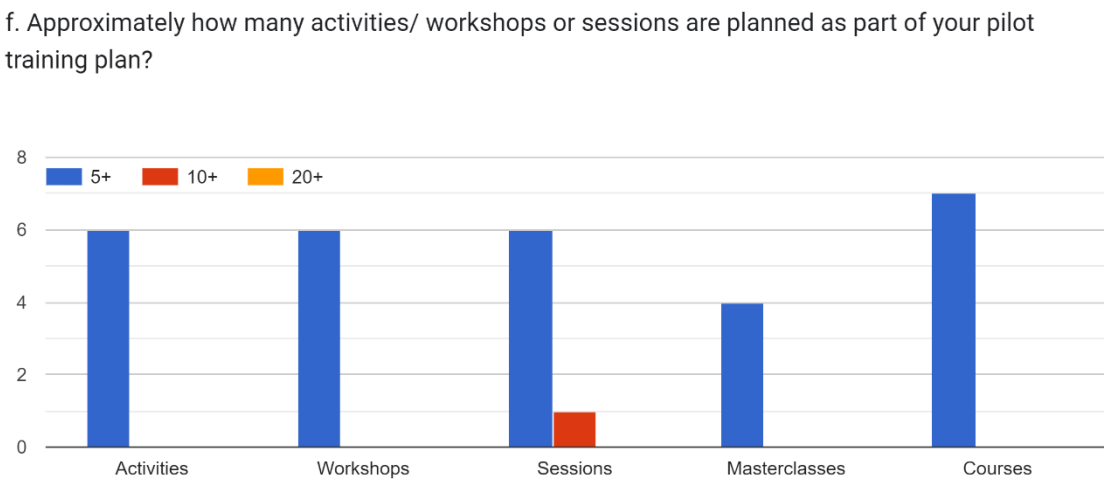


Figure 12 – Estimated amount of Training material

Modes of delivery

The data provided shows a diverse mix of delivery methods for educational content across different organisations involved in the training programmes. Here's a breakdown:

- Digital Reading Materials: Mentioned frequently, this method seems popular as a way to provide accessible, self-paced learning resources. Two entries explicitly emphasise the integration of digital reading materials alongside other training formats.
- In-Person Classroom-Based Training: Although digital methods are prevalent, in-person classroom-based training remains a key component for at least two organisations, highlighting the value of direct, interactive learning environments.
- Online Courses and MOOCs: Several organisations are utilising online courses and MOOCs, suggesting a strong preference for scalable and wide-reaching educational tools that can accommodate large numbers of participants simultaneously.
- E-Learning Modules: This is the most frequently mentioned method, indicating a significant trend towards modular, online learning that allows for flexibility in pacing and scheduling, which is beneficial for accommodating diverse learner needs.
- Recorded Video Lectures: This method is mentioned as a part of the training delivery, providing an asynchronous learning option that participants can engage with on their own time.

Several entries highlight a limitation in the survey design, indicating an inability to select multiple delivery methods, which might have restricted the full representation of how organisations plan to implement their training. This suggests that many organisations likely employ a blended approach, utilising multiple formats to optimise learning outcomes but could only report one or a few due to survey constraints.

The following graphic illustrates the distribution of different training delivery methods employed by organisations, highlighting the prevalence of digital and in-person approaches, and the challenges faced due to survey limitations on multiple selections.

h. What are the modes of delivery for each of your provided training plans?

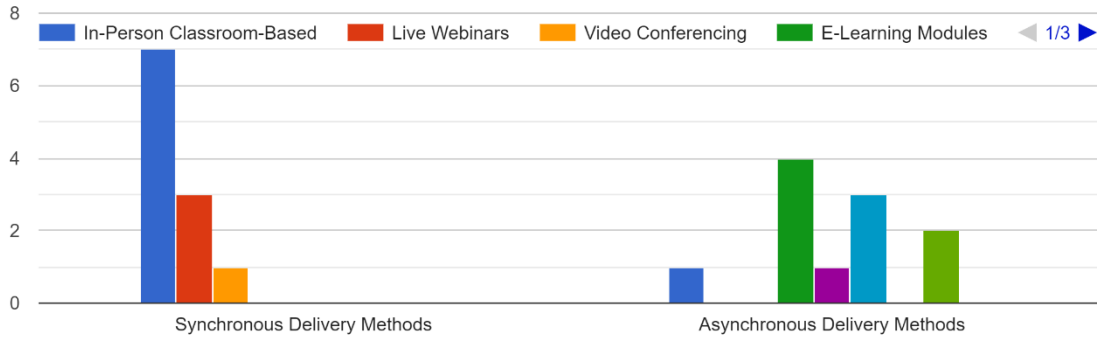
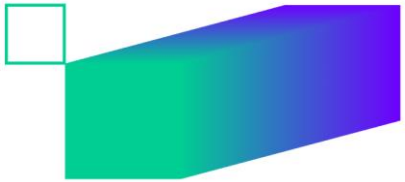


Figure 13 – Modes of delivery

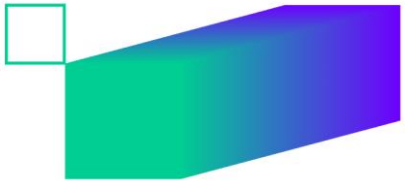
The structure of Training Plans per Pilot Organizations & co-working partners

This reference table provides a comprehensive overview of the various training initiatives planned by participating organisations within the project. Each entry outlines the organisation's focus on specific thematic areas or transferable skills, titles of upcoming pilot programmes, main topics covered in the initial design of the pilots, the target groups that will benefit from these initiatives, and the estimated number of beneficiaries. Additionally, the table details the number of planned activities, courses, workshops, or sessions that make up each pilot programme, along with the modes of delivery, whether synchronous or asynchronous.

The purpose of this table is to collate and organise information about the diverse training efforts across different organisations, ensuring clarity in the scope and scale of each initiative. This helps in understanding how each training module aligns with broader project goals, facilitates coordination among different stakeholders, and enables effective planning and implementation of the educational strategies. This serves as a vital tool for tracking progress, assessing the reach of training efforts, and ensuring that the training needs of all target groups are met comprehensively.

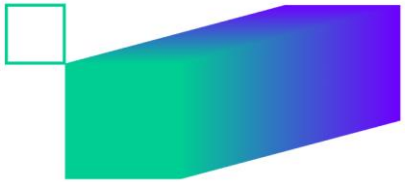


Which organisation are you affiliated with?	Please specify which topic(s) or transferable skills you are focusing on, contributing to, or implementing.	Provide Title/Titles of the upcoming Pilot/Pilot's that you are planning to deliver.	Provide the main Topics of your Pilot's initial design/overview.	Beneficiaries/ Target Groups	Approximate Number of Beneficiaries	Approx. how many activities/ courses/workshops or sessions are planned as part of your pilot training plan?	Modes of Delivery (Synchronous/ Asynchronous)
AU/Aarhus Universitet	Research Integrity, Science Communication, Citizen's Science	1) CS101- Citizen Science, an introduction 2) Participant coordination and community engagement	**CS101 Overview:** 2-hour foundational module explores Citizen Science (CS) across multiple disciplines. Requires no prior knowledge. Participant **Coordination and Community Engagement:** 2-hour module, this course follows CS101 and delves deeper into managing participant coordination and community engagement within CS. Focus on ethical participatory research, sustained engagement, and inclusivity challenges in diverse community settings.	Researchers from Master's, to PhD, Postdoc, and established researchers	100+	5+	Live Webinars/Digital Reading Materials and In-person classroom-based training
SISSA/International School for Advanced Studies	Science Communication	Science Communication towards media and policy makers	(1) Introduction to Science Communication (2) Writing for the media (3) Talking with the media (4) social media for scientists (5) Talking with policymakers	Early Career Academics R1 First Stage Researcher Master's students Research Organisations	50 -100	5+	Live Webinars Digital Reading Materials Live in-person training. Train the trainer - live session
IZTECH/ Izmir Institute of	Open Access, FAIR RDM, Dissemination & Exploitation			Master's students Doctoral Students	100+	5+	Training plans, course outlines, p.p presentation

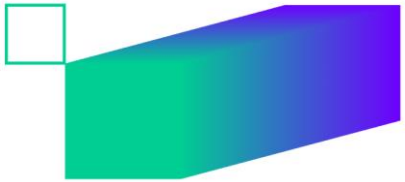


Technology				All stages of researchers Administrative and Management Staff Turkish librarians from research intensive university			
RBI/Ruđer Bošković Institute	Open Access, FAIR RDM, Science Communication	RBI's Open Science Winter School	Open Access (copyright, OA publishing, funder requirements,open peer-review), FAIR RDM (what is FAIR RDM, benefits, DMPs, FAIR practice), science communication	R2 Recognised Researcher Principal Investigators (PIs) Early Career Academics Research Organisations All stages of researchers	20 - 40	10+	In-Person Classroom-Based Live in-person training Online Courses and MOOCs
TCD/ Trinity College Dublin	Dissemination & Exploitation, Science Communication, Citizen's Science	Citizen Science, possibly also Narrative CVs	Citizen Science pilot design. In the process of developing training in-house on Narrative CVs. Online module on Citizen Science with opportunities for blended learning (separately, also on Narrative CVs if possible). Webinar/s and supporting documentation on Narrative CVs (suitable for workshops)	R1 First Stage Researcher R1 First Stage Researcher R1 First Stage Researcher Principal Investigators (PIs)	20 - 40	5+	In-Person Classroom-Based E-Learning Modules
KNAW/ Royal Netherlands Academ	FAIR RDM	Initial pilot of PATTERN FAIR RDM materials	This pilot introduces researchers to FAIR Research Data Management (RDM) through a structured five-session programme. The initial three sessions focus on beginner	The course accommodates both beginner, intermediate	20 - 40	5+	

5+



y of Arts and Sciences			topics such as FAIR principles and creating Data Management Plans. The subsequent two sessions delve into intermediate topics like metadata standards and repository use. Participants will apply these concepts to a domain-specific project throughout the sessions, utilising project-based learning methods. Additionally, the pilot includes five stand-alone masterclasses addressing advanced-level topics.	and advanced level topic			
UMinho/ University of Minho	Open Access, FAIR RDM, Research Integrity	Open Access, RDM & FAIR data, Research integrity	Open Access, RDM & FAIR data, Research integrity Pilots will be developed within the: 1) UMinho Open Science Summer school, 2) UMinho Open Data Winter schools, 3) Doctoral schools students seminars, 4) Open Access International week webinars	R1 First Stage Researcher Early Career Academics R2 Recognised Researcher Educational Organisations	20 - 40, 50 -100	5+	In-Person Classroom-Based E-Learning Modules
LPI/Learning Planet Institute,	FAIR RDM, Gender, non-discrimination & Inclusion, Mental Health Leadership, Citizen's Science	The "Frontières de l'Innovation en Recherche et Éducation" (FIRE) Doctoral School; AIRE (Approches Interdisciplinaires de la Recherche et de l'Enseignem	The "Frontières de l'Innovation en Recherche et Éducation" (FIRE) Doctoral School; AIRE (Approches Interdisciplinaires de la Recherche et de l'Enseignement) Master programme	R2 Recognised Researcher R1 First Stage Researcher Administrative and Management Staff	50 -100, 100+	5+	In-Person Classroom-Based Online Courses and MOOCs



		ent) Master programme					
UH/ University of Helsinki	Gender, non-discrimination & Inclusion, Citizen's Science	Gender equality, non-discrimination and inclusion: with and within research / Citizen Science Participation and Volunteer management	This course emphasises key aspects of gender equality, non-discrimination, and inclusion in the research environment, offering structured materials that enhance awareness within Research Performing Organisations and among individual researchers. It also prepares participants to successfully secure funding by integrating gender and inclusion considerations into their research strategies. The "Participant Coordination and Community Engagement" module is a free, 2-hour continuation of CS101, targeted primarily at Master and PhD candidates who are interested in involving the public in their research. Suitable for those familiar with basic Citizen Science principles, this intermediate-level course can be taken independently or as part of the PATTERN CS training sequence.	R1 First Stage Researcher Early Career Academics Master's students Administrative and Management Staff	50 -100	5+	In-Person Classroom-Based In-Person Classroom-Based
SciLink/ SciLink Research and Development Centre	Management & Leadership	Module 1: Choosing and Managing your PhD supervisor / Module 2: Breaking the silence around well-being at work / Module 3: Effectuating	The Organisation aims to iteratively develop (through a series of pilots) three modules focussed on the individual, institutional, and systemic levels of mental health leadership.	Research active university employees at all levels.	100+	5+	In-Person Classroom-Based E-Learning Modules

		institutional change					
UniSR/ Università Vita-Salute San Raffaele	Gender, non-discrimination & Inclusion, Citizen's Science, Dissemination & Exploitation, Science Communication, Research Integrity	Gender equality, non-discrimination and inclusion: with and within research ; Citizen Science, an introduction, & Participant coordination and community engagement ; Science Communication towards media and policy makers; Introduction to Research Integrity and the Good Scientific Practice in Responsible Research and Innovation	The GNI course emphasises key aspects of gender equality, non-discrimination, and inclusion in the research environment, offering structured materials that enhance awareness within Research Performing Organisations and among individual researchers. It also prepares participants to successfully secure funding by integrating gender and inclusion considerations into their research strategies.	Doctoral students R2 Recognised Researcher R1 First Stage Researche	20-40	5+	In-Person classroom-based E-Learning Modules

Table 1 – Training Plans per Thematic Area & Pilot Organization

Time plans for each Pilot Organization & co-working partners

Course Title/Thematic Area	Duration	Phase 1(May 2024 - April 2025)	Phase 2(May 2025 to April 2026)	Additional Information
OA_Empowering researchers: retaining copyright and maximise your impact in Open Access Publishing	Online (1H30) webinar	Yes	Yes	OAW
OA_Open Access publishing: overcoming the challenges and busting the myths	Online (2h) self-paced	Yes	Yes	Doctoral seminar
OA_Meeting funder requirements: navigating Open Access Publishing	(1h30-2h) Face-to-face	Yes	Yes	Specific 4 coord.
OA_Trusted publishers for my research: decoding good practices & overcoming predatory publishers	(2h) face-to-face	Yes	Yes	On-demand session | Summer school
OA_Mastering Open Peer Review: Evaluating and Engaging in Transparent Scholarly Discourse	Online - (1h) self-paced	Yes	Yes	
OA_Integrating Open Access Publishing into my research: putting into practice	(PBL approach for winter/summer Schools)	No	Yes	Summer school
OA_Designing my research project Open Access strategy: meeting funder requirements	(PBL approach for winter/summer Schools)	No	No	
FAIR RDM - Session 1. What is FAIR RDM and why should we do it?	Beginner | 2.5 hours	N/A	N/A	
FAIR RDM - Session 2: Planning for FAIR: Introduction to RDM and DMPs	Beginner | 2.5 hours	N/A	N/A	
FAIR RDM - Session 3: Getting started with putting FAIR RDM into practice	Beginner | 2.5 hours	N/A	N/A	

Table 2 – Training Plan UMinho/University of Minho

Course Title/Thematic Area	Duration	Phase 1(May 2024 - April 2025)	Phase 2(May 2025 to April 2026)	Additional Information
CS_101- Citizen Science, an introduction	2-hour foundational module	Yes	Yes	Starting May 2024.
CS_Participant coordination and community engagement	2-hour module	Yes	Yes	Starting January/February 2025

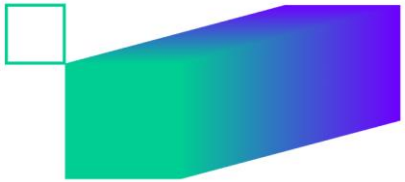
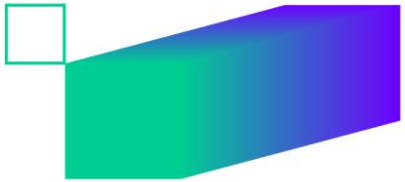


Table 3 – Training plan AU/Aarhus University

Course Title	Duration	Phase 1(May 2024 - April 2025)	Phase 2(May 2025 to April 2026)	Additional Information
SC_Introduction to Science Communication	2h.	Yes	Yes	Pilot Delivery at: AU/Aarhus Universitet, RBI/Ruđer Bošković Institute, UniSR/ Università Vita-Salute San Raffaele, HEAL-Link/ Hellenic Academic Libraries Link
SC_Writing for the media	2h.	Yes	Yes	
SC_Talking with the media	2h.	Yes	Yes	
SC_Social media for scientists	2h.	Yes	Yes	
SC_Talking with policymakers	2h.	Yes	Yes	

Table 4 – Training plan SISSA/International School for Advanced Studies

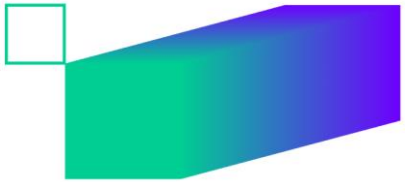
Course Title	Duration	Phase 1(May 2024 - April 2025)	Phase 2(May 2025 to April 2026)	Additional Information
OA_Empowering researchers: retaining copyright and maximise your impact in Open Access Publishing	Online (1H30) webinar	Yes	Yes	
OA_Open Access publishing: overcoming the challenges and busting the myths	Online (2h) self-paced	Yes	Yes	
OA_Meeting funder requirements: navigating Open Access Publishing	(1h30-2h) Face-to-face	Yes	Yes	
OA_Trusted publishers for my research: decoding good practices & overcoming predatory publishers	(2h) face-to-face	Yes	Yes	
OA_Mastering Open Peer Review: Evaluating and Engaging in Transparent Scholarly Discourse	Online - (1h) self-paced	Yes	Yes	



OA_Integrating Open Access Publishing into my research: putting into practice	(PBL approach for winter/summer Schools)	No	No	
Designing my research project Open Access strategy: meeting funder requirements	(PBL approach for winter/summer Schools)	No	Yes	
FAIR RDM	To be determined	Yes	Yes	October 2024 – February 2025 Winter School
Dissemination & Exploitation	To be determined	Yes	Yes	

Table 5 – Training plan IZTECH/Izmir Institute of Technology

Course Title/Thematic Area	**Duration**	**Phase 1(May 2024 - April 2025)**	**Phase 2(May 2025 to April 2026)**	**Additional Information**
RBI's Open Science Winter School • Thematic areas: o Open Access (5 OA courses) o FAIR RDM (5 courses) o Science Communication (three of five SC modules will be held separately, a month or two prior, PBL incorporated in the modules)	To be determined	Yes		Two Science Communication modules will be held in November/December 2024, and the last two during the winter school at the end of February 2025, along with the Open Access and FAR/RDM modules.
RBI's Open Science Winter School 2.0 • Thematic areas: o Open Access ("Designing my research project Open Access strategy: meeting	To be determined		Yes	



funder requirements" with PBL approach) ○ FAIR RDM (5 courses including PBL approach) ○ Science Communication (three of five SC modules will be held separately, a month or two prior, PBL incorporated in the modules)				

Table 6 – Training plan RBI/ Ruđer Bošković Institute

Course Title/Thematic Area	Duration	Phase 1(May 2024 - April 2025)	Phase 2(May 2025 to April 2026)	Additional Information
Citizen Science	To be determined	Yes	Yes	Co working Partners with AU/Aarhus Universitet
Narrative CVs/Science Communication	To be determined	Yes	Yes	

Table 7 – Training plan TCD/Trinity College Dublin

Course Title/Thematic Area	Duration	Phase 1(May 2024 - April 2025)	Phase 2(May 2025 to April 2026)	Additional Information
FAIR RDM Sessions 1 - 5	2.5 hour for each session plus 30 min project work between the sessions.	Yes	Yes	The Organisation as Thematic Lead will perform the first round of piloting (Sept '24) and will provide train-the-trainer session (Oct '24) for other project partners who will be piloting FAIR RDM materials. Initial Pilot Delivery at DANS/Data Archiving and Networked Services Institution.

Table 8 – Training plan KNAW/Royal Netherlands Academy of Arts and Sciences

Course Title/Thematic Area	Duration	Phase 1(May 2024 - April 2025)	Phase 2(May 2025 to April 2026)	Additional Information
The "Frontières de l'Innovation en Recherche et Éducation" (FIRE) Doctoral School; AIRE (Approches Interdisciplinaires de la Recherche et de l'Enseignement) Master programme	To be determined	Yes	Yes	Pilot Delivery at LPI/Learning Planet Institute

Table 9 – Training Plan LPI/Learning Planet Institute

Course Title/Thematic Area	Duration	Phase 1(May 2024 - April 2025)	Pilot Phase 2	Additional Information
Gender equality, non-discrimination and inclusion: with and within research	To be determined	Yes	Yes	1 Jan 2025 GNI 1 Jan 2025 CS 2 Jan 2026 GNI 2 Jan 2026
Citizen Science Participation and Volunteer management	To be determined	Yes	Yes	

Table 10 – Training plan UH/University of Helsinki

Course Title/Thematic Area	Duration	Phase 1(May 2024 - April 2025)	Phase 2(May 2025 to April 2026)	Additional Information
Research Data Management PhD course	To be determined	Yes	Yes	Phase 1 October 2024 FAIR RDM will be delivered from February of 2025

Table 11 – Training plan UD/University of Debrecen

Course Title/Thematic Area	Duration	Phase 1(May 2024 - April 2025)	Phase 2(May 2025 to April 2026)	Additional Information
MHL_Module 1: Choosing and managing your PhD supervisor	To be determined	Yes	Yes	The Organisation aims to iteratively develop (through a series of pilots) three modules focused on the individual, institutional, and systemic levels of mental health leadership. Pilot Delivery at DANS/Data Archiving and Networked Services, LPI/Learning Planet Institute
MHL_Module 2: Breaking the silence around well-being at work.	To be determined	Yes	Yes	

MHL_Module 3: Effectuating institutional change	To be determined	Yes	Yes	Phase 1(May 14th 2024, Budapest, first iteration of 3 pilots; second iteration oct/nov 2024 - Online webinar). Phase 2 / May 2025 LPI pilot. The rest still needs to be planned.

Table 12 – Training plan SciLink/SciLink Research and Development Centre

Course Title/Thematic Area	Duration	Phase 1(May 2024 - April 2025)	Phase 2(May 2025 to April 2026)	Additional Information
Gender equality, non-discrimination and inclusion: with and within research	To be determined	Yes	Yes	Starting Month for all modules is the January of 2025
SC_Science Communication towards media and policy makers	To be determined	Yes	Yes	
RI_Introduction to Research Integrity and the Good Scientific Practice in Responsible Research and Innovation	To be determined	Yes	Yes	
DE_Get funding for your research, then disseminate, communicate and exploit the research results,	To be determined	Yes	Yes	
CS_Participant coordination and community engagement	To be determined	Yes	Yes	

Table 13 – Training plan UniSR/Università Vita-Salute San Raffaele

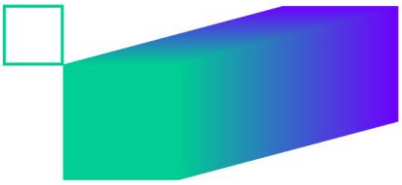
6 Conclusions

The D 3.1. report document presents a foundational report developed as part of the PATTERN project. It outlines preliminary training plans designed to fill critical gaps and capitalize on opportunities within Open Science (OS) and Responsible Research and Innovation (RRI) across fourteen pilot organizations in Europe. Engaging all consortium members and pilot organizations in a collaborative co-creation process, the report sets the stage for extensive, applied training activities. These activities will not only involve researchers at various career stages but will also incorporate insights from educational directors and other local stakeholders to co-develop personalized training solutions. With the integration of feedback from early developmental stages and previous EU-funded initiatives, Work Package 3 (WP3) will facilitate two learning cycles to evaluate and refine the training modules. This iterative approach ensures the training is effectively tailored to meet evolving educational objectives and adapt to changing market needs, enhancing the overall impact of the PATTERN project.

Chapter 2 of the document delves into the critical aspects of Lifelong Learning and Training Development in research fields, emphasizing the continuous enhancement of skills and knowledge. It explores the essential elements of Lifelong Learning policies, as illustrated in Figure 2, providing a foundational framework for understanding the broader implications of lifelong education within the academic and research community. The chapter further discusses Best Practices for Promoting Lifelong Learning and Developing Learning Materials, offering actionable insights into creating effective educational resources that cater to ongoing learning needs. It also outlines Strategies for Enhancing Teaching, Learning, and Institutional Support, highlighting the importance of integrated support systems that foster an environment conducive to continuous learning.

Additionally, the chapter addresses Strategies for Implementing Lifelong Learning in Non-Formal or Semi-Formal Education settings, expanding the scope of lifelong learning beyond traditional academic boundaries. This section provides guidelines for adapting lifelong learning principles to more flexible and accessible educational formats, thereby broadening the reach and impact of such initiatives within the research community.

Furthermore Chapter 3 builds upon the lifelong learning principles discussed in Chapter 2, focusing on tailored educational strategies for adults within the Open Science community. It highlights collaborative content creation, integrating digital and adaptive learning methodologies, and transitioning from traditional pedagogical approaches to andragogy and heutagogy. This progression supports self-directed learning and real-world application through project-based activities. The chapter provides further details of the development of training plans for pilot programs, illustrating the planning process through various models and templates that enhance understanding of adult education needs. Key Performance Indicators and evaluation processes are emphasized to monitor and refine the effectiveness of educational measures. To sum up this section outlines a comprehensive blueprint for designing and implementing flexible and impactful adult education programs



within the PATTERN project, ensuring they are responsive to the evolving needs of the research community and aligned with broader project objectives.

Finally, Chapters 4 and 5 collectively detail the methodology and outcomes of thematic areas and the subsequent implementation across various pilot organizations within the PATTERN project. Chapter 4, "Methodology & Results per Thematic Area," provides an in-depth look at the development of training modules, delineating the educational content tailored to enhance specific skills and knowledge across distinct thematic areas. This is visually supported by figures that illustrate the coverage analysis of each skill and thematic area, showing the depth and breadth of the training modules developed.

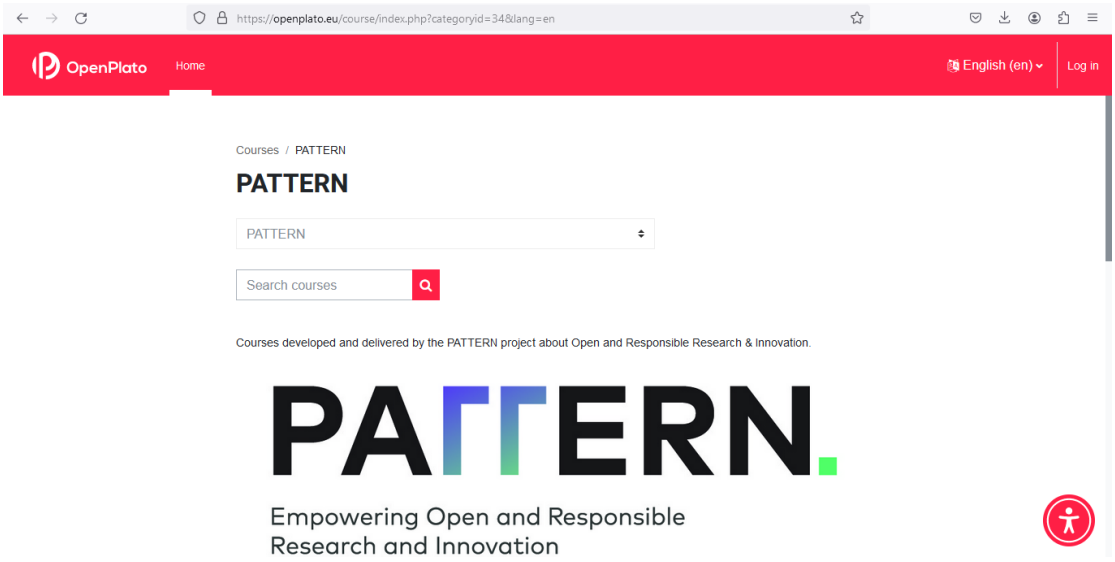
Chapter 5, "Pilots per Organization," delves into the application of these training modules, presenting detailed Training plans for each pilot organization. It outlines the training topics, target groups, estimated participant numbers, and the variety of delivery modes used to execute the training. This chapter provides a comprehensive overview of how each organization tailors its approach to fit its unique needs and the collaborative efforts of thematic leaders and professional experts in guiding these initiatives.

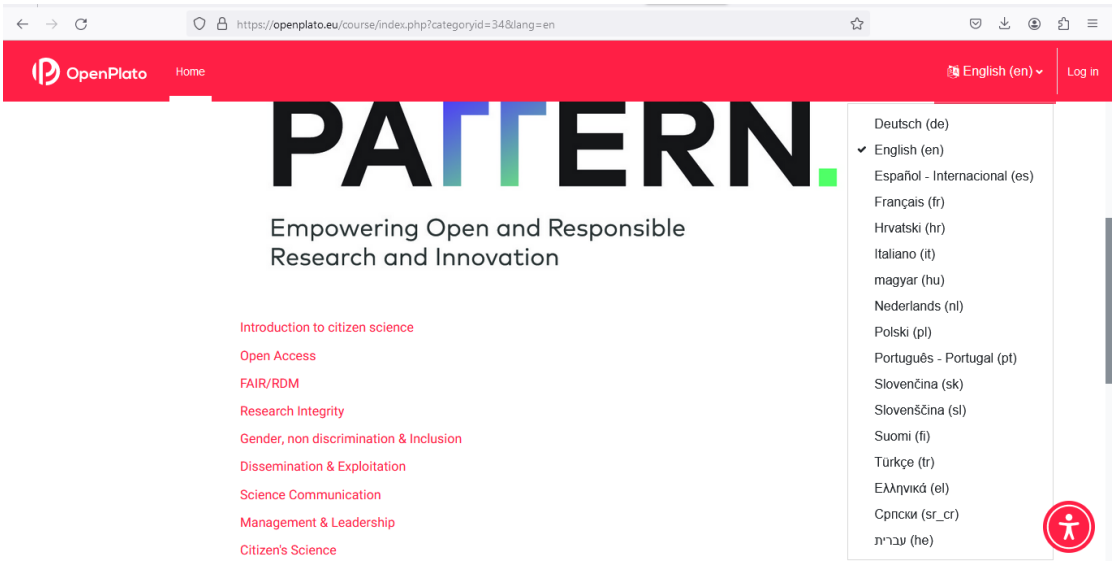
The structures of these plans are elaborately displayed through summary tables that list training schedules, illustrating a coordinated effort to implement the PATTERN project's objectives effectively across different geographic and institutional contexts.

In conclusion, these chapters not only discuss the structured development of training materials but also showcase the practical application of these materials across diverse organizational settings, ensuring that the project's goals are met through well-planned educational strategies and expert collaboration.

7 Appendix

7.1 Appendix I: PATTERN's Training Material at OpenPlato platform





7.2 Appendix II: The Course Outline Template

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DESIGN YOUR TRAINING

This document is adapted from the 'Design your training form' from the EOSC Synergy project, licensed under CC BY 4.0 funded from the EU H2020 programme (GA No 85764) and the EU-Citizen.Science platform course design templates proposing also new sections and adapting it to Project and Challenge Based Learning.

Training title:

Link to FINAL masterfile:

Course summary:

e.g. This is a free course of an hour and a half, that provides an introduction to Citizen Science, which is a form of active public engagement in science.

It is designed to assist journalists who need to understand Citizen Science in their reporting. No prior knowledge in science reporting is needed for this course.)

The interest in Citizen Science, the number of projects, and the number of people who participate in such activities have grown significantly over the last decade. By the end of this course, the learner will:

be able to explain the historical background and current activities in Citizen Science, by identifying key terms and concepts;

identify the major challenges in Citizen Science projects, including data quality, motivation, working with volunteers, and sharing information;

analyse the contexts in which Citizen Science can be integrated within news stories.

The enrolment key to this course is: CitSciNews.

Intended audience profiling:

Audience	Discipline(s)	Research topic(s)	Learning Needs	Challenges	Motivation
R1 First Stage Researcher			Knowledge: Skills:		

R2 Recognised Researcher			Knowledge: Skills:		
R3 Established Researcher			Knowledge: Skills:		

Learning objectives (link it to WP1 identified gaps and/or societal challenges):

Course length:

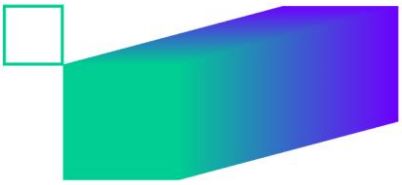
The time it takes to complete the course from the start of the Welcome and Introduction to the end of the final self-assessment quiz. e.g. 1.5 hours

Learning outcomes:

Audience	WP1 Gap, Learning Needs	Research Topic(s)	Knowledge	Skills	Project (expected outcome)	Learning Process or Methodologies
R1 First Stage Researcher						
R2 Recognised Researcher						
R3 Established Researcher						

Outline of course (adapted for asynchronous / self-paced learning)

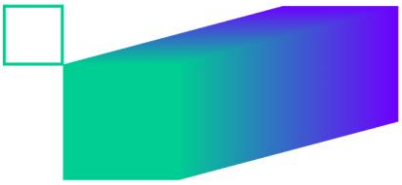
	Pre-learning activity	Learning activity	Engagement activity asynchronous	Engagement activity synchronous	Engagement activity a/as	Expected Project (outcome)	Evaluation method and Accreditation
Lesson 1							



Lesson 2							
Lesson 3							
Lesson 4							

or (original format):

	Learning activity 1	Learning activity 2	Learning activity 3	Expected Project	Evaluation method and Accreditation
Topic 1:					
Duration					
Assessment (if applicable)					
Topic 2:					
Duration					
Assessment (if applicable)					
Topic 3:					



Duration					
Assessment (if applicable)					

7.3 Appendix III: The Initial Training Analysis Template

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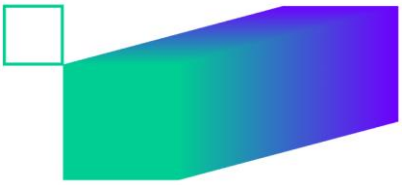
INITIAL TRAINING ANALYSIS

This document has been adapted from the 'Initial Training Analysis form' from the EOSC Synergy project, licensed under CC BY 4.0 funded from the EU H2020 programme (GA No 85764).

Fill in as much detail as you can at this stage – these are your initial thoughts and some of this might be guesswork – copy this file *if* you need to think about multiple training topics. You'll go into more detail in the Design stage, and you can update this form if needed. Please see here a workflow diagram providing a high-level overview of the entire design and creation process and where this step fits into that.

Goals and audience

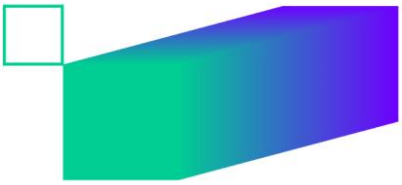
Your title and broad topics *Include a short descriptive title. Why do learners need to know about your topic/service? What does it offer?*	
Training goal *Why are you doing this training? What would success look like? This can include developing skills, gaining knowledge and changing attitude, improving service awareness/use etc*	
Audience *Who is your target audience? This could be particular roles (e.g. researcher, students), knowledge level (e.g. aimed at beginners) or task based - e.g. those who want to be able to do a specific task.*	
Course Summary	



This field will be copied into the COURSE SUMMARY field in Moodle. *Always use the following structure: approx. 150 words - first part describes length of course "This is a free course of 1.5 hours", second part describes who the course is for and if any prior knowledge is needed. Third part explains the significance of the course, why the learner should take it i.e. learning objectives, and then the topics that are covered in the course. Finally, insert details of a code (enrolment key) that needs to be entered in order to enrol on the course, this can be anything you want it to be and will be configured in Moodle once the course has been created.*	
Benefits/outcomes for learners *What will learners gain from your training? What will they be able to do? What will they know? It is helpful to use the phrase 'By the end of this training you will: Be able to…. Be familiar with… Have practiced…': Think about 4 or 5 in bullet points*	
Pre-requisites *Is there any knowledge that is useful / required? Any other courses that it would be useful to complete beforehand?*	

Content and resources

Content *This should be a rough outline at this stage - you will think about this in more detail in the Design stage. What topics will you cover? How many sessions and what length?*	
Delivery method *Live sessions or self-learning? A mix? You may not have a choice in some of these areas depending on the constraints you have.*	
Timescale	



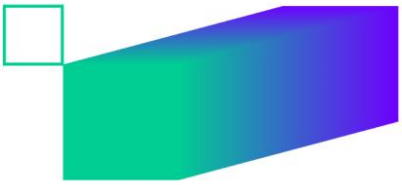
When do you plan to deliver the training? Allow enough time to develop and test content.	
Who will develop/deliver? *Do you have the right skills or will you need support? Where will you get support?*	
Software, tools, infrastructure required *This might be to deliver your course (e.g. a webinar tool) or for learner activities (e.g. collaboration, live coding). Note that you may decide to use additional tools once you've designed your activities.*	
Materials to re-use *What are the materials you will re-use? What is their format? videos, slides, documentation etc. You can save time by reusing other materials. How will you keep track of this in order to give credit later?*	
Re-use of your material *Do you want others to re-use your material? How? Material can be shared in different stages/shape and may need to be in particular formats depending on where it will be reused.*	
Project-based learning elements *How will project-based learning be integrated into your course? What do you plan for the teams to do? What activities will be carried out and what guidance is needed for the trainers?*	

Assessment and Evaluation

The course should initially use the Bloom taxonomy for the initial structure. Please keep in mind that we will move towards a competency-based evaluation (that will be further developed in the coming steps).

The course should cover 30% knowledge, 20% understanding, 40% application, 10% analysis/synthesis. Below more information:

- Knowledge (what knowledge will students learn? Knowledge is about concepts. There is theoretical, positional and propositional knowledge);
- Skills – know how (how is this knowledge supposed to be applied or has been applied in a real setting or context or other projects or best practices? This is more related to (real) application methods);



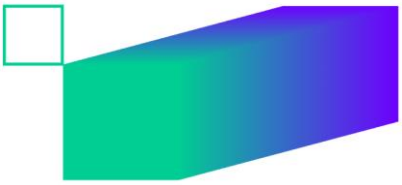
- Skills – Practice (In this phase students should create a real project and choose and apply the knowledge and know how in their context, in practice, what are they supposed to learn from this intervention with reality? How will you assess the process? How will you assess it throughout the process?);
- Analysis or Synthesis of the Final Project and/or Result corresponds to the evaluation of the final project or result. Projects Platforms should be used to provide a working space for students to produce this final Analysis/Synthesis: under which Open RRI and topic criteria will you assess this project?

More on Bloom's taxonomy: here**. For more info, take a look at the** Guidance to Writing Learning Outcomes **(p.15).**

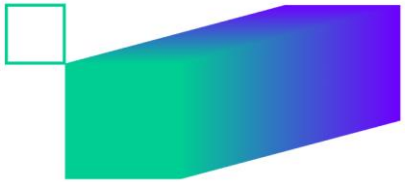
More on competency-based evaluation: here (p. 33); **Recommended Use Case:** DigComp 2.2**.**

More on project-based learning: here**.**

	Knowledge: know what	Skills: know how	Skills: Practice	Analysis/Synthesis: Final Project or Result
Content *Include how you are planning to assess the content you will cover, topics, sessions, process and learning outcomes. Please, separate by knowledge topics, skills and course outcomes to be developed by students*				
Delivery method *What evaluation criteria would you choose for the delivery method evaluation? How are you going to assess that your delivery method is being efficient for course participants? Please include ways you will use to adapt your course before, during and after the learning cycles foreseen for WP3*				

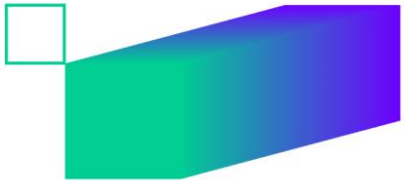


Software, tools, infrastructure provided *How would you assess that the provided tools, infrastructure and platforms are efficient throughout your course? What assessment criteria you will use? This information will be helpful for the further development of PATTERN tools*	
Learning material *What evaluation criteria will would you use to assess the learning material (re-)used? How are you going to assess it?*	

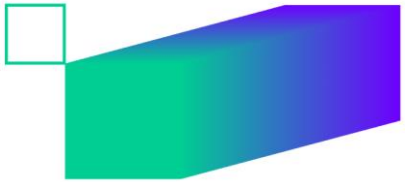


7.4 Appendix IV: The development of the Training Modules

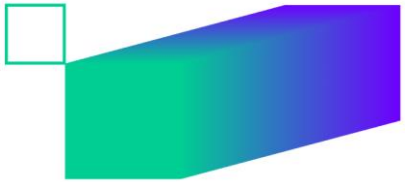
Thematic Area	Transferable skills	Courses	Learning Level	Duration (hours)	Syncr. Or Asyncr.	Links to other transferable skills	Summary	Research stage	Skills: know-how	Skills: practice	Learning Outcomes
OA	Open Access	Open Access publishing: overcoming the challenges and busting the myths (2h self-paced)		2			This course aims at developing student's Open Access publishing skills to be undertaken as a self-paced course, hosted in OpenPlato. This course will serve as a prerequisite to the face-to-face PhD trainings, in the context of pilot institutions. This course serves as a prerequisite to the face-to-face PhD trainings, in the context of pilot institutions.				
OA	Open Access	Empowering Researchers: Retaining Copyright and Maximize Your Impact in Open Access Publishing									
OA	Open Access	Meeting Funder Requirements: Navigating									



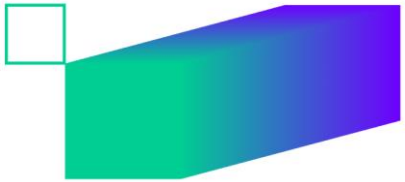
		Open Access Publishing									
OA	Open Access	Trusted Publishers for my research: decoding good practices & overcoming predatory publishers									
OA	Open Access	Mastering Open Peer Review: Evaluating and Engaging in Transparent Scholarly Discourse									
OA	Open Access	Integrating Open Access Publishing into my research: putting into practice									
OA	Open Access	Designing my research project Open Access strategy: meeting funder requirements									
FAIR RDM	FAIR Data Management	What is FAIR RDM and why should we do it?									
FAIR RDM	FAIR Data Management	Planning for FAIR: Introduction									



		to RDM and DMPs									
FAIR RDM	FAIR Data Management	Getting started with putting FAIR RDM into practice									
FAIR RDM	FAIR Data Management	A deeper dive into putting FAIR RDM into practice. Part 1.									
FAIR RDM	FAIR Data Management	A deeper dive into putting FAIR RDM into practice. Part 2.									
CS	Citizen Science	an introduction to Citizen Science									
CS	Citizen Science	Participant Management and Community engagement									
RI	Research Integrity										
GNI	Gender, non-discrimination and inclusion	Unconscious biases	all	1	all		introduction into essential concepts regarding unconscious biases, power dynamics, and privileges that affect individuals	all	Design thinking activity on Master suppression techniques and Counter Strategies (group mapping and counter strategies)	Explaining concepts combined with practical situations – e.g. through reflective questions	What biases/privileges exist, how they affect research activities and environment, how to notice and deal with them



GNI	Gender, non-discrimination and inclusion	Inclusive Language	all	1	all						
GNI	Gender, non-discrimination and inclusion	Inclusive working environment	all		all						
GNI	Gender, non-discrimination and inclusion	Gender-sensitive research	all	2	all				How to make research projects gender sensitive and inclusive?	Academic privilege Activity	Added value of including gender and inclusion into research projects – sharing good practices of gender and inclusion dimension in research
GNI	Gender, non-discrimination and inclusion	Gender and FAIR data	all	6	all	FAIR RDM	Gender and data (quantitative, qualitative and mixed methods): this course is accessible to different levels of statistical analysis and gender theory. We seek to mix groups and facilitate peer learning from basic to advanced level of quantitative or qualitative analysis as well as gender, cultural diversity and inclusion theories. You will be mentored by data,	all	Webinar: Introduction to Gender Statistical Analysis Workshop 1: Analysis, quantification and visibility of a gender variable through an analytical framework in practice Workshop 2: Analysis, quantification and visibility of a gender variable through an		



							social and gender scientists throughout your project/publication and you will learn how to link policy with research's data and information analysis cycles in real-life quantitative, qualitative or mixed methods' scenarios.		analytical framework in practice (part 2) Group project by societal challenge		
GNI	Gender, non-discrimination and inclusion	Gender and inclusion dimension in research funding	all	1	all						
SC	Science Communication										
ML	Mental Health Leadership										
DE	Dissemination and exploitation										

PATTERN.

Empowering Open and Responsible Research and Innovation

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