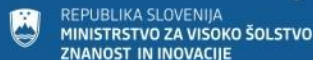


# Planning and Delivering Education and Training

Iryna KUCHAR, EIFL Open Access Programme Manager

Ljubljana in online, Centralna tehniška knjižnica Univerze v Ljubljani,  
Usposabljanje podatkovnih strokovnjakov, 23. – 26. 9. 2024





# “The bicycle” – good for going far





## The Bicycle Principles

v1.2.0 - November 2023



Introduction to the Recommendations [Next >](#)

GitHub

Home ▾

- The need for a community-driven principle-based framework
- The Bicycle Principles for short-format training
- The Principles and this website
- Banbury Working Group
- Citations and publications
- Subscribe to mailing list
- Funding

► Recommendations and Surveys

Glossary and Definitions

Community Feedback, Forum, Mailing lists

# The Bicycle Principles for Effective, Inclusive, and Career-spanning Short-format Training

*Improving Professional Development in the Life Sciences and Beyond*

## Announcement

**November 2023**

**Peer-Reviewed Publication Available:** The Bicycle Principles are now published in PLOS ONE: Jason J. Williams, Rochelle E. Tractenberg, Bérénice Batut, Erin A. Becker, Anne M. Brown, Melissa L. Burke, Ben Busby, Nisha K. Cooch, Allissa A. Dillman, Samuel S. Donovan, Maria A. Doyle, Celia W. G. van Gelder, Christina R. Hall, Kate L. Hertweck, Kari L. Jordan, John R. Jungck, Ainsley R. Latour, Jessica M. Lindvall, Marta Lloret-Llinares, Gary S. McDowell, Rana Morris, Teresa Mourad, Amy Nisselle, Patricia Ordóñez, Lisanna Paladin, Patricia M. Palagi, Mahadeo A. Sukhai, Tracy K. Teal, Louise Woodley. (2023) **An international consensus on effective, inclusive, and career-spanning short-format training in the life sciences and beyond.** PLOS ONE 18(11): e0293879. <https://doi.org/10.1371/journal.pone.0293879>

<https://www.bikeprinciples.org>



Short-Format Training (SFT)		Formal knowledge about teaching and learning applies	Formal High Education (FHE)	
<b>Time</b>	Short – hours/days/few weeks		Long – quarters/semesters	<b>Time</b>
<b>Format</b>	Focus on interactive/hands-on		Lecture heavy; some hands-on	<b>Format</b>
<b>Pre-req.</b>	Often unarticulated/unenforceable		Articulated and enforceable	<b>Pre-req.</b>
<b>Learner prep.</b>	Heterogenous preparation and needs		Prescribed preparation and needs	<b>Learner prep.</b>
<b>Instructor</b>	Domain (not pedagogy) qualification; sporadic teaching duties		Higher expectation of qualification to teach; regular teaching duties	<b>Instructor</b>
<b>Regulations</b>	Unlikely to be regulated		Standards, policies, and laws applied	<b>Regulations</b>
<b>Economics</b>	Value of instruction is abstract or uncertain; labor may be uncompensated		Instruction has concrete economic value; compensation for labor by default	<b>Economics</b>
<b>Sequence</b>	Learners must choose		Within a defined major/minor program	<b>Sequence</b>
<b>Variability</b> More unpredictable/unrepeatable			<b>Variability</b> Highly predictable/repeatable	

Williams JJ, Tractenberg RE, Batut B, Becker EA, Brown AM, Burke ML, et al. (2023) An international consensus on effective, inclusive, and career-spanning short-format training in the life sciences and beyond. PLoS ONE 18(11): e0293879. <https://doi.org/10.1371/journal.pone.0293879>

# The Bicycle Principles

for Effective, Inclusive and Career-spanning Short-Format Training (SFT)



**Lisanna Paladin**

EMBL Bio-IT | [bio-it.embl.de](http://bio-it.embl.de)

Bioinformatics Community Project Manager

With feedback from **Celia van Gelder**

# Short-format training (SFT) definition

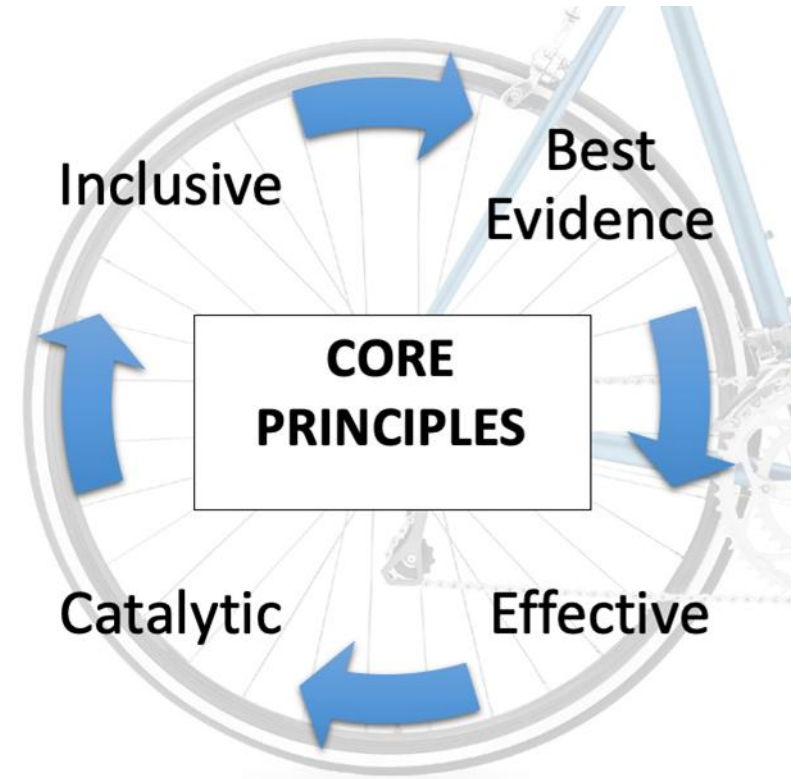
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Instruction in disciplinary skills and knowledge over a **relatively short duration** (i.e., hours, days, or a few weeks).

- Generally happens **outside of a formal degree-granting program**.
- **Content is determined by instructors** or instructional designers.
- Tends to be **stand-alone**, not requiring formal prerequisites or required subsequent SFT.
- Typically delivered to a group of learners who **enroll because of their interest** in the topic, rather than a mandate.
- Typically **developed and delivered by domain experts** outside of and separately from an institutional teaching role.

# All Short Format Training should...

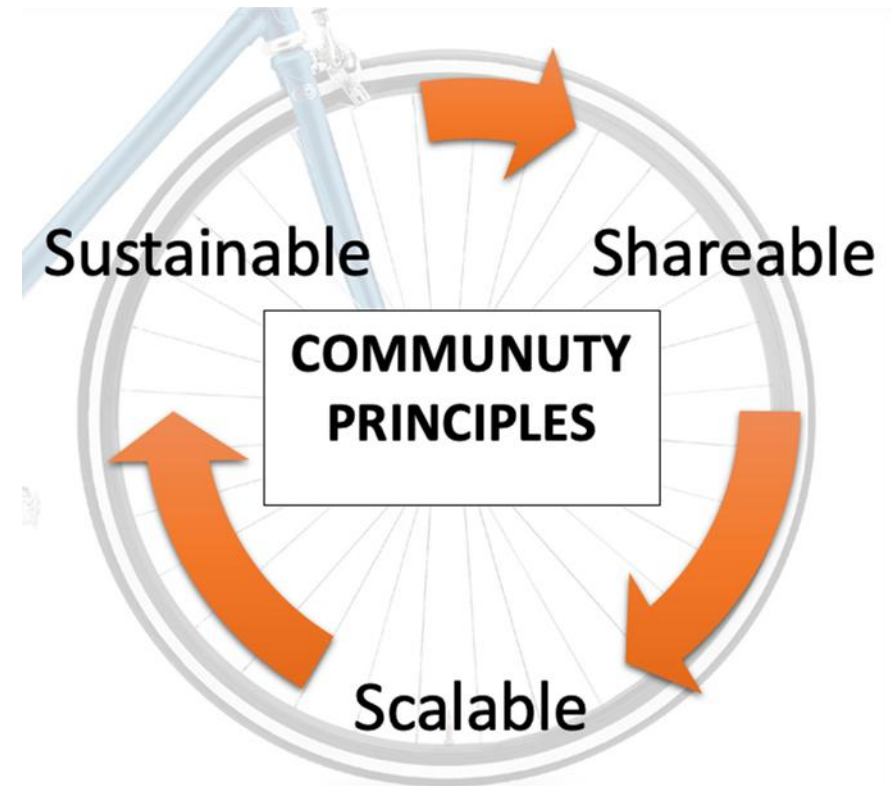
1. Use **Best Evidence**; grounded in findings from the education sciences and formally evaluated instruction.
2. Promote **Catalytic** learning; prepare learners to succeed when the application of knowledge, skills, and abilities requires further self-directed study.
3. Be **Effective**; provide evidence (i.e., from assessment, evaluation) to learners that they have made progress in achieving programmatic and learning goals.
4. Be **Inclusive**; maximize the ability of all learners to participate in and benefit from the learning experience.



The “unicycle” - fine for going alone

# Community principles (when STF happens in)...

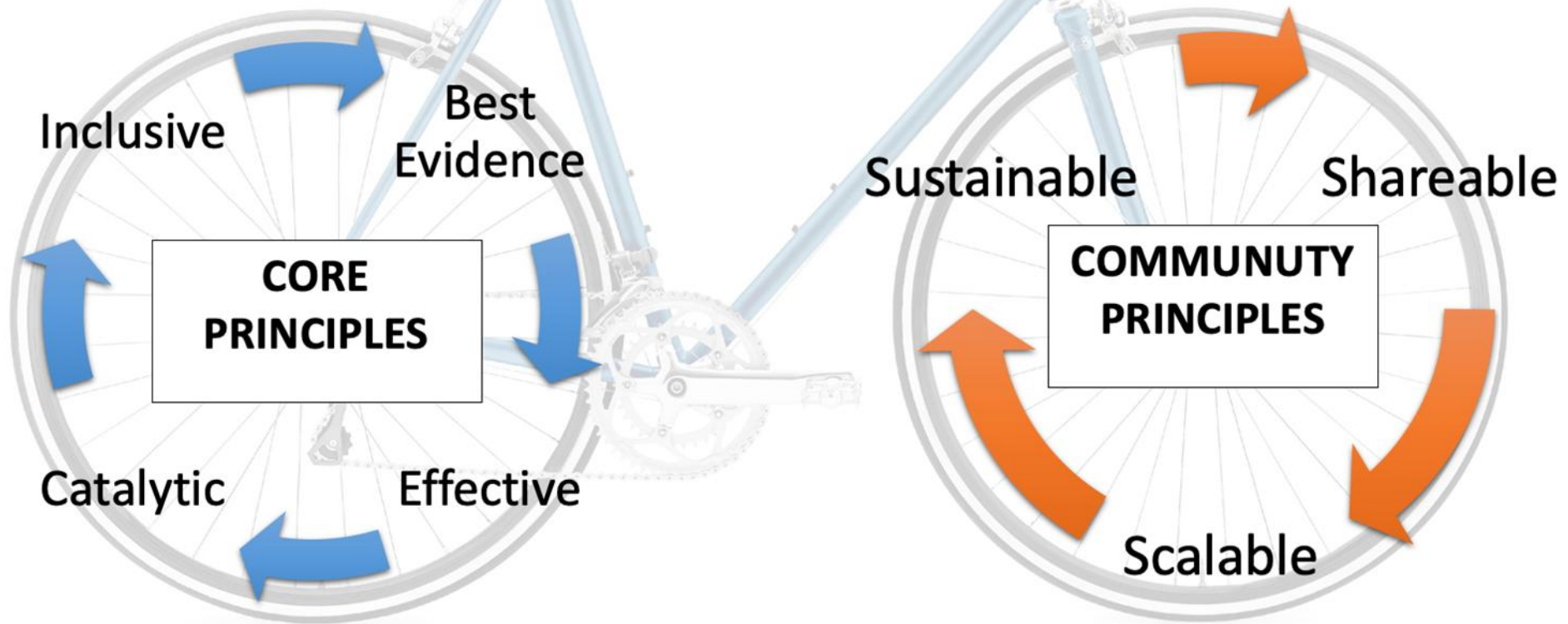
1. **Reach:** include new types and larger audiences of *learners*.
2. **Scale:** increase delivery of short-format training by new groups and larger numbers of *instructors and instructional developers*.
3. **Sustain:** work to maintain the **availability, usability, relevance, and reliability** of learning materials as well as supporting the supporting infrastructures, trainers, and communities which enable effective and inclusive training.



The "bicycle" - good for going far

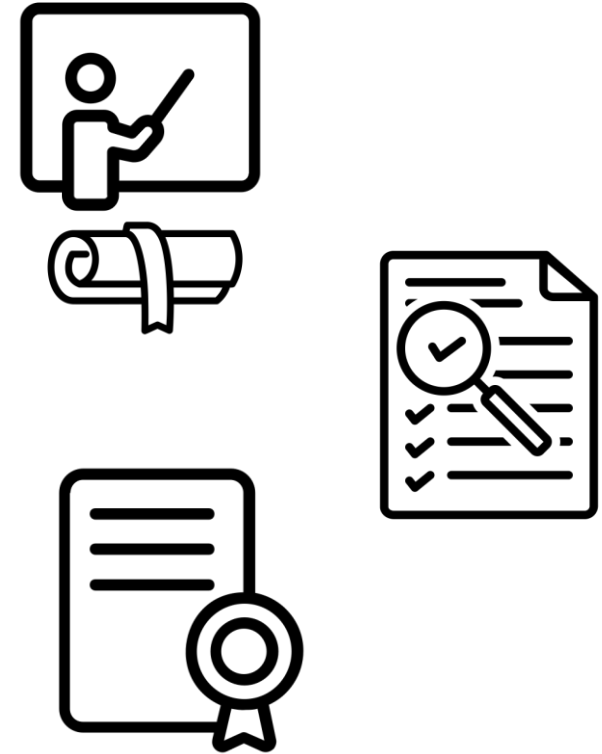


# “The bicycle” – good for going far



# Recommendations

- A. **Professionalize** the training of short-format training **instructors and instructional designers**
- B. **Centralize infrastructure** for short-format **training assessment** and evaluation
- C. Support **microcredentialing** of short-format training instructors



**Institutional role in certifying training**

## Recommendations (2)

- D. Operationalize equitable and inclusive practice in short-format training as an **ethical obligation**



- E. Deploy short-format training to **counter inequity**

An ethical approach to training

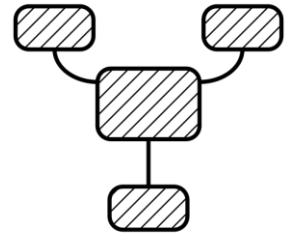
- F. Make the Bicycle Principles **actionable for funders**



Outreach to funders

# Recommendations (3)

- G. Clarify the **economic models** that enable short-format training
- H. **Document models** for high-fidelity reaching, scaling, and or sustaining of short-format training
- I. Apply **FAIR principles** to training materials



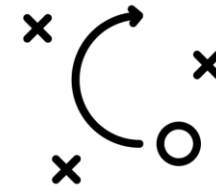
**Planning** (at all levels)

# Recommendations (4)

- J. Encourage interoperable short-format training **registries**
- K. **Communicate standards of instruction** through badging
- L. Develop an **implementation strategy** for Catalytic Learning



**Institutional role (again!)**

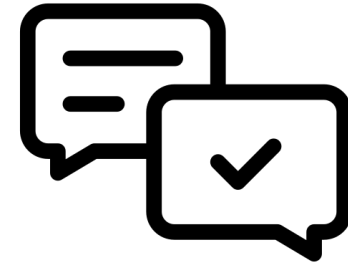


**Make learning useful**



# Recommendations (5)

- M. Support **integration of diagnostic assessment** into short-format training
- N. Encourage **evidence-based guidance** to support career-spanning learning



Feedback



Best evidence

## My personal summary

- Essential **role of the institution** to facilitate this process
- Assess what makes learning **effective and inclusive**



# Introduction to pedagogy and training design

Adapted from the EOSC Synergy Train the Online Trainer course  
Helen Clare, Jisc & Linas Cepinskas, DANS

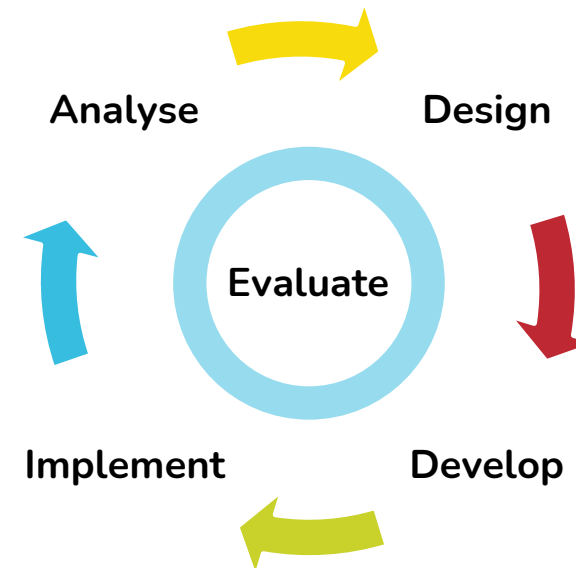


EOSC-SYNERGY receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 857647



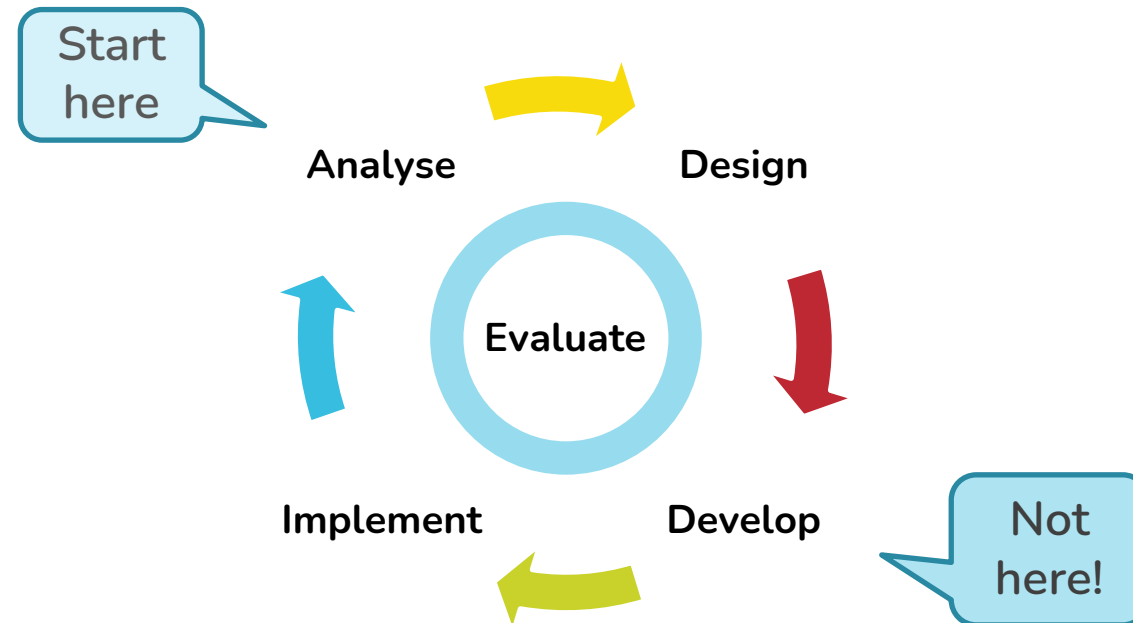
# How to think about good design

- Many models available
- ADDIE gives an overarching framework
- Other models can be used to guide each stage



## In reality

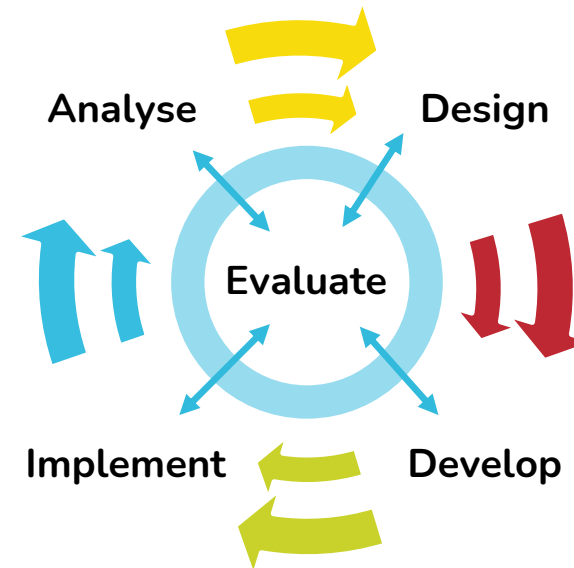
- It's tempting to jump straight into development
- Don't skip analysis and design





## In reality

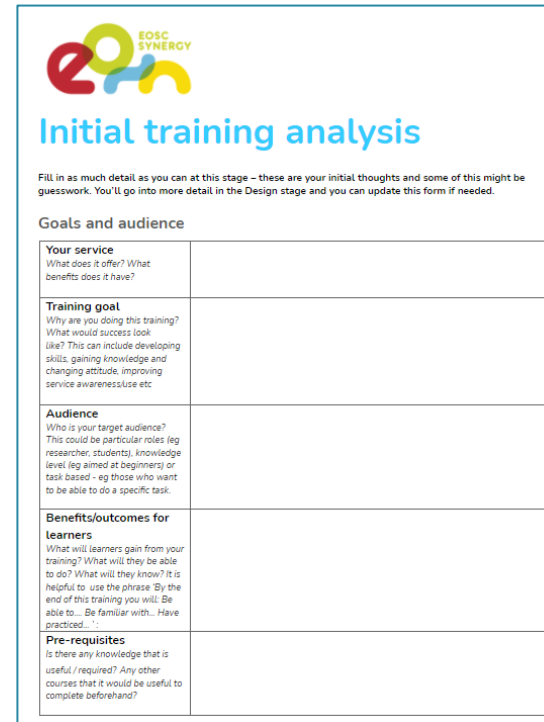
- It's iterative
- It's not always linear
- Evaluation at the core



# Your initial training analysis

- The goals of your training
- Topics to cover
- Your audience / learners
- Learning outcomes
- Delivery method
- Practical issues

[www.eosc-synergy.eu](http://www.eosc-synergy.eu) - RIA 857647

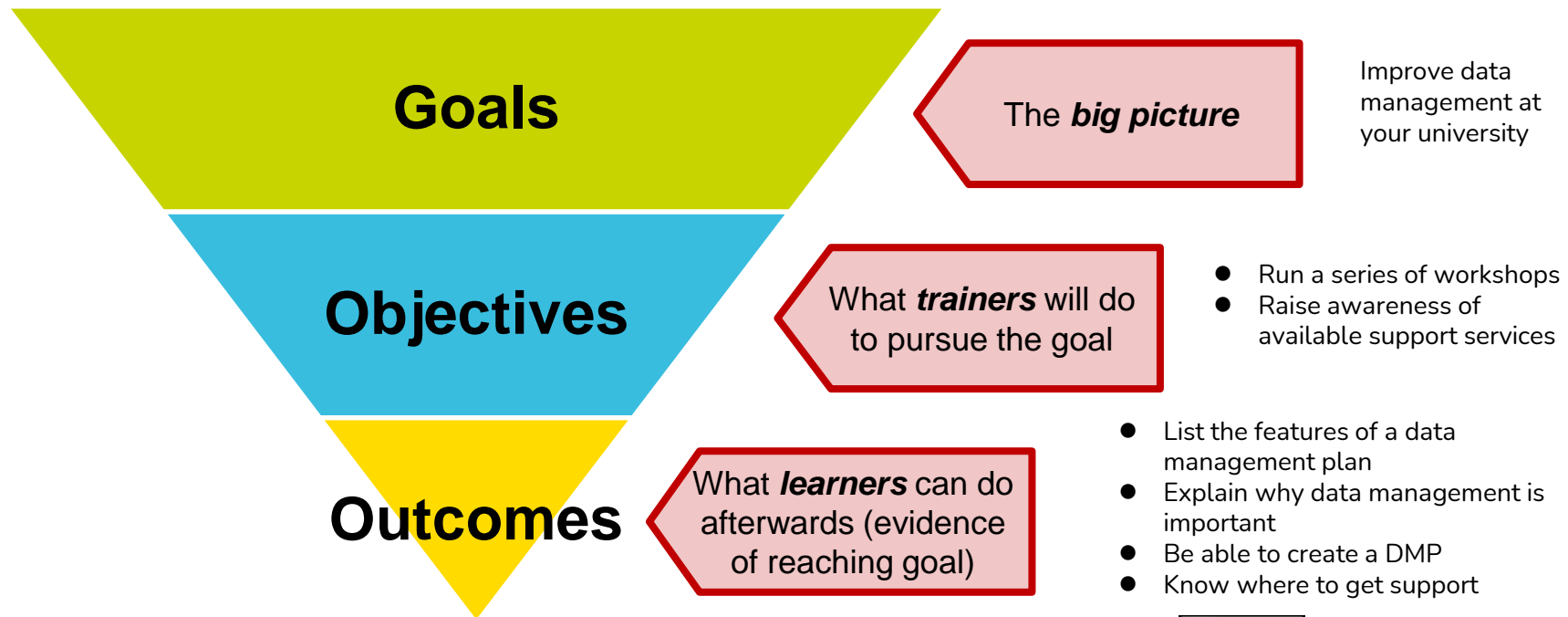
A form titled 'Initial training analysis' with the EOSC SYNERGY logo at the top. It contains a table with five rows for 'Your service', 'Training goal', 'Audience', 'Benefits/outcomes for learners', and 'Pre-requisites'. Each row has a text area for details and a large empty box for additional information.

**Initial training analysis**

Fill in as much detail as you can at this stage – these are your initial thoughts and some of this might be guesswork. You'll go into more detail in the Design stage and you can update this form if needed.

Goals and audience	
<b>Your service</b> What does it offer? What benefits does it have?	
<b>Training goal</b> 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.	
<b>Audience</b> Who is your target audience? This could be particular roles (eg researcher, students), knowledge level (eg aimed at beginners) or task based - eg those who want to be able to do a specific task.	
<b>Benefits/outcomes for learners</b> 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...':	
<b>Pre-requisites</b> Is there any knowledge that is useful / required? Any other courses that it would be useful to complete beforehand?	

# Goals, objectives and outcomes



Adapted from: <http://www.drew.edu/sla/outcomes/>

## Your audience

- Role, background and context
- Prior knowledge, skills and experiences
- Motivation
- Barriers / fears



# 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:

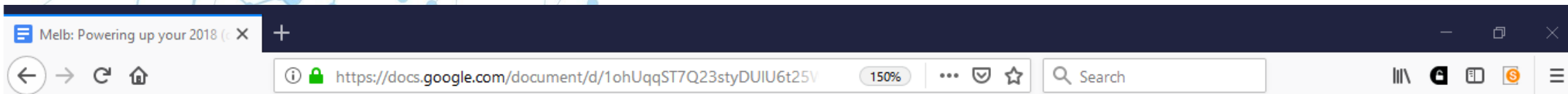


## MOTIVATION/GOALS



## FRUSTRATION





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



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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:

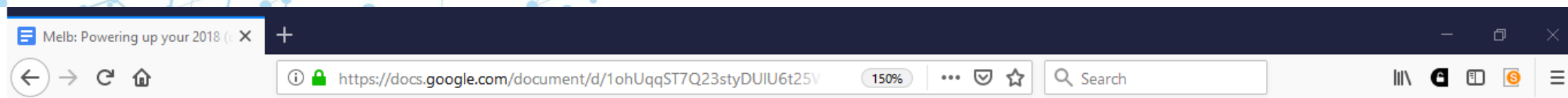
- emphasises the value of the **process of learning**
- uses approaches to learning that are **problem-based and collaborative** rather than didactic
- emphasises more **equality between the teacher and learner**.

### 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)

31





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



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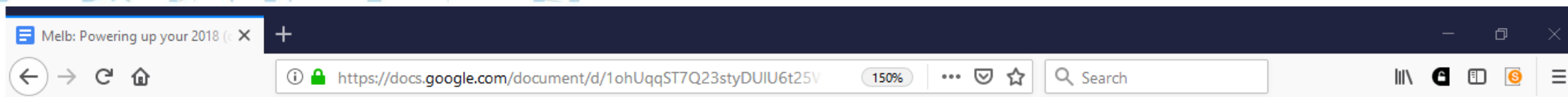
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<b>2. Adults bring life experiences and knowledge to learning experiences</b>	<ul style="list-style-type: none"><li>• Draw on experiences</li><li>• Facilitate reflective learning opportunities</li></ul>
<b>3. Adults are goal oriented</b>	<ul style="list-style-type: none"><li>• Link learning to work goals</li><li>• Provide real case-studies</li><li>• Ask questions -- motivate reflection, inquiry and further research</li></ul>
<b>4. Adults are relevancy oriented</b>	<ul style="list-style-type: none"><li>• Reflection -- what they learnt, how to apply it</li><li>• Provide some choice -- to reflect individual interests</li></ul>

31





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



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### 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





<p><b>Your title and broad topics</b>  <i>Include a short descriptive title. Why do learners need to know about your topic/service? What does it offer?</i></p>	
<p><b>Training goal</b>  <i>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.</i></p>	
<p><b>Audience</b>  <i>Who is your target audience? This could be particular roles (eg researcher, students), knowledge level (eg aimed at beginners) or task based - eg those who want to be able to do a specific task.</i></p>	
<p><b>Benefits/outcomes for learners</b>  <i>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... '</i></p>	
<p><b>Content</b></p>	



**Learning outcomes** (this is what your learning activities should achieve):

1. E.g. Be able to practise Open Science.
2. ...
3. ...

	Learning activity 1	Learning activity 2	Learning activity 3			
<b>Topic 1</b> <i>E.g. Introduction to Open Science</i>	<i>E.g. Acquisition: Video, online forum</i>	<i>E.g. Practice: Use data repositories</i>				
• Duration						
• Assessment (if applicable)						
<b>Topic 2</b>						



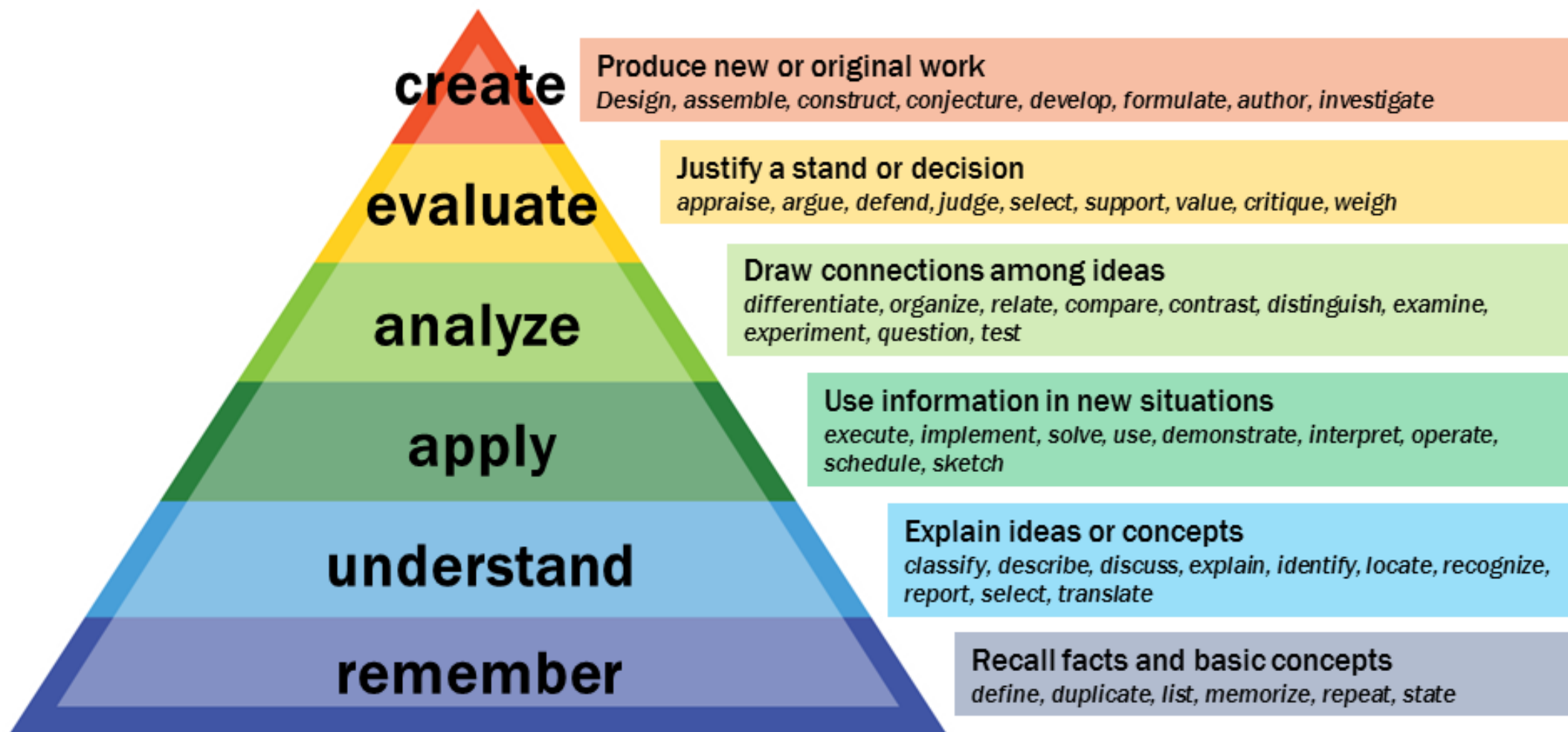
[Training analysis worksheet A & B - short versionFile](#)

<https://moodle.learn.eosc-synergy.eu/course/view.php?id=132&section=4#tabs-tree-start>





# Bloom's Taxonomy





## *A Taxonomy for Teaching, Learning, and Assessment*

### **Remember**

Recognizing  
Recalling

### **Apply**

Executing  
Implementing

### **Evaluate**

Checking  
Critiquing

### **Understand**

Interpreting  
Exemplifying  
Classifying  
Summarizing  
Inferring  
Comparing  
Explaining

### **Analyze**

Differentiating  
Organizing  
Attributing

### **Create**

Generating  
Planning  
Producing

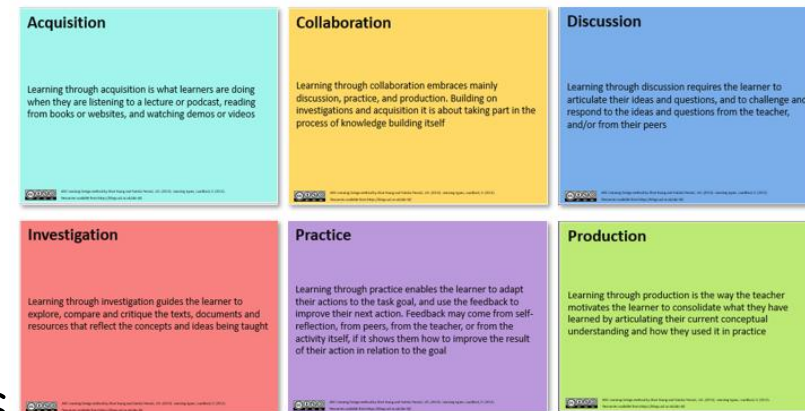
# The ABC learning design method

- Well established
- Quick and simple
- Map learner journey
- Identify learning type activities
- Select specific activities



<https://abc-ld.org/>

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Learning type: Production	
Conventional method	Digital technology
producing articulations using:	
<input type="checkbox"/> statements	<input type="checkbox"/> producing and storing digital documents
<input type="checkbox"/> essays	<input type="checkbox"/> representations of designs
<input type="checkbox"/> reports	<input type="checkbox"/> performances, artefacts
<input type="checkbox"/> accounts	<input type="checkbox"/> animations
<input type="checkbox"/> designs	<input type="checkbox"/> models
<input type="checkbox"/> performances	<input type="checkbox"/> resources
<input type="checkbox"/> artefacts	<input type="checkbox"/> slideshows
<input type="checkbox"/> animations	<input type="checkbox"/> photos
<input type="checkbox"/> models	<input type="checkbox"/> videos
<input type="checkbox"/> videos	<input type="checkbox"/> blogs
<input type="checkbox"/>	<input type="checkbox"/> e-portfolios.
<input type="checkbox"/>	<input type="checkbox"/>

# ABC Learning types cards


## Acquisition

Learning through acquisition is what learners are doing when they are listening to a lecture or podcast, reading from books or websites, and watching demos or videos

 ABC Learning Design created by Oliver Wang and Natalia Peralta, 2017-2019. Learning types, License: CC BY (2019).  
Resources available from <https://eosc-synergy.eu/abc/abc-40/>


## Collaboration

Learning through collaboration embraces mainly discussion, practice, and production. Building on investigations and acquisition it is about taking part in the process of knowledge building itself

 ABC Learning Design created by Oliver Wang and Natalia Peralta, 2017-2019. Learning types, License: CC BY (2019).  
Resources available from <https://eosc-synergy.eu/abc/abc-40/>


## Discussion

Learning through discussion requires the learner to articulate their ideas and questions, and to challenge and respond to the ideas and questions from the teacher, and/or from their peers

 ABC Learning Design created by Oliver Wang and Natalia Peralta, 2017-2019. Learning types, License: CC BY (2019).  
Resources available from <https://eosc-synergy.eu/abc/abc-40/>


## Investigation

Learning through investigation guides the learner to explore, compare and critique the texts, documents and resources that reflect the concepts and ideas being taught

 ABC Learning Design created by Oliver Wang and Natalia Peralta, 2017-2019. Learning types, License: CC BY (2019).  
Resources available from <https://eosc-synergy.eu/abc/abc-40/>

## Practice

Learning through practice enables the learner to adapt their actions to the task goal, and use the feedback to improve their next action. Feedback may come from self-reflection, from peers, from the teacher, or from the activity itself, if it shows them how to improve the result of their action in relation to the goal

 ABC Learning Design created by Oliver Wang and Natalia Peralta, 2017-2019. Learning types, License: CC BY (2019).  
Resources available from <https://eosc-synergy.eu/abc/abc-40/>

## Production

Learning through production is the way the teacher motivates the learner to consolidate what they have learned by articulating their current conceptual understanding and how they used it in practice


 ABC Learning Design created by Oliver Wang and Natalia Peralta, 2017-2019. Learning types, License: CC BY (2019).  
Resources available from <https://eosc-synergy.eu/abc/abc-40/>




E

EOSC train the trainer

⏪

- Your boards
-  4.1 Preparing to teach about E...

 4.3 Ethics and Legal Issues Rela...

Board ▾

4.1 Preparing to teach about EOSC

☆

EOSC train the trainer

Workspace visible

Automation

Filter

Show menu

LB AI BK CV +19

Invite

ADMIN: ABC categories

Acquisition: Listening, reading, watching (books, recordings, videos)

Discussion: Articulating ideas and questions, challenging/responding to ideas from tutor/peers

Practice: Learning through practice, reflection, feedback (using models, simulations, role play, scenarios)

Investigation: Exploration,

+ Add a card

1. Meta overview of EOSC, EOSC as an umbrella

Key learning objective: introduce EOSC topics

Time allocation: 1 hr module activities + 1 hr pre-module reading

Acquisition: Pre-event reading and preparation

Discussion: what does EOSC mean to you?

+ Add a card

2. How EOSC can be integrated into research

Key learning objective: learn how the evolving structure/services/resources serves actor groups

Time allocation: 1.5 hrs + 1 hr pre-reading + 1h pre-investigation

Acquisition: Pre-event reading and preparation

Investigation: Pre-event: Explore EOSC links within learner context

+ Add a card

3. Answering questions about EOSC

Key learning objective: build confidence about answering questions about EOSC to groups

Time allocation: 1h45 + 1 hr pre-reading

Resources needed: clean whiteboard, FAQs and sample answers, table for participants to fill in

+ Add a card

You are a guest on these boards. To see other boards and members in this Workspace, an admin must add you as a member.

How do you  
plan your  
training  
events?



## Finding a place for your training and 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)



Melb: Powering up your 2018 (c x PDF 20180602 Embedding Intersect x +

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📄 🔒 📅 💰 ☰



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



Share



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Advertising strategies: This table is an abbreviated version from [Quizlet](#)

Technique	What does this mean?	Event	Online
Loaded Words	Words with strong associations (eg University Rankings!)		
Transference	Associates positive words, images and ideas with a product and its users		
Testimonial	Endorsement by a celebrity or expert		
Bandwagon	Feel like everyone else has the product and if you don't, you will be left out.		
Snob Appeal	The opposite of bandwagon -> using the product means the consumer is better, smarter, richer and so on...than anyone else.		
Repetition	Repeats catchphrase, name or logo over and over so that it "sticks"		
Flattery	Consumer's vanity: implying smart, rich, popular people buy the product.		
Plain Folks	"people just like you" use the product.		

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

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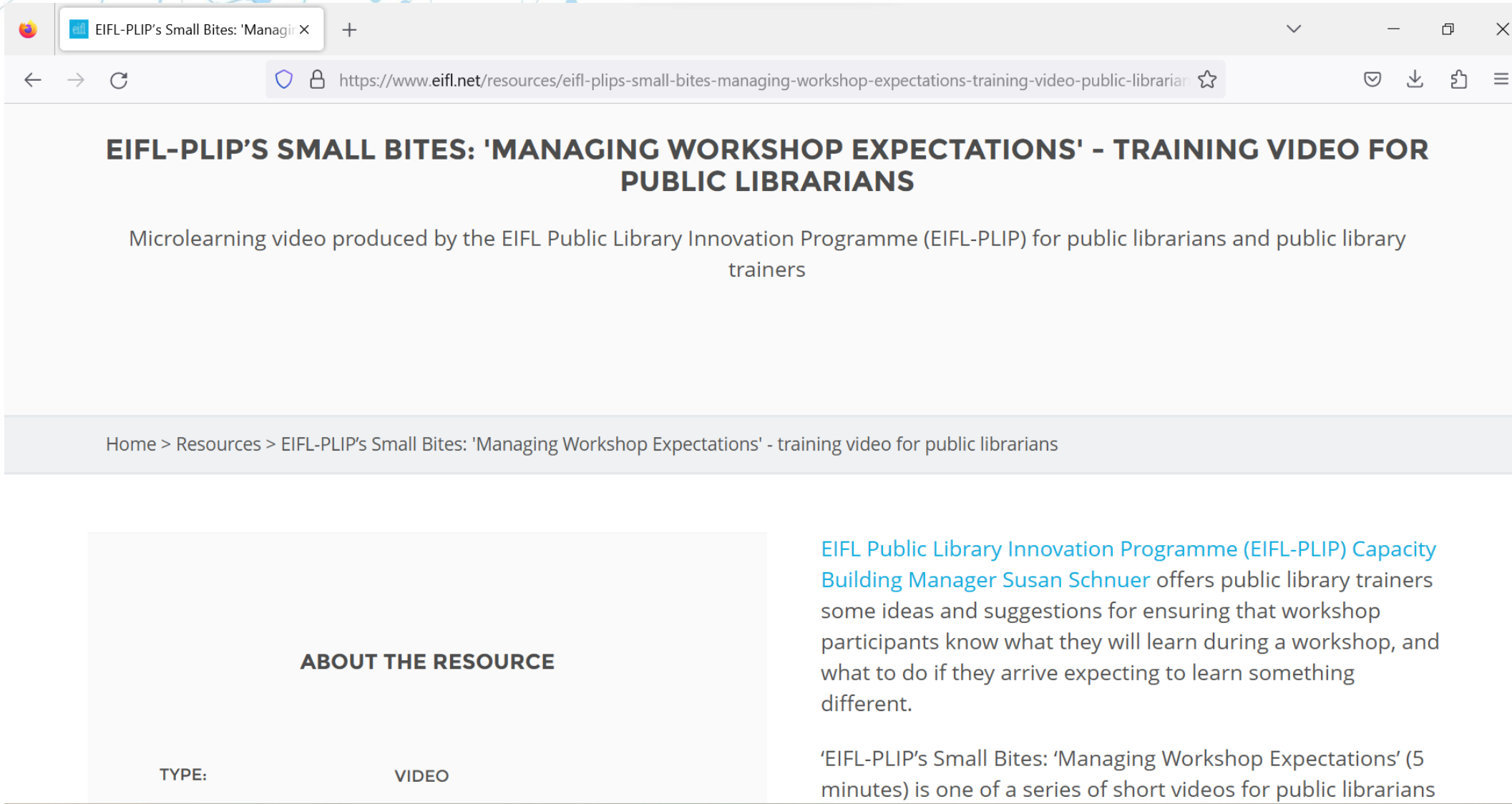
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Emotional Appeals	Appeals to the consumer's fears, joys, sense of nostalgia.		
Facts and Figures	Uses statistics, research or other data		
Special Offer	Offers a discount, coupon, free gift or other enticement		
Urgency	Makes you feel like you need the product right away		
Ethos	Establishes credibility or character of the company		
Pathos	Evokes an emotional response in the consumer		
Logos	Appeals to logic or reason - often have evidence and statistics		



**How do you  
promote your  
training  
events?**



The screenshot shows a web browser window with a single tab titled "EIFL-PLIP's Small Bites: 'Managing Workshop Expectations' - Training Video for Public Librarians". The address bar shows the URL: <https://www.eifl.net/resources/eifl-plips-small-bites-managing-workshop-expectations-training-video-public-librarians>. The page content includes a title, a description of the microlearning video, a breadcrumb trail, and a section titled "ABOUT THE RESOURCE" with a video player placeholder and a description of the resource.

## EIFL-PLIP'S SMALL BITES: 'MANAGING WORKSHOP EXPECTATIONS' - TRAINING VIDEO FOR PUBLIC LIBRARIANS

Microlearning video produced by the EIFL Public Library Innovation Programme (EIFL-PLIP) for public librarians and public library trainers

Home > Resources > EIFL-PLIP's Small Bites: 'Managing Workshop Expectations' - training video for public librarians

### ABOUT THE RESOURCE

TYPE: VIDEO

EIFL Public Library Innovation Programme (EIFL-PLIP) Capacity Building Manager Susan Schnuer offers public library trainers some ideas and suggestions for ensuring that workshop participants know what they will learn during a workshop, and what to do if they arrive expecting to learn something different.

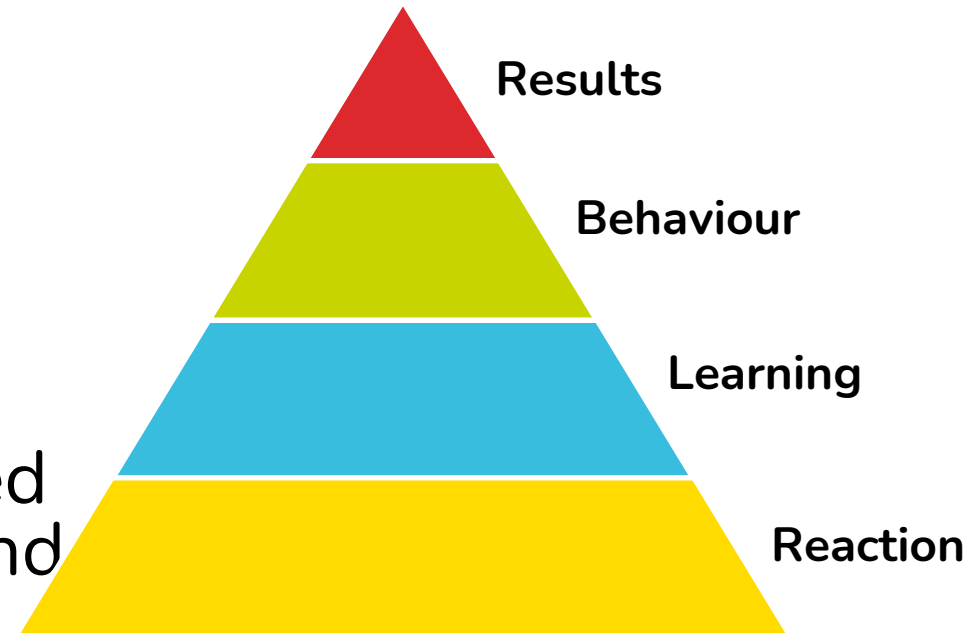
'EIFL-PLIP's Small Bites: 'Managing Workshop Expectations' (5 minutes) is one of a series of short videos for public librarians

# Evaluation

Different levels of  
evaluation

Linked to assessment

Needs to be considered  
in design, not at the end



Kirkpatrick, D. L. (1994). Evaluating training programs: the four levels.  
San Francisco: Berrett-Koehler.



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

**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?**

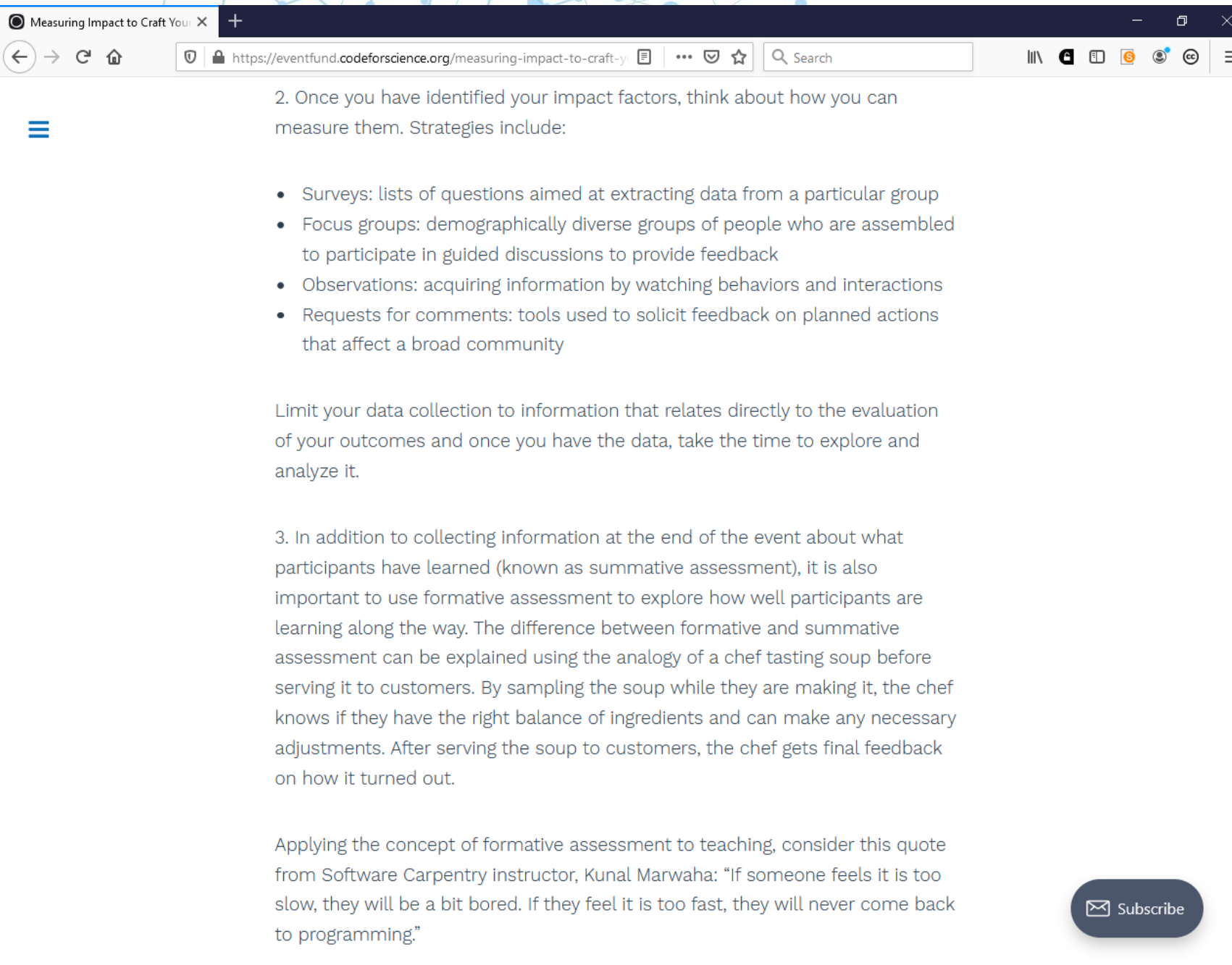
1. Write down your event's purpose and goals and identify concrete impact factors to measure success. These factors may include:

- 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

 [Subscribe](#)





Measuring Impact to Craft Your Story

2. Once you have identified your impact factors, think about how you can measure them. Strategies include:

- Surveys: lists of questions aimed at extracting data from a particular group
- Focus groups: demographically diverse groups of people who are assembled to participate in guided discussions to provide feedback
- Observations: acquiring information by watching behaviors and interactions
- Requests for comments: tools used to solicit feedback on planned actions that affect a broad community

Limit your data collection to information that relates directly to the evaluation of your outcomes and once you have the data, take the time to explore and analyze it.

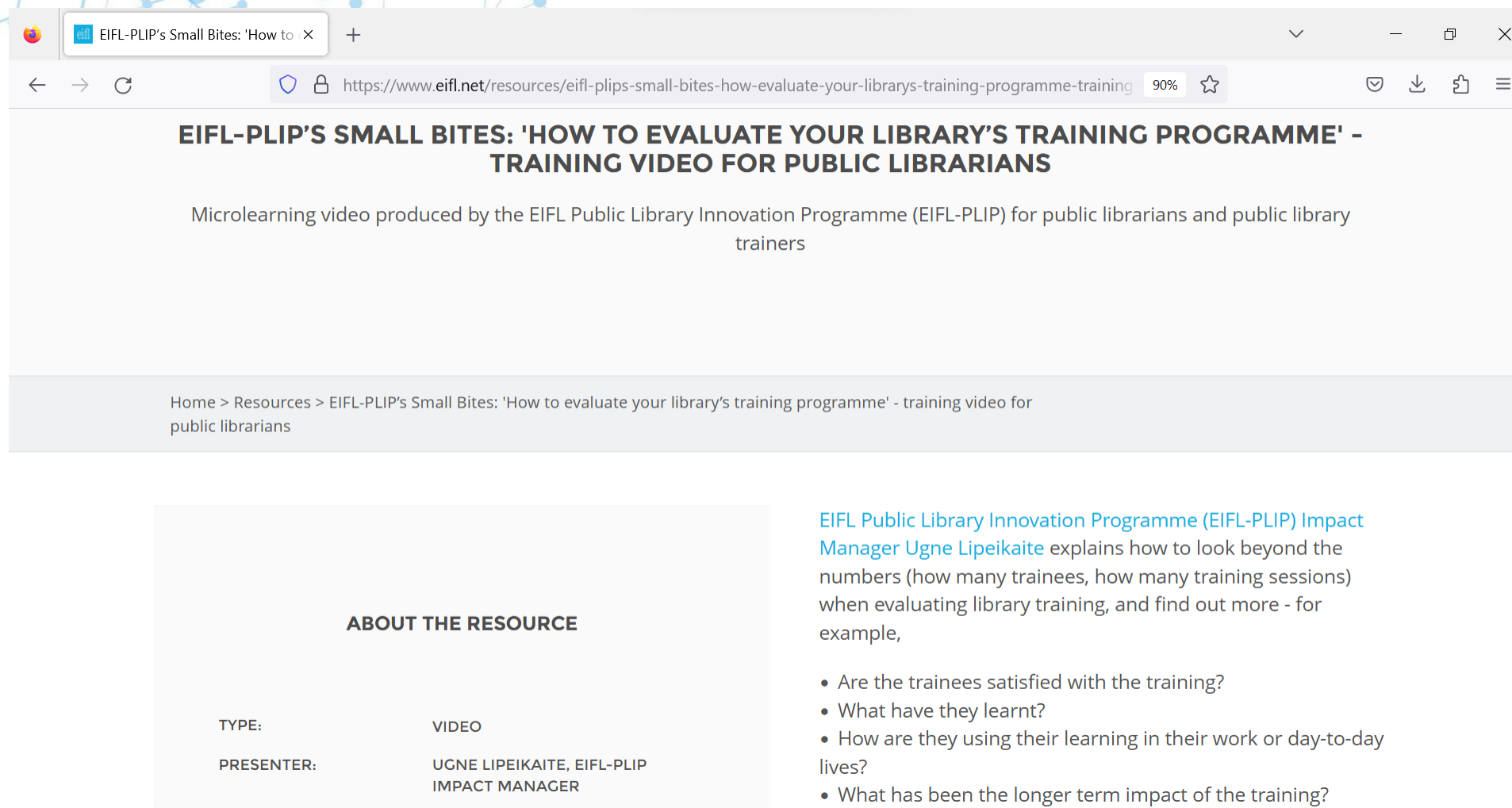
3. In addition to collecting information at the end of the event about what participants have learned (known as summative assessment), it is also important to use formative assessment to explore how well participants are learning along the way. The difference between formative and summative assessment can be explained using the analogy of a chef tasting soup before serving it to customers. By sampling the soup while they are making it, the chef knows if they have the right balance of ingredients and can make any necessary adjustments. After serving the soup to customers, the chef gets final feedback on how it turned out.

Applying the concept of formative assessment to teaching, consider this quote from Software Carpentry instructor, Kunal Marwaha: "If someone feels it is too slow, they will be a bit bored. If they feel it is too fast, they will never come back to programming."

Subscribe

**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/>





The screenshot shows a web browser window with a single tab titled "EIFL-PLIP's Small Bites: 'How to...". The address bar shows the URL: <https://www.eifl.net/resources/eifl-plips-small-bites-how-evaluate-your-librarys-training-programme-training>. The page content includes a title, a description, a breadcrumb trail, and a table with resource details.

## EIFL-PLIP'S SMALL BITES: 'HOW TO EVALUATE YOUR LIBRARY'S TRAINING PROGRAMME' - TRAINING VIDEO FOR PUBLIC LIBRARIANS

Microlearning video produced by the EIFL Public Library Innovation Programme (EIFL-PLIP) for public librarians and public library trainers

Home > Resources > EIFL-PLIP's Small Bites: 'How to evaluate your library's training programme' - training video for public librarians

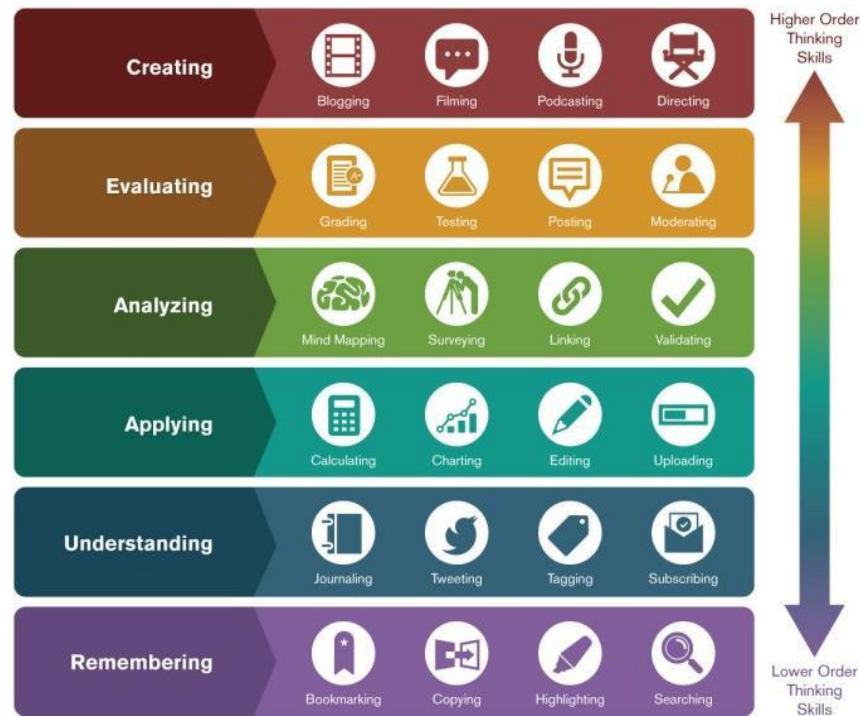
ABOUT THE RESOURCE	
TYPE:	VIDEO
PRESENTER:	UGNE LIPEIKAITE, EIFL-PLIP IMPACT MANAGER

EIFL Public Library Innovation Programme (EIFL-PLIP) Impact Manager [Ugne Lipeikaite](#) explains how to look beyond the numbers (how many trainees, how many training sessions) when evaluating library training, and find out more - for example,

- Are the trainees satisfied with the training?
- What have they learnt?
- How are they using their learning in their work or day-to-day lives?
- What has been the longer term impact of the training?

<https://www.eifl.net/resources/eifl-plips-small-bites-how-evaluate-your-librarys-training-programme-training-video-public>

# Two points to remember



1. Activities should match the intended outcomes

2. And be engaging and appropriate for learners



FOSTER Training Follow Up

https://docs.google.com/forms/d/e/1FAIpQLSfoGezrjLnYMtWHCPZD 120% Search

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: \_\_\_\_\_

FOSTER Training Follow Up

https://docs.google.com/forms/d/e/1FAIpQLSfoGezrjLnYMtWHCPZD 120%

Search

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

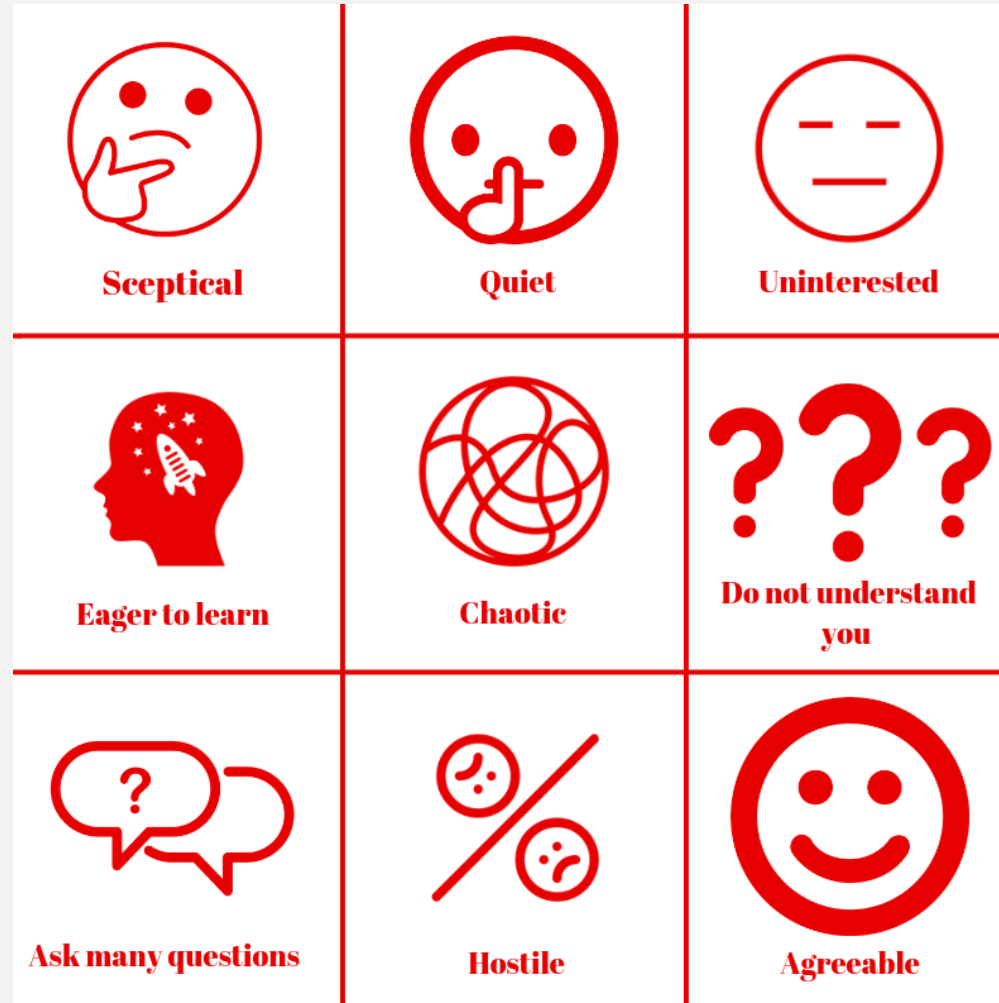
☐ If yes, please add your contact email here

SUBMIT

How do you know if  
you are making a  
difference?

How do you evaluate  
the efficacy and  
impact of your  
training?

# The Unpredictable: Audience Mood



# The Unpredictable: External factors

 <p><b>Audience is checking e-mails</b></p>	 <p><b>No WIFI!</b></p>	 <p><b>Audience keeps looking at phone</b></p>
 <p><b>Disturbing noise</b></p>	 <p><b>Forgot something!</b></p>	 <p><b>One person dominates</b></p>
 <p><b>Sound issues</b></p>	 <p><b>Room temperature is uncomfortable</b></p>	 <p><b>Venue is not suitable</b></p>



EDITORIAL

<https://doi.org/10.1371/journal.pcbi.1007854>

# Ten simple rules for making training materials FAIR

Leyla Garcia, Bérénice Batut, Melissa L. Burke, Mateusz Kuzak, Fotis Psomopoulos, Ricardo Arcila, Teresa K. Attwood, Niall Beard, Denise Carvalho-Silva, Alexandros C. Dimopoulos, Victoria Dominguez del Angel, Michel Dumontier, Kim T. Gurwitz, [ ... ],Patricia M. Palagi [ view all ]

Published: May 21, 2020 • <https://doi.org/10.1371/journal.pcbi.1007854>

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- Author summary
- Introduction
- Rule 1: Plan to share your training materials online
- Rule 2: Improve findability of your training materials by properly describing them
- Rule 3: Give your training materials a unique identity
- Rule 4: Register your training materials online

Author summary

Everything we do today is becoming more and more reliant on the use of computers. The field of biology is no exception; but most biologists receive little or no formal preparation for the increasingly computational aspects of their discipline. In consequence, informal training courses are often needed to plug the gaps; and the demand for such training is growing worldwide. To meet this demand, some training programs are being expanded, and new ones are being developed. Key to both scenarios is the creation of new course materials. Rather than starting from scratch, however, it's sometimes possible to repurpose materials that already exist. Yet finding suitable materials online can be difficult: They're often widely scattered across the internet or hidden in their home institutions, with no systematic way to find them. This is a common problem for all digital objects. The scientific community has attempted to address this issue by developing a set of rules (which have been called the Findable, Accessible, Interoperable and Reusable [FAIR] principles) to make such objects more findable and reusable. Here, we show how to apply these rules to help make training materials easier to find, (re)use, and adapt, for the benefit of all.

ADVERTISEMENT

WHY PUBLISH YOUR METHODS?

Contextualize Results



Figure 1: Ten rules for making training materials FAIR. Taken from Garcia et al 2020

<https://doi.org/10.1371/journal.pcbi.1007854>

Format	Advantages	Disadvantages
PPT and PPTX	<ul style="list-style-type: none"> <li>• Easily (re)usable</li> <li>• Available to multiple OSs/Software</li> <li>• Widespread</li> </ul>	<ul style="list-style-type: none"> <li>• Limited way to provide detailed training instructions</li> <li>• Not version controlled</li> </ul>
Keynote	<ul style="list-style-type: none"> <li>• Polished overall aesthetic</li> </ul>	<ul style="list-style-type: none"> <li>• Limited to macOS family</li> <li>• Not version controlled</li> </ul>
PDF	<ul style="list-style-type: none"> <li>• Can be displayed identically in any environment</li> </ul>	<ul style="list-style-type: none"> <li>• Not easily editable</li> <li>• Not version controlled</li> </ul>
TeX	<ul style="list-style-type: none"> <li>• Easily editable</li> <li>• Version controlled</li> <li>• Free</li> </ul>	<ul style="list-style-type: none"> <li>• Steep learning curve for trainers</li> </ul>
MD, RST, and HTML	<ul style="list-style-type: none"> <li>• Version controlled Free</li> </ul>	<ul style="list-style-type: none"> <li>• Rendering (need templating to transform into HTML)</li> </ul>
Google slides	<ul style="list-style-type: none"> <li>• Version controlled Free</li> </ul>	<ul style="list-style-type: none"> <li>• Not always possible to use owing to local/institutional policies</li> <li>• Not always accessible (depending on geographic location)</li> </ul>

MD, Markdown; PDF, Portable Document Format; PPT, PowerPoint; PPTX, PowerPoint Open XML Presentation; RST, reStructuredText

*Table 1: Ten rules for making training materials FAIR. Taken from Garcia et al 2020*

<https://doi.org/10.1371/journal.pcbi.1007854>  
<https://doi.org/10.1371/journal.pcbi.1007854.t001>

Type of metadata	What to include
Title	Title of the training material.
Contact details	Author(s) name and contact details.
Licensing and (re)use details	License under which the materials are shared, and rules and conditions for (re)use and contribution.
Preferred citation	Instructions on how to cite your material.
Description	Overview of the subject matter, aims of the training, and language in which the training is delivered.
Learning outcomes	Statements that indicate what trainees should be able to do upon successful completion of the training.
Target audience	The intended audience, their prerequisite knowledge and skills, their general background, and how the training material will help them.
Required resources	Technical resources and related materials (software requirements, datasets, infrastructure requirements, etc.).
Keyword	Keywords or tags identifying the topic of the materials.
Structure and duration	Description of the structure of the materials and setting in which to deliver them, including the time allocated to each part (lectures, exercises, etc.)
Additional information	Items that provide additional information about (re)use and delivery of the materials (e.g., general tips and guidance).
Links and references	Links and references that are relevant to the content but not required for delivery of the materials.
Date of last revision	Date of last update of the materials and the version.

*Table 2: Ten rules for making training materials FAIR. Taken from Garcia et al 2020*  
<https://doi.org/10.1371/journal.pcbi.1007854>



# Home



Are you a developer of training material? Do you want to get more community involvement with your training material by making it **Findable Accessible Interoperable and Reusable (FAIR)**? Look no further, you are at the right (web)address! The ten [chapters](#) provide guidance on how you can FAIRify your training material.

This is an initiative of the [ELIXIR FAIR training focus group](#), and based on the paper describing the 10 simple rules for [FAIR training materials publication](#). <sup>1</sup>


<https://elixir-europe-training.github.io/ELIXIR-TrP-FAIR-training-handbook>

Directly to the chapters





Home

 Search



elixir-europe-training/FAIR-...  
v1.0.0 ☆ 20 🗨 17

FAIR training handbook

[Home](#)

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Chapters



Checklist

Keywords list

Contributors

- [Preface](#)
- [1. Why FAIR training & training materials?](#)
- [2. Choose material types and formats that facilitate FAIRness](#)
- [3. Get ready to create your materials or reuse](#)
- [4. Use metadata to describe training materials](#)
- [5. Get a persistent identifier for your training training material](#)
- [6. Make it accessible](#)
- [7. Make it reusable](#)
- [8. Provide a licensing](#)
- [9. Boost discoverability](#)
- [10. Recognition, acknowledgment, authorship](#)



give feedback



<https://elixir-europe-training.github.io/ELIXIR-TrP-FAIR-training-handbook/#>

## Depositing training materials in Zenodo: FAIRsFAIR checklist

This checklist has been adapted from “10 simple rules for making training materials FAIR” by Garcia L., Batut B., Burke M.L., et al. (2020). The objectives of this checklist are to encourage the FAIRsFAIR project partners to deposit their training materials in Zenodo for long-term access and sustainability beyond the time of the project as a first step towards making these materials as FAIR as possible. To facilitate better use of Zenodo, the questions with an \* refer to the repository’s website.

Describing digital objects with structured metadata is fundamental to making them FAIR. Regardless of the type of object, adding appropriate, standardised metadata will help make them both machine and human readable. Please keep in mind that only the person uploading the document to Zenodo is able to change or add to the metadata. If you are uploading on behalf of others, then check the metadata in advance to reduce the need to make changes in the future.

FAIR principles	Steps	Key questions	Yes	No	Notes
Reusable	1. Plan to share your training materials online. 2. Keep your training materials up-to-date.	<ul style="list-style-type: none"> <li>Have you considered which material or parts of this material could be helpful to others?</li> </ul>	X		Consider how the material should be <u>organised</u> in a collection to help others discover it. Most but not all materials will relate to an event, such as a webinar, workshop or training course. If this covers more than one speaker or topic consider creating a collection to describe this context, and upload the material for each in a separate record. In some cases, not all material may be available, e.g. speaker notes, references to related material, or information about the context of the training. Think in advance what could be most useful to your audience and consider adding anything that is missing.
		<ul style="list-style-type: none"> <li>Have you considered if you will need to</li> </ul>	X		Sometimes material does not need to be updated (e.g., material from a one-off event). If you do not plan to update the material, provide a timestamp of the last update/last version in your material.

[https://docs.google.com/document/d/1Bv2Tg2GIN7OW4LB\\_maimxoTtmNujwuX-/edit](https://docs.google.com/document/d/1Bv2Tg2GIN7OW4LB_maimxoTtmNujwuX-/edit)





01

Apr  
2022

# Recommendations for a minimal metadata set to aid harmonised discovery of learning resources

By [Bridget Walker](#)

Education and Training on Handling of Research Data IG

**Group co-chairs:**

[Laura Molloy](#), [Katarzyna Biernacka](#), [Amy Nurnberger](#)

**Supporting Output title:** Recommendations for a minimal metadata set to aid harmonised discovery of learning resources

**Authors:** Nancy Hoebelheinrich, Katarzyna Biernacka, Michelle Brazas, Leyla Jael Castro, Nicola Fiore, Maggie Hellström, Iryna Kuchma, Emma Lazzeri, Ellen Leenarts, Paula Martinez Lavanchy, Elizabeth Newbold, Amy L. Nurnberger, Esther Plomp, Lucia Vaira, Celia van Gelder, Angus Whyte

## Education and Training on Handling of Research Data IG

**Status:** Recognised & Endorsed

**Chair(s):** [Laura Molloy](#), [Katarzyna Biernacka](#), [Amy Nurnberger](#)

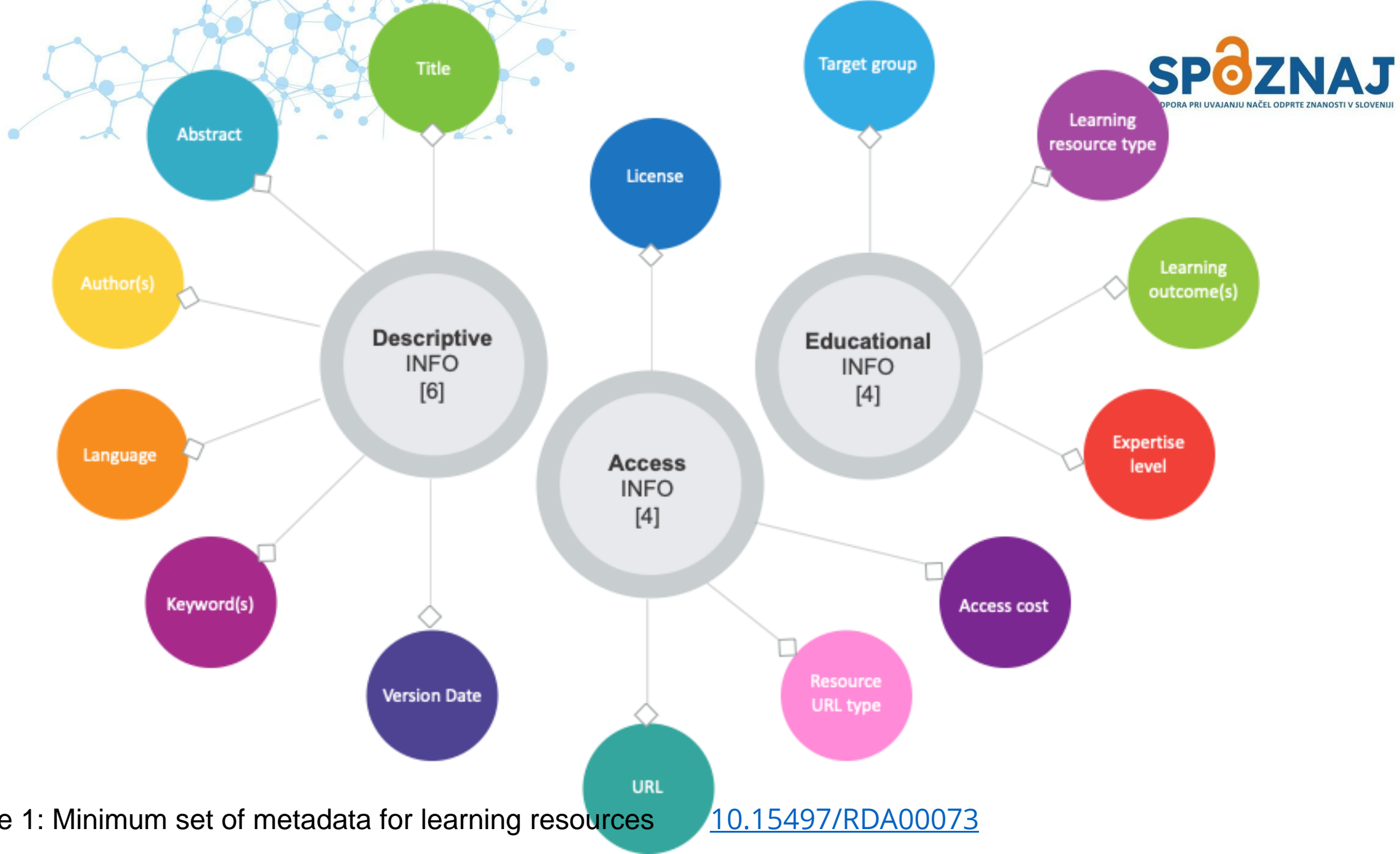


Figure 1: Minimum set of metadata for learning resources

[10.15497/RDA00073](https://nbn-resolving.org/urn:nbn:de:hbz:5:1-63864-p0007-3)

Published January 10, 2023 | Version v2

Report

Open

# Quality assurance criteria for learning resources

Alves, Renato<sup>1</sup> ; Ansine, Janice<sup>2</sup> ; Bezuidenhout, Louise<sup>3</sup> ; Buss, Mareike<sup>4</sup> ;  
 Clare, Helen<sup>5</sup> ; Correia, Antónia<sup>6</sup> ; England, Jonathan<sup>7</sup> ; Flohr, Pascal<sup>3</sup> ;  
 Garnett, Victoria<sup>8</sup> ; Havemann, Jo<sup>9</sup> ; Hellström, Margareta<sup>10</sup> ; Hoebelheinrich, Nancy<sup>11</sup> ;  
 Jacobs, Neil<sup>12</sup> ; Kragh, Gitte<sup>13</sup> ; Kuchma, Iryna<sup>14</sup> ; Leenarts, Ellen<sup>15</sup> ;  
 Thomas-Lopez, Daniel<sup>16</sup> ; Manca, Maria Teresa<sup>17</sup>; Moura, Paula<sup>6</sup> ; Oset García, Paula<sup>18</sup> ;  
 Paladin, Lisanna<sup>19</sup> ; Príncipe, Pedro<sup>20</sup> ; Ševkušić, Milica<sup>21</sup> ; Shanahan, Hugh<sup>22</sup> ;  
 Shanmugasundaram Venkataraman<sup>23</sup> ; Szuflińska-Żurawska, Magdalena<sup>24</sup> ; Whyte, Angus<sup>25</sup> 

Show affiliations

Training Coordinators' Community of Practice (CoP) Task Force on "Learning resources quality assurance" presents a generic framework and discipline agnostic recommendations for the quality assurance of learning resources and catalogues of learning resources and/or training/learning platforms that contain such resources.

The generic QA framework defines the requirements that should be met in order to conduct QA in an efficient and effective way.

The recommendations focus on online learning resources and take the form of self-assessment checklists of criteria, which are sufficiently general to cover many fields of application, while still being easily adaptable to specific use cases.

In line with the generic character of the recommendations, content-related criteria (e.g. topics covered or accepted, accepted types and formats, etc.) are not elaborated on. On the other hand, in support of recent efforts towards establishing training platforms and catalogues of learning resources in Europe and beyond, special attention is paid to the criteria guiding the selection of resources to be included in a platform/catalogue.

<https://zenodo.org/records/7520222>

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## Versions

Version v2 Jan 10, 2023  
10.5281/zenodo.7520222

Version v1 Jan 10, 2023  
10.5281/zenodo.7520145

[View all 2 versions](#)

**Cite all versions?** You can cite all versions by using the DOI [10.5281/zenodo.7520144](https://doi.org/10.5281/zenodo.7520144). This DOI represents all versions, and will always resolve to the latest one. [Read more.](#)

## External resources

Indexed in

## **CREATION OF LEARNING RESOURCES - A content creator persona**

**This checklist is intended for all institutions and individuals involved in the creation of learning resources.**

### **Criteria**

- Scope is defined: subjects, themes, disciplines, domains, keywords.
- Target audience is defined.
- Learning outcomes are defined using action verbs that allow you to assess if an objective is achieved. For example, "Understand the meaning of FAIR" can be transformed into "Describe the meaning of FAIR". Check Bloom's taxonomy to find useful verbs for developing the learning outcomes  
(<https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>).
- Knowledge prerequisites to use the learning resource are stated.
- The level of training and qualifications to be obtained after the training is completed are defined and the association of the resource with any skills and competencies or other educational frameworks are declared.
- Training methods (workshops, lectures, labs, etc.) and the estimated lengths of activities are defined.
- Delivery methods (classroom training, self-paced course, etc.) are defined. Check whether the pedagogic approach of activities matches the intended outcome.
- The materials are in line with the FAIR principles and open and reproducible science practices

<https://doi.org/10.5281/zenodo.7520222>



- File formats for training materials are interoperable and reusable and/or community-endorsed standards are used to describe the educational content of the materials.
- The materials are made available via an appropriate platform or repository (that can facilitate FAIR compliance).
- Consider adding enough metadata so that a potential user has enough details to identify, choose and use the resource.
- Persistent Identifiers (PIDs) are assigned (where relevant).
- Consider adding enough descriptive materials for learning resources (e.g. instructions for games, etc.).
- The materials are assigned a licence.
- Copyright, usage conditions, access constraints and licensing are declared. In case existing materials are used, ensure that the necessary permissions to reuse the materials are obtained and all sources are credited.
- A preferred citation is created with a standard citation format.
- Technical requirements are listed (this can include space requirements for face to face teaching to detailed requirements for computational resourcing (e.g. what types of software need to be installed, is there expectation that students will have their own computers or will that be provided and so on).
- Accessibility approaches are defined, i.e. proof-read and accurate subtitles and transcripts for videos, audio files and presentations for hearing-impaired users; slides include thorough contextualising notes; audio-descriptions for visually impaired users.
- Responsibilities are defined (e.g. who will do what, who will update the material, etc.).
- Update procedures are in place.
- Any known translations into other languages than the primary language declared

<https://doi.org/10.5281/zenodo.7520222>

Open Science Basics

- Open Concepts and Principles
- Open Research Data and Materials
- Open Research Software and Open ...
- Reproducible Research and Data An...
- Open Access to Published Research...
- Open Licensing and File Formats
- Collaborative Platforms
- Open Peer Review, Metrics and Eval...
- Open Science Policies
- Citizen Science
- Open Educational Resources
- Open Advocacy

On Learning and Training

Organizational Aspects

Examples and Practical Guidance

## 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

[https://open-science-training-handbook.github.io/Open-Science-Training-Handbook\\_EN](https://open-science-training-handbook.github.io/Open-Science-Training-Handbook_EN)

Open Science / EIFL Train-the-Trainer Bootcamp - Nov. 2023 / List of 'serious' games linked to Open Science

## List of 'serious' games linked to Open Science

**Research Data Management (RDM) Adventure Game:** a text-based role-playing interactive fiction serious game, based on the data management challenges of a research project. The game takes the form of an online choose-your-own-adventure format in which game players take a simulated research project through the following processes: data management planning, data collection/generation, data organisation, data description and research publication, while encountering data management challenges along the way. The game was developed as part of a collaboration between the University of Bath Library and Stellenbosch University Library and Information Service between 2017 and 2020 by Alex Ball (University of Bath), Samuel Simango (Stellenbosch University) and Nushrat Khan (University of Bath). In January 2021, the Wellcome Trust's Early Career Researchers Advisory Board endorsed the game by including it in the **Wellcome Open Research early career researchers pack**, recognising it as a useful tool for researchers. [More details.](#)

**DANS Data Game:** card and online game in English developed by the Data Archiving and Networked Services (DANS), The Netherlands. The game is only available in multiplayer mode (3-4 players, but can be adjusted for two players). The goal of the game is to collect as many sets of four cards as possible, by asking alternately between players. The sets represent various areas of the research data landscape and each card bears the name and a definition of a concept relevant for Research Data Management, as well as the names of the related cards that should be collected. Cards can be downloaded and printed. [More details](#)

<https://openplato.eu/mod/page/view.php?id=1102>





**Do you use any games in your  
training?**

**Training as a community  
building**

**Collaborating with  
researchers: communication,  
networking, etc.**

Training Coordinators

**Community of Practice**  
informal network to share training  
experiences

<https://www.openaire.eu/cop-training>





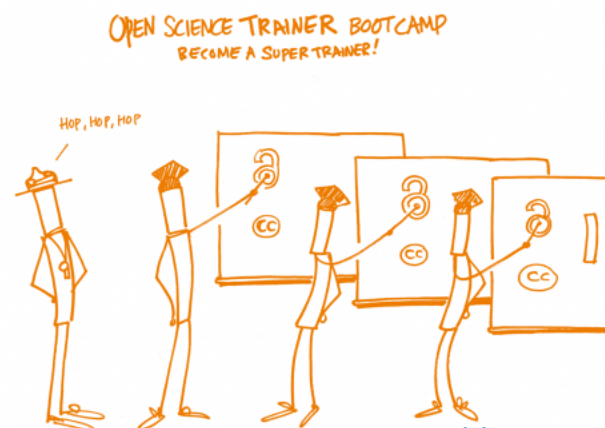
## OPEN SCIENCE TRAINERS MEET-UP: REPRODUCIBILITY AND OPEN DATA

EIFL organizes the sixth online meet-up for open science trainers on the topics of reproducible research and open data

[Home](#) > [Events](#) > [Open science trainers meet-up: Reproducibility and open data](#)

**Event Date:** 18 Sep 2024

📍 Online



Join us for the sixth EIFL online meet-up of open science trainers that will focus on reproducible research and open data as training topics.

- Date and time: 18 September, 09:00 UTC
- Registration: Please [register here](#) to participate in the meet-up

<https://pad.riseup.net/p/ostraining>



# Framework for Open and Reproducible Research Training



# FORRT

<https://forrt.org>

# Thank you! Questions?

**Contact:** [iryna.kuchma@eifl.net](mailto:iryna.kuchma@eifl.net)  
[@irynakuchma](https://www.instagram.com/irynakuchma)  
[@irynakuchma@mstdn.social](https://www.facebook.com/irynakuchma)



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PEDAGOŠKI INŠTITUT

