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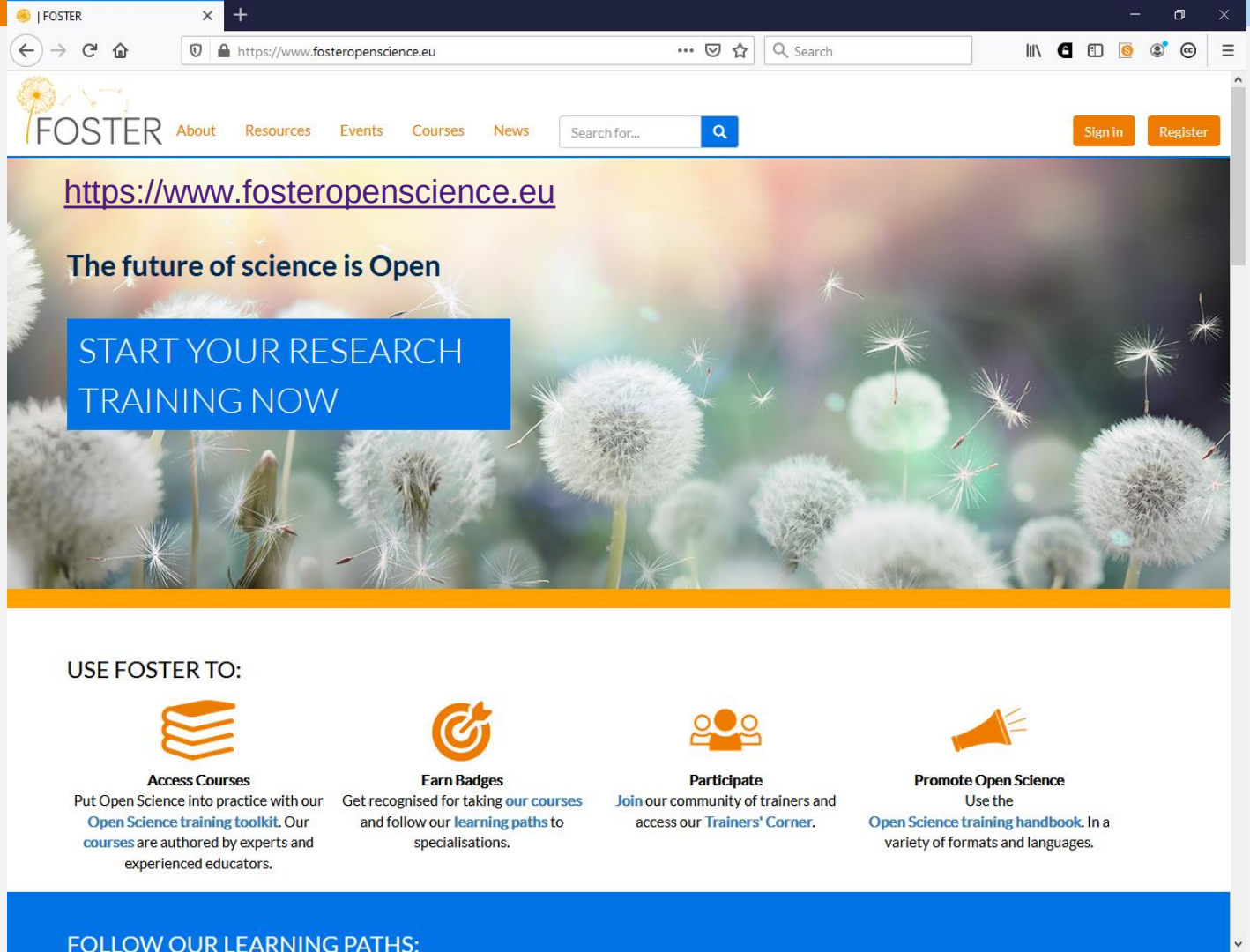
Train the trainer

Iryna Kuchma
EIFL Open Access Programme Manager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Promote Open Science
Use the Open Science training handbook. In a variety of formats and languages.
FOLLOW OUR LEARNING PATHS:

FOLLOW OUR LEARNING PATHS:

- The open access author
- The open innovation accelerator
- The reproducible research practitioner
- The responsible data sharer
- The open peer reviewer
- Open Responsible Research Innovator
- Responsible Research Communicator
- Open Responsible Researcher
- Ethical Research Data Scientist

Introduction to Responsible Research and Innovation
What is Open Science?
Managing and Sharing Research Data
Research and Data ethics
Data Protection and Ethics

ACCESS OUR FEATURED COURSES:

Open Licensing

Licensing your research outputs is an important part of practicing Open Science. In this course, you will:

Open Peer Review

This course introduces you to open peer review (OPR), an emerging practice which is gaining momentum as part of Open Science.

Scientific Summarization Services

In the current context of scientific information overload in which new

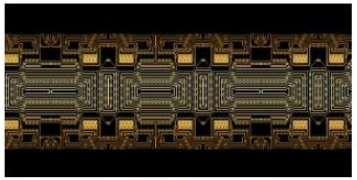
Research and Data ethics

This course covers research data ethics, along with basic data...

Openness in Science and RRI

This introductory course will help you to know the concepts of Open Science and RRI, key principles and the implications for practicing research.

Upon completion of this course, you wi...



Open and FAIR Research Data

This course explains the difference between open data and FAIR...

https://www.fosteropenscience.eu/courses

Introduction to Responsible Research and Innovation

This introductory course will help you to understand what Responsible Research & Innovation (RRI) means, where it has come from, and why it can introduce an important and beneficial shift in...

Engaging the Public in Responsible Research and Innovation

The course will help understand and justify the importance of public engagement as a key dimension of responsible research and innovation and open science. It provides tools to design, implement...

Responsible Research and Innovation for Companies

Open Science Training Courses

https://www.fosteropenscience.eu/toolkit

Search

What is Open Science?

Spanish version available

This introductory course will help you to understand what open science is and why it is something you should care about.

https://www.fosteropenscience.eu/toolkit

Best Practices

Spanish version available

This course introduces some practical steps for opening up your research practices and how to meet expectations relating to openness from funders, publishers and peers.

Managing and Sharing Research Data

Spanish version available

In this course, you'll focus on which data you can share and how you can go about doing this most effectively.

OSS and Workflows

Spanish version available

This course introduces Open Source Software (OSS) and workflows as an emerging but critical component of Open Science.

Data Protection and Ethics

Spanish version available

This course helps you to get to grips with responsible data sharing.

Open Licensing

Spanish version available

This course helps you to find the best open license for your open research outputs.

Open Access Publishing

Spanish version available

This course will help you become skilled in making your publications openly accessible in line with funders' requirements and in the wider context of Open Science.

Sharing Preprints

Spanish version available

This course introduces the practice of sharing preprints and helps you to see how it can support your research.

Open Peer Review (OPR)

Spanish version available
This course will introduce you to OPR and let you know how you can get started with it.

Open Science and Innovation

This course will show you how Responsible Research and Innovation is accelerated through Open Science.

Use Open Data in Teaching

This course shows you how you can use open data in your teaching and improve the research data management literacy of your students.

Assessing the FAIRness of data

This course shows you how to go about assessing the findability, accessibility, interoperability and reusability (FAIRness) of research data.

Readme · GitBook

https://book.fosteropenscience.eu/en/

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Published with GitBook

https://book.fosteropenscience.eu/en/

The Open Science Training Handbook

A group of fourteen authors came together in February 2018 at the TIB (German National Library of Science and Technology) in Hannover to create an open, living handbook on Open Science training. High-quality trainings are fundamental when aiming at a cultural change towards the implementation of Open Science principles. Teaching resources provide great support for Open Science instructors and trainers. The Open Science training handbook will be a key resource and a first step towards developing Open Access and Open Science curricula and andragogies. Supporting and connecting an emerging Open Science community that wishes to pass on their knowledge as multipliers, the handbook will enrich training activities and unlock the community's full potential.

Sharing their experience and skills of imparting Open Science principles, the authors (see below) produced an open knowledge and educational resource oriented to practical teaching. The focus of the new handbook is not spreading the ideas of Open Science, but showing **how** to spread these ideas most effectively. The form of a book sprint as a collaborative writing process maximized creativity and innovation, and ensured the production of a valuable resource in just a few days.

Bringing together methods, techniques, and practices, the handbook aims at supporting educators of Open Science. The result is intended as a helpful guide on how to forward knowledge on Open Science

Open Science Basics

Open Access to Published Research Results

Open Science Policies

Open Concepts & Principles

Open Licensing & File Formats

Open Research Data & Materials

Open Peer Review, Metrics & Evaluation

Reproducible Research & Data Analysis

Open Research Software & Open Source

Open Education Resources

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book.fosteropenscience.eu

On Learning and Training

How to

- Prepare your workshop
  - Theoretical learning strategies
  - Different audiences
  - Strategies to develop motivation
- Execute your workshop
  - How to design a course
  - How to choose content
  - How to start training
- & reflect on your workshop
  - Aspects to evaluate

Organisational Aspects

- Venue
- Timing & budget
- Equipment & media
- Marketing & advertising strategy
- Registration
- Evaluation

→ Check list

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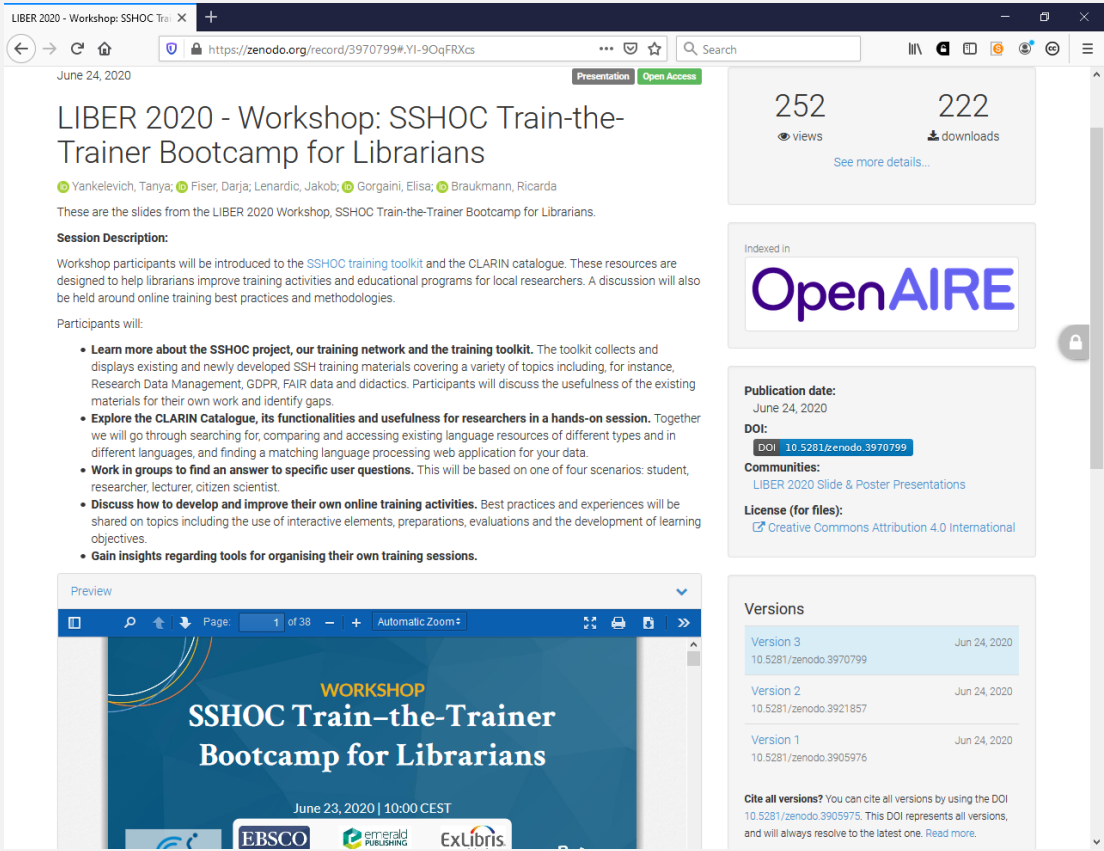
BRINGING WORKSHOPS/TRAINING ONLINE

TIMELINE AND CHECKLIST FOR ORGANIZING ONLINE WORKSHOPS/TRAINING

Prepared by Tatsiana Yankelevich

https://zenodo.org/record/3970799



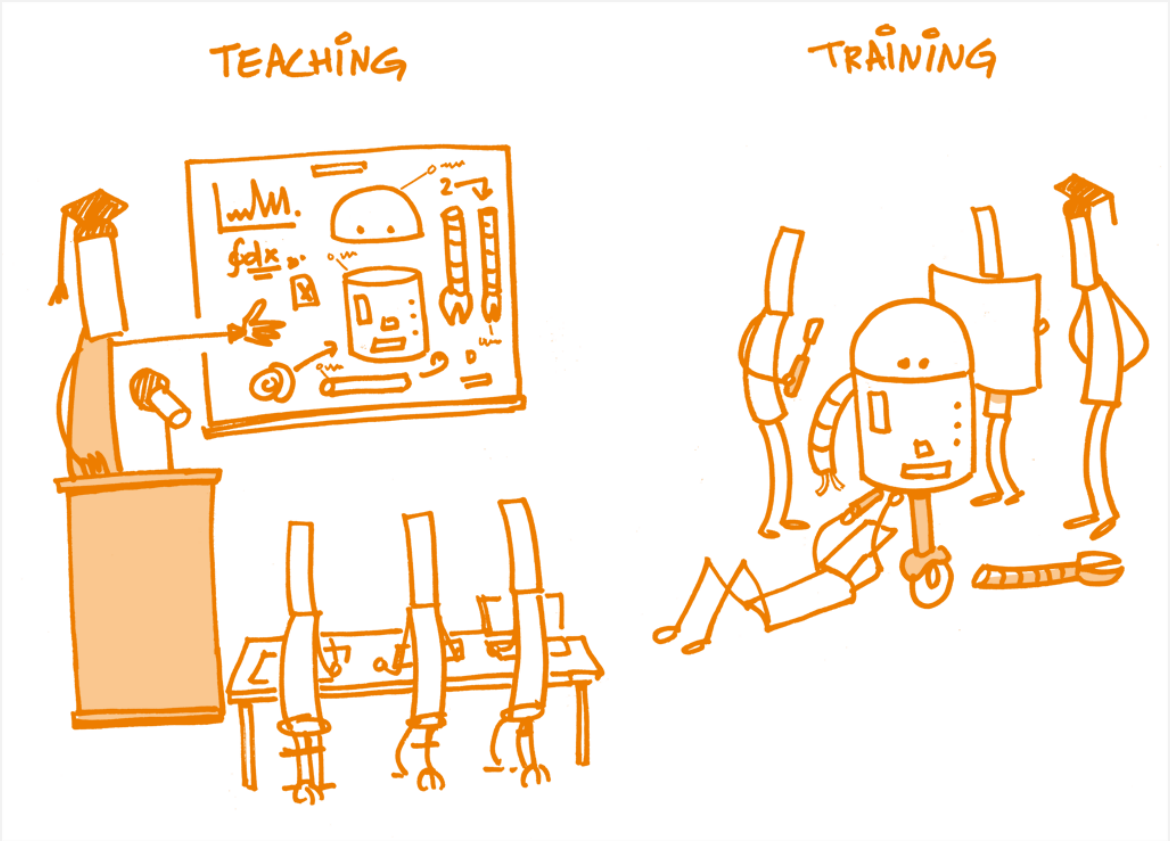
Example training outlines

- Exercises:
  - Format, time needed, topic, learning objectives, description, materials needed, level of prior knowledge, how to adapt
- Open Science Café
  - Enable low-threshold discussion and dialogue between different stakeholders

CC BY Martine Oudenhoven

www.fosteropenscience.eu/content/organise-your-own-open-science-cafe

Hands-on and interactive



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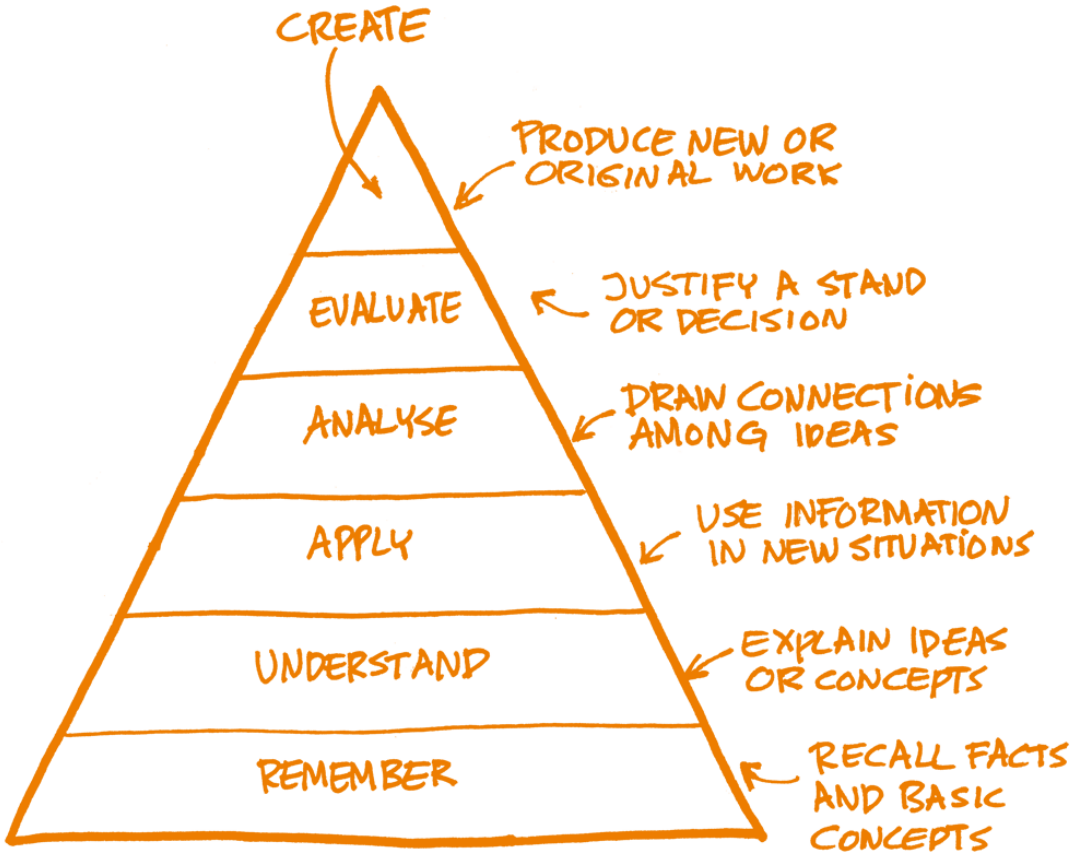
BLOOM'S TAXONOMY



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Melb: Powering up your 2018 (data skills) training - online workbook v2

File Edit View Tools Help https://docs.google.com/document/d/1ohUqqST7Q23stydDUlU6t25W2q7rvYpvbr_ZlsJxOfjA/edit

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Adult learning theory and Knowles 6 principles of adult learning

ADAPTED FROM: May 5, 2015, Sourced from: Queensland Occupational Therapy Fieldwork Collaborative,

Part of being an effective educator involves understanding how adults learn best (Lieb, 1991). Andragogy (adult learning) is a theory that:

- emphasises the value of the **process of learning**
- uses approaches to learning that are **problem-based and collaborative** rather than didactic
- emphasises more **equality between the teacher and learner**.

1. Adults are internally motivated and self-directed	• Graded learning -- increase complexity as the program unfolds • Lead the student toward inquiry -- before too many facts • Feedback -- regular, constructive and specific • Goals -- which they complete and "tick off" • Encourage use of resources • Vary learning styles (eg VARK)

2. Adults bring life experiences and knowledge to learning experiences	• Draw on experiences • Facilitate reflective learning opportunities

.

3. Adults are goal oriented	• Link learning to work goals • Provide real case-studies • Ask questions -- motivate reflection, inquiry and further research

4. Adults are relevancy oriented	• Reflection -- what they learnt,how to apply it • Provide some choice -- to reflect individual interests

5. Adults are practical	Students move from classroom to hands-on problem solving where they can recognise firsthand how what they are learning applies to the work context. • Be explicit -- about how learning is useful and applicable to the job • Active participation -- try things rather than observe
6. Adult learners like to be respected	Respect can be demonstrated by: • Acknowledge -- the wealth of experiences • Regarding them as an equal colleague • Encourage expression -- of ideas, reasoning and feedback
(7. Adults are pressed for time)	(from Training Principles of Adult Learning White Paper) • Just in time • Just for me

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Plan based on learning outcomes rather than objectives

Learning objectives

- Describe the intentions of the instructor by stating **the purpose and goals** of the course.
- Focus on the **content and skills** important within the programme.
- May describe **what the instructors will do**.
- Should be **specific and detailed**.

https://open-science-training-handbook.gitbook.io/book/on-learning-and-training

Learning outcomes

Learning outcomes are statements that describe or list **measurable and essential mastered content-knowledge — reflecting skills, competencies, and knowledge that trainees have achieved and can demonstrate** upon successfully completing a course.

https://open-science-training-handbook.gitbook.io/book/on-learning-and-training

Learning outcomes (2)

Outcomes **express higher-level thinking skills that integrate course content and activities and can be observed as a behavior, skill, or discrete usable knowledge** upon completing the course.

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Learning outcomes (3)

Outcomes are exactly what assessments are intended to show – specifically **what the trainees will be able to do upon completing the course.**

An assessable outcome can be displayed or observed and evaluated against criteria.

Outcomes are **clear and measurable criteria for guiding the teaching, learning, and assessment process** in the course

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Data-driven research is becoming increasingly common in a wide range of academic disciplines, from Archaeology to Zoology, and spanning Arts and Science subject areas alike. To support good research, we need to ensure that researchers have access to good data. Upon completing this course, you will:

- **understand** the differences between open, closed, and shared data
- **be able to** make decisions about which data you can share
- **know** what a data management plan is
- **be aware** of the FAIR principles
- **know** how to get maximum impact from sharing your research data

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https://www.fosteropenscience.eu/learning/managing-and-sharing-research-data

Let's see how much you've learned in this course.

If I choose to share my data, then they must be available to anyone who want them.

Please select one of the options below.

- True
- False

Submit | Show feedback

As the researcher who led the project, I decide what data can be shared.

Please select one of the options below.

- True
- False

A data management plan that is submitted with a grant application cannot be changed.

Please select one of the options below.

- True
- False

Submit | Show feedback

FAIR data are:

Please select one of the options below.

- Findable, accurate, interoperable, reusable
- Findable, accessible, interoperable, replicable
- Findable, accessible, interoperable, reusable
- Formatted, accessible, interoperable, reusable

Submit | Show feedback

To get the most out of the data you share, you should make it available...

Please select one of the options below.

- from my personal web page
- from a discipline specific repository

Submit | Show feedback

Well Done!

You are now on target to manage and share your research data. Remember:

- think carefully about which data you can make open and which need to be protected and remember to consult with relevant stakeholders when making decisions
- to update your data management plan as your project progresses;
- to try and make your data findable, accessible, interoperable and reusable (FAIR);
- take the time to assign a DOI, provide a recommended citation, to provide a good description, and to license your data to get the most our of sharing.

Want to learn more? Please check out the additional resources below. Want to learn something new? Then please select your next course from our main menu.

The responsible data sharer

Sharing data is great but you need to know what data you can share, with whom you can share, when to share, and how best to share. This pathway will equip you with the knowledge you need to make informed decisions about sharing your data responsibly.

Effort: 3-4 hours

Level: intermediate and advanced

The learning path will be completed by finishing the following courses:

- What is open science?
- Managing and sharing research data
- Data protection and ethics
- Open licensing

The reproducible research practitioner

Recent studies have revealed a reproducibility crisis for published findings. This pathway will help you to make sure that your published findings can stand up to scrutiny and serve as a solid foundation for others to build upon.

Effort: 3-4 hours

Level: intermediate and advanced

The learning path will be completed by finishing the following courses:

- What is Open Science?
- Best practice in open research
- Open Access publishing
- Managing and sharing research data
- Open source software and workflows

The open innovation accelerator

The notion that innovation happens within set boundaries is being challenged. This pathway will provide you with the skills you need to spot opportunities and to build open innovation aspects into your research.

Effort: 2-3 hours

Level: intermediate and advanced

The learning path will be completed by finishing the following courses:

- Open Science and innovation
- Managing and sharing research data
- Open licensing

https://www.fosteropenscience.eu/learning-paths

Finding a place for your training & messages in the competitive research landscape

What methods do you, and could you, use to drive **attention** to your training activities?

What methods do you, and could you, use to drive up **attendance** at your training activities - how can you turn REGISTRATION (i.e. interest) into ATTENDANCE (i.e. action)

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How do you know if you are making a difference?

How does your unit/department evaluate the **efficacy & impact of training** it provides to researchers & students?

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Did you apply the knowledge and skills gained at the training to your work? *

- ○ Yes
- ○ No
- ○ Planning to

If no, why didn't you apply the knowledge and skills you gained at the training?

- ○ I don't get enough support from my employer/supervisor
- ○ I need more training to be able to transfer this knowledge into everyday practice
- ○ I don't have enough time
- ○ Other: _____

If yes, what changes did you make to your practice as a result of the training?

Your answer

What impact has the training had on your working life and practices?

Your answer

Can we contact you for any follow up questions?

- ◯ Yes
- ◯ No
- ◯ If yes, please add your contact email here

SUBMIT

Level 1: Reaction

The first level of criteria is “reaction,” which measures whether learners find the training engaging, favorable, and relevant to their jobs. This level is most commonly assessed by an after-training survey (often referred to as a “smile sheet”) that asks students to rate their experience.

A crucial component of Level 1 analysis is a focus on the learner versus the trainer. While it may feel natural for a facilitator to fixate on the training outcome (such as content or learning environment), the Kirkpatrick Model encourages survey questions that concentrate on the learner’s takeaways.

EVALUATION CATEGORY	TRAINER-CENTERED	LEARNER-CENTERED
PROGRAM OBJECTIVES	The program objectives were clearly defined. The program objectives were covered by the instructor. The material was the right level of complexity for my backgroud.	I understood the learning objectives. I was able to relate each of the learning objectives to the learning I achieved. I was appropriately challenges by the material.
COURSE MATERIALS	The course materials were well organized. The course materials complemented the course content.	I found the course materials easy to navigate. I felt that the course materials will be essential for my success.
CONTENT RELEVANCE	The material was relevant to my needs.	I will be able to immediately apply what I learned.
FACILITATOR KNOWLEDGE	The facilitator demonstrated a good understanding of the material. The facilitator shared his/her experiences in regards to the content.	My learning was enhanced by the knowledge of the facilitator. My learning was enhanced by the experiences shared by the facilitator.

Kirkpatrick model. This model looks at four levels: https://www.ardentlearning.com/blog/what-is-the-kirkpatrick-model

Level 2: Learning

Level 2 gauges the learning of each participant based on whether learners acquire the intended knowledge, skills, attitude, confidence and commitment to the training. Learning can be evaluated through both formal and informal methods, and should be evaluated through pre-learning and post-learning assessments to identify accuracy and comprehension.

Methods of assessment include exams or interview-style evaluations. A defined, clear scoring process must be determined in advance to reduce inconsistencies.

Level 3: Behavior

One of the most crucial steps in the Kirkpatrick Model, Level 3 measures whether participants were truly impacted by the learning and if they're applying what they learn. Assessing behavioral changes makes it possible to know not only whether the skills were understood, but if it's logistically possible to use the skills in the workplace.

Oftentimes, evaluating behavior uncovers issues within the workplace. A lack of behavioral change may not mean training was ineffective, but that the organization's current processes and cultural conditions aren't fostering an ideal learning environment for the desired change.

Level 4: Results

Kirkpatrick model. This model looks at four levels: https://www.ardentlearning.com/blog/what-is-the-kirkpatrick-model

How can we measure skills/community building through time in an ethical way?

This post summarizes a series of four steps that Kari recommends event organizers work through to develop an impact evaluation strategy.

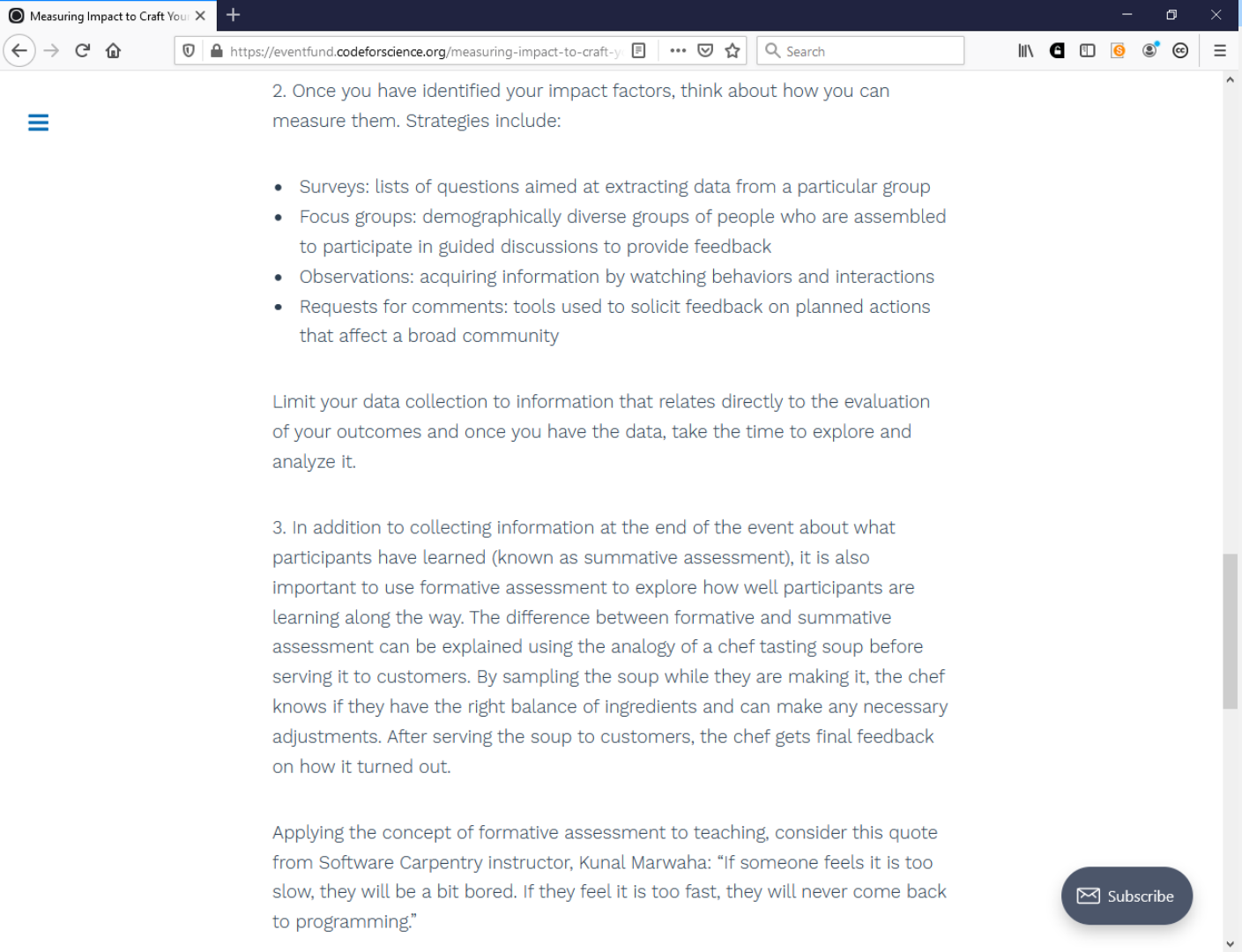
1. Write down your event's purpose and goals and identify concrete impact factors to measure success. These factors may include:

- Reactions: Were instructions easy to follow? What were the strengths and weaknesses of the event? Were the organizers able to accommodate participants so that everyone could fully contribute?
- Learnings: Did participants learn something new about contributing to a project? Did participants learn a new tool? Did participants learn a new approach? Did participants meet new people?
- Behavior: Are participants more confident in their abilities? Are participants motivated to make contributions in the future? Are participants interested in sharing what they learned?
- Results: What are the deliverables? What percentage of participants followed the contribution guidelines? Were there any code of conduct violations?

For example, The Carpentries measures both short- and long- term success in the following areas.

Short Term: How are workshop participants immediately impacted?	Long Term: What concrete changes are workshop participants adopting?
Increased confidence in tools	Improved coding practices
Motivation to seek more knowledge	Making reproducible analyses
Increased self-efficacy for coding	Receiving professional recognition
Motivation to join a local or the global Carpentries community	Improved research productivity

Measuring Impact to Craft Your Story by Dr. Kari L. Jordan, The Carpentries https://eventfund.codeforscience.org/measuring-impact-to-craft-your-story/



Measuring Impact to Craft Your Story by Dr. Kari L. Jordan, [The Carpentries https://eventfund.codeforscience.org/measuring-impact-to-craft-your-story/](https://eventfund.codeforscience.org/measuring-impact-to-craft-your-story/)

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Training design

UPDATE: a new, updated version has been added on April 17th, 2019. It is available via this public dropbox link. If you want to see what has changed, check the Readme.txt file first!

https://www.fosteropenscience.eu/content/train-trainer-card-game-open-science-training

GOAL: Trainers can use this game to facilitate 'train-the-trainer' workshops. Participants design a usable framework for a training – which will they deliver themselves at a later stage - on (a) topic(s) of their choice. The card game offers the participants the option to preselect audience type, audience size, training type and audience knowledge level. In addition, two 'unforeseen' circumstances can be added: audience mood, and 'trouble' (uh-oh!). Apart from going home with a usable design for a training, the audience of this workshop will also benefit from the input and experience of the other participants.

AUDIENCE: (Potential) trainers on Open Science related topics. These trainers are supposed to have a sufficient level of knowledge about their training topic(s) in order for them to be able to pass it on in the trainings they will organise themselves at a later stage. This exercise is suitable for max. 7 groups, consisting of 2-4 trainers per group.

DURATION: 1,5 hour preparation time, +15 mins for persona exercise, + 15 minutes per group for presentation and evaluation

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Authors: Gwen Franck
Publication year: 2018
Language: English (EN)
Level of knowledge: Advanced: apply
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Topics

Design your own training

TOPIC:
Choose

Pick a Card:

AUDIENCE SIZE
AUDIENCE TYPE
KNOWLEDGE LEVEL

Create a PERSONA

Present your plans (5 mins):

- Structure
- Materials
- Exercise
- ...

Training Format

Audience SIZE

Audience TYPE

Knowledge Level

 No prior knowledge	 Basic knowledge (aware of)	 Basic knowledge (practitioner)
 Advanced knowledge (practitioner)	 Advanced knowledge (trainer)	 Unknown
 Mixed		

Your audience

BIO

Occupation:

Age:

Education:

Personality in 3 words:

SKILLS

(1=none, 5 = very skilled)

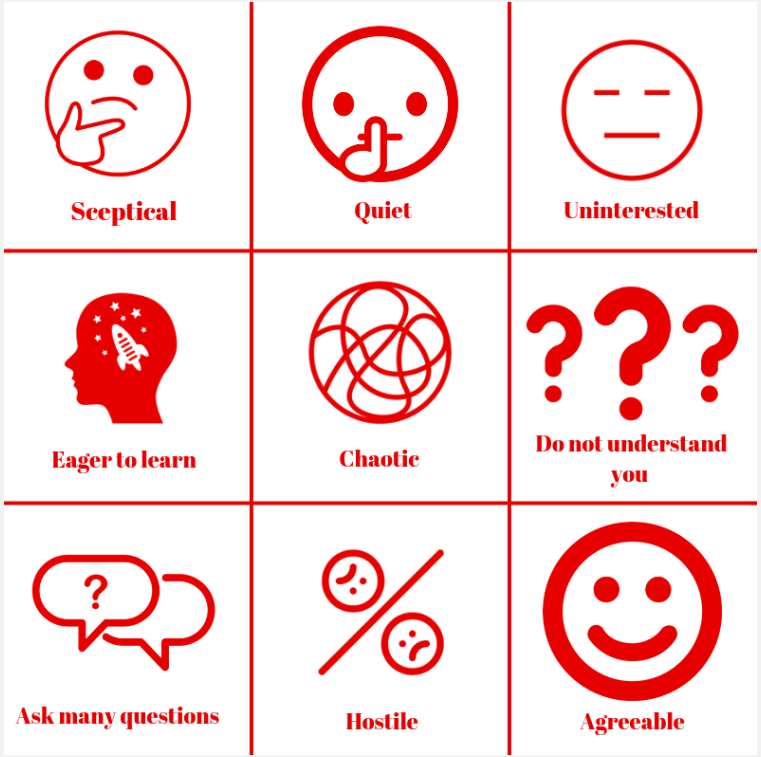
Job experience:	1 2 3 4 5
Open Science	1 2 3 4 5
Training experience	1 2 3 4 5
Technology:	1 2 3 4 5

Name:

MOTIVATION/GOALS

FRUSTRATION

The Unpredictable: Audience Mood



The Unpredictable: External factors

Design your own training

Present your plans (5 mins):

- Structure
- Materials
- Exercise
- ...

Troubleshooting:

AUDIENCE MOOD
DISTURBING FACTORS

EVALUATION

- Is the proposed training appropriate for audience size, type and level of knowledge?
- Are the training materials adequate, understandable and accessible?

Thank you!
Questions?

Contact: iryna.kuchma@eifl.net
@irynakuchma

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