

Concept planning for Open Research events

Sarah von Grebmer zu Wolfsthurn

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Prerequisites

! Important

Before completing this submodule, please carefully read about the prerequisites.

Prerequisite	Description	Link/Where to find it
Familiarity with Open Science concepts and practices	Examples: Replication crisis, open access, R, version control, preregistration, etc.	Click here to get familiar with Open Research first
Didactic principles	A firm grasp on didactic tools for teaching	Click here to get familiar with didactic principles

Presenter Notes: These are the **presenter notes**. You will find a script for the presenter for every slide. In presentation mode, your audience will not be able to see these presenter notes, they are only visible to the presenter

For **this session**, it is important that you have previously thought about didactics and incorporating pedagogical elements in your teaching. You should be familiar with the basics of what learning means, the framework of constructivism, constructive alignment and how to set and formulate learning objectives. If you are not yet familiar with these concepts, please see the previous session on “Core didactic principles” when teaching about Open Research.

Instructor Notes: There are also **instructor notes**. For some slides, there will be pedagogical tips, suggestions for activities and troubleshooting tips for issues your audience might run into. You can find these notes underneath the presenter notes.

Before you get started on this session with your audience, you need to ensure that the audience fulfills these criteria.

Questions from previous submodule

What are your questions from the previous session?

Presenter Notes: What are your questions from the previous session?

Instructor Notes: Instead of asking “Do you have any questions”, work under the assumption that there are questions to show your learners that it is normal to ask questions and to still be unsure about specific elements of previous sessions. Instead, ask “What are your questions”.

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Key terms and definitions

- **ARIFE+ scheme:**
- **Positive error framing:**
- **Error patterns** in the learning process:
- **Constructive feedback:**

Presenter Notes: Here are some key concepts we will be discussing throughout the session. You are not meant to be familiar with these concepts at this point, but this serves for you as an overview after we have explored each term in more detail. At the end of the session, we will come back to these terms and you will have formed new concepts related to each of these terms.

Instructor Notes: *Idea for interactive activity:* Identify prior knowledge of learners at this point and come back to possible misconceptions throughout the session. Use the think-pair-share method (Mundelsee & Jurkowski, 2021). Allow for about 5 minutes for this exercise. *Presenter notes for activity:* Think for yourself what each one of these concepts means to you at this point, or have an educated guess based on your experience what the key term could mean. Then, discuss with your partner. We will then briefly discuss the terms in the larger group. At the end of the session, we will come back to these terms and you will have formed new concepts related to each of these terms.

Key terms and definitions

- **ARIFE+ scheme:** A didactic framework for planning competency-based instruction that structures learning in five phases.
- **Positive error framing:** A didactic approach that views mistakes as learning opportunities and encourages learners to analyze their errors to boost understanding, skills and confidence.
- **Error patterns** in the learning process: Systematic mistakes rather than random failure, critical indicators for how learners think and where the misconceptions lie

- **Constructive feedback:** Information given to help someone improve their performance, skills, or behavior in a supportive and actionable way through describing observable behavior and offering next steps in a respectful way

Presenter Notes: First, the ARIPE+ scheme by Städeli (2013) is a didactic framework that helps educators systematically plan learning experiences. It structures instruction into five phases, guiding learners from initial engagement and exploration through to application, feedback processes and reflection.

Second, positive error framing refers to an educational mindset that treats mistakes as valuable learning opportunities. Instead of viewing errors as signs of failure, learners are encouraged to examine and understand them. This process helps deepen conceptual understanding, develop skills, and build confidence by creating a learning environment where experimentation and reflection are welcomed.

Next, error patterns are recurring and systematic mistakes that occur during learning. Unlike random errors, these patterns provide important insights into learners' thinking processes. By identifying and analyzing error patterns, educators can uncover underlying misconceptions and adapt instruction to address specific learning needs more effectively.

Finally, constructive feedback is information given to help someone improve their performance, skills, or behavior in a supportive and actionable way through describing observable behavior and offering next steps in a respectful way.

Instructor Notes: If you did the think-pair-share exercise the slide before, skip this slide, this is for learners to come back to these concepts in their own time.

Covered in this session

- **Practical and logistical considerations** when organizing an Open Research (OR) event
- **Designing and structuring** the event
 - **ARIPE+ scheme**
 - Fostering **motivation**
 - Assessing **prior/existing knowledge** in your learners
 - Providing useful **feedback**
- **Tips** for a **successful OR event**

Presenter Notes: This session focuses on both the practical and pedagogical aspects of organizing and delivering an Open Research event. When I say Open Research event, I really mean anything from a one-off lecture, to a workshop, seminar, seminar series, lunch talk or full course.

We will begin with the practical and logistical considerations, including what to think about when planning, organizing, and delivering an OR event.

We will then focus on designing and structuring the event. We will introduce the ARIPE+ scheme as a framework for structuring the content of an OR event, and consider how to foster learner motivation and active participation to help with the learning process. We will also look at ways to assess learners' prior or existing knowledge, so that activities can be adapted to their needs, and discuss how to provide useful, timely, and constructive feedback.

Finally, we will go over some tips on how to make your Open Research even more successful for your learners.

Learning objectives

At the end of this session, you will be able to:

- **Consider** practical and logistical challenges of organizing an Open Research event
- **Structure** an Open Research event according to the five phases of the ARIPE+ scheme (Städli et al., 2013) to facilitate the learning process
- **Apply** techniques to **enhance** motivation in your learners
- **Understand** key elements of constructive feedback

Presenter Notes: In this session, there are several learning objectives. You as the learners will be able to:

- **Consider** the practical and logistical challenges involved in organizing an Open Research event.
- **Design** an Open Research event using the five phases of the ARIPE+ scheme (Städli et al., 2013) to support effective learning.
- **Apply** techniques that enhance learner motivation and engagement.
- **Understand** the key principles of constructive feedback and how to apply them effectively.

Before we start: Survey time!

Question 1

What is your level of experience with organizing Open Research events (e.g., a workshop, a seminar, lecture, lecture series..)?

- a. I have never organized an Open Research event

- b. I have organised 1-2 Open Research events
- c. I have organized 3-10 Open Research events
- d. I organize > 10 Open Research events per year
- e. Organizing Open Research events is all I do because it is my (literal) job

Question 2

What is your level of familiarity with the ARIPE+ scheme?

- a. I have never heard of it before.
- b. I have heard of it but have never worked with it.
- c. I have basic understanding and experience with it.
- d. I am very familiar and have worked with it extensively.

Question 3

Which of the following pedagogical elements do you feel most confident about in your teaching? (*Select all that apply*)

- a. Probing and boosting motivation in your learners
- b. Formulating and communicating learning objectives for your event
- c. Conceptualizing and communicating the bigger vision of the event
- d. Reactivating prior knowledge in your learners
- e. Providing constructive feedback
- f. None of the above

Instructor Notes: The pre-submodule survey serves to examine learners' prior knowledge about the submodule's topic. Use free survey software such as particify or formR to establish the following questions (shown on separate slides).

Discussion of survey results

What do we see in the results?

Presenter Notes: Let us have a look at these results.

Instructor Notes: Briefly examine the answers given to each question interactively with the group. Use visuals from the survey to highlight specific answers.

Accessibility Tip: Have people work in pairs if someone did not bring their phone/does not have a phone. This survey also cannot be completed in an asynchronous setting.

Your turn! Why do you teach?

Activity: Why do you teach? What motivates you to teach? *Write a few bulletpoints on what motivates you to teach.*

Write down your thoughts. Take 3 minutes for this activity.

Presenter Notes: Time for an activity! Why do you teach? What motivates you to teach? Write a few bulletpoints on what motivates you to teach. Keep this in mind as we go along.

Instructor Notes: Plan about 3 minutes for this activity, plus 2 minutes discussion.

General framework of an Open Research event

Your turn! What to consider for planning an Open Research event?

What do you think are some initial **points to consider** when you **plan** an **Open Research event**? (3 minutes) (*event = workshop, course, lecture, seminar, talk etc.*)

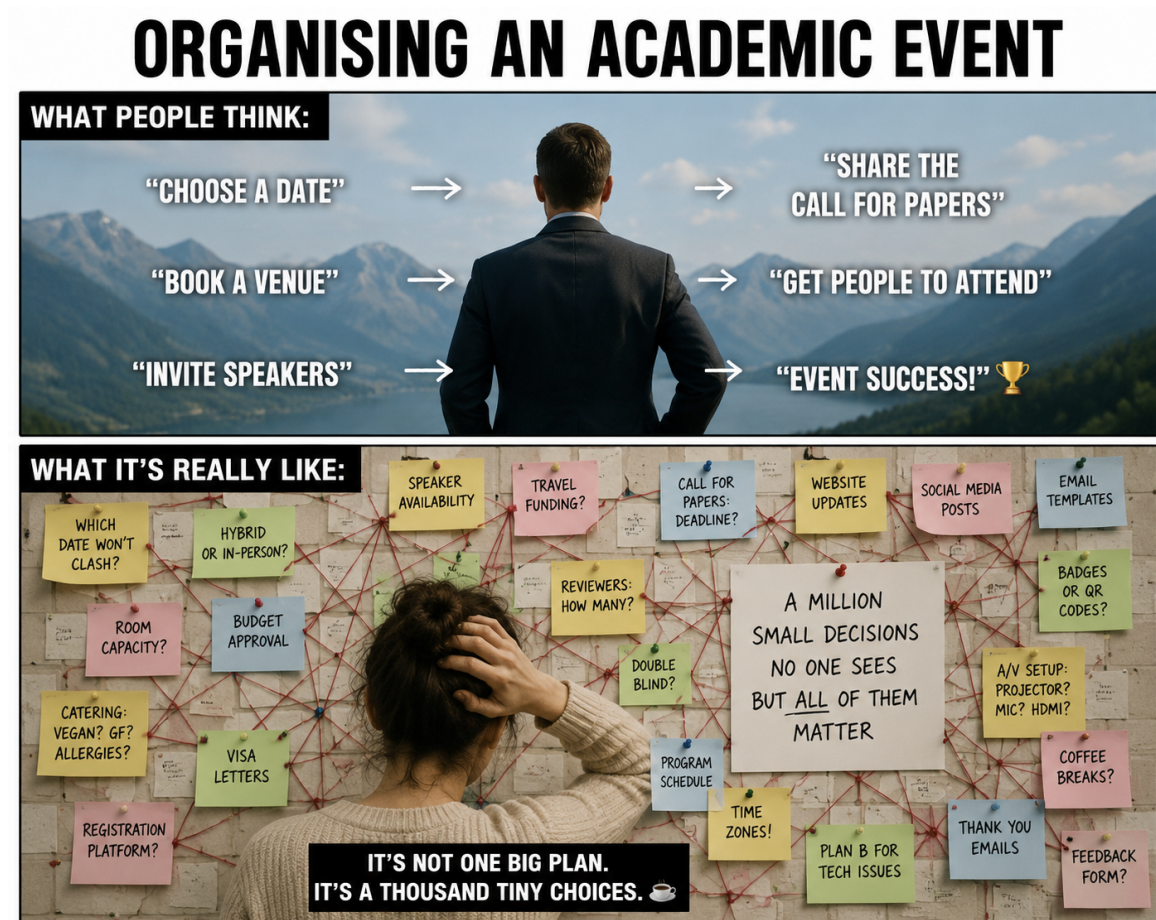
Write down your thoughts. Take 3 minutes for this activity.

Presenter Notes: Next question when planning an event on Open Research: what do you think are some initial **points to consider** when you **plan** an **event on Open Research**? An event could be a workshop, course, lecture, seminar, talk etc. Take three minutes to collect your thoughts.

Instructor Notes: Answers that instructor might be looking for are:

- What is a suitable topic?
- Who is my audience? How much experience do they have with Open Research topic X?
- What is the event format?
- How long is the event/course?
- Prior learning objectives or learning materials?
- What do my learners connect with Open Research?

Logistics: Practical considerations



Made with generative AI.

Presenter Notes: This is an illustration of what organizing an academic event more generally can feel like: at first, it all seems very straightforward and the organization follows a more or less logical sequential flow. In reality though it can also feel a little more like in the image at the bottom, where you are constantly facing micro decisions, sometimes with little time to think about them and running about ten operations in parallel.

Logistics: Practical considerations

Things to consider **when organizing an event**:

- **Who** could the target audience be?
- What are suitable **dates and times**?
- What does my **audience need**? (accessibility)
- What **modality** is suitable? (in-person, online, hybrid)
- What **equipment/materials/software** do I need?
- How can I **book rooms/equipment**?
- What are the **administrative procedures** (catering, room booking..)?
- How can I **advertise** my event?
- **Check your working conditions**: What is expected from *me*? How much time do I have?
- ...

Presenter Notes: Before focusing on the learning design itself, it is important to consider the practical aspects of organizing an Open Research event. Good planning helps create an environment in which learners can fully engage with the learning activities.

The first question is who the target audience is. Are you designing the Open Research event for undergraduate students, doctoral researchers, professional staff, or a mixed audience?

You should also think carefully about dates and times. Consider learners' schedules, competing commitments, and time zones if the event includes online attendees. For example, if learners have to travel for your course, you might consider avoiding periods where there are large festivities in town happening at the same time.

Another important consideration is accessibility and learners needs. Think about whether learners may require accessible rooms, captioning, alternative formats for materials, or flexible participation options. This ties in with creating an inclusive learning environment, which we will discuss in the next session.

Next, consider the most suitable modality. Depending on the Open Research topic, the goals and audience, an event may work best in person, online, or in a hybrid format. Each option offers different opportunities and challenges in terms of interaction, logistics, and resource requirements.

You will also need to identify any equipment, materials, or software required. This is particularly relevant for Open Research events on computational reproducibility, for example, where learners might need to work on their own laptops with specific open software such as RStudio or on GitHub.

Related to this is understanding how to book rooms and equipment. Institutional procedures often require advance planning, and popular spaces or resources may need to be reserved well ahead of time.

In addition, familiarize yourself with any administrative procedures that may apply, such as room bookings, catering options, attendee registration systems etc.

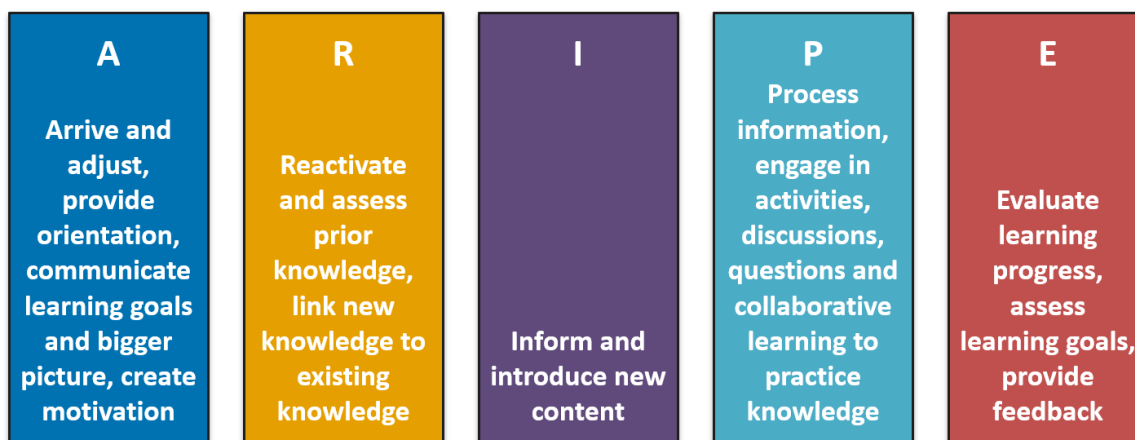
Then, consider how you will advertise the event. This helps ensure that the intended audience is aware of the opportunity and understands its value. This might include email lists, institutional websites, newsletters, social media channels, or personal networks.

Finally, check your own working conditions: how much time do you have? What is expected of you from your department? What do you need to achieve with your learners? Being clear about these constraints helps ensure that your plans are realistic and focused.

Structuring your lesson

Presenter Notes: Moving on from practical considerations to actually designing your event with the aim to boost and foster the learning progress and success of your learners.

The ARIPE+ scheme (Städli et al., 2013)



The “+” generally stands for elements connected to the **learning environment**, e.g., creating a supportive, accessible and safe environment, inclusivity, (body) language, see Städli et al. (2013).

Presenter Notes: One useful framework for structuring an event or individual lesson on Open Research is the ARIPE+ scheme, developed by Städli and colleagues (2013). The model organizes learning into a sequence of phases that guide learners from initial engagement with

a topic through exploration, practice, application, and reflection. ARIPE+ helps educators design learning experiences that are active and learner-centered. Rather than focusing only on content delivery, the framework emphasizes what learners can do and demonstrate throughout the learning process. The “+” generally stands for elements connected to the learning environment, e.g., creating a supportive, accessible and safe environment, inclusivity, (body) language ...

In the following slides, we will explore each phase of the ARIPE+ scheme and consider how it can be applied when designing an Open Research event.

The ARIPE+ scheme

- **A** - *Arrive and adjust*: Provide orientation, outline journey and bigger picture, communicate learning objectives, create and foster motivation
- **R** - *Reactivate*: Reactivate and assess prior knowledge, link new content to existing content (constructivism)
- **I** - *Inform*: Introduce new content
- **P** - *Process*: Activities, tasks, discussions, questions, collaborative learning
- **E** - *Evaluate*: Check progress on learning objectives, feedback and assessment

Presenter Notes: The five phases of the ARIPE scheme are as follows:

- **A: Arrive and adjust.** This is where learners get oriented. Explain why the session matters, what they’ll learn, how the workshop is structured, how it connects to the bigger picture and what the intended learning objectives are. This phase also helps establish motivation and creates a positive learning environment.
- **R: Reactivate.** Before introducing new ideas, help learners connect with what they already know. This could involve asking questions, discussing previous experiences, or using a quick activity to surface prior knowledge. Within the framework of constructivism, learning is much more effective when new information can be linked to existing mental models.
- **I: Inform.** This is the instructional phase where you introduce new concepts, methods, or skills. Rather than trying to cover everything, focus on the key ideas that learners need in order to achieve the learning objectives that you introduced in the first phase.
- **P: Process.** Learning happens through active engagement. Give participants opportunities to apply what they’ve learned in the previous phase through exercises, discussions, problem-solving, or collaborative activities. This is often the longest phase of a workshop because practice is essential for learning.

- **E: Evaluate.** Finally, check whether learners have achieved the intended outcomes. Evaluation doesn't have to mean a formal test or exam, it can be reflection, instructor or peer feedback, a short quiz, or a practical task. It also gives you valuable information about what learners have understood and what may need further clarification. The modality and practicalities around this should also already be clearly explained during the first phase to manage expectations of your learners.

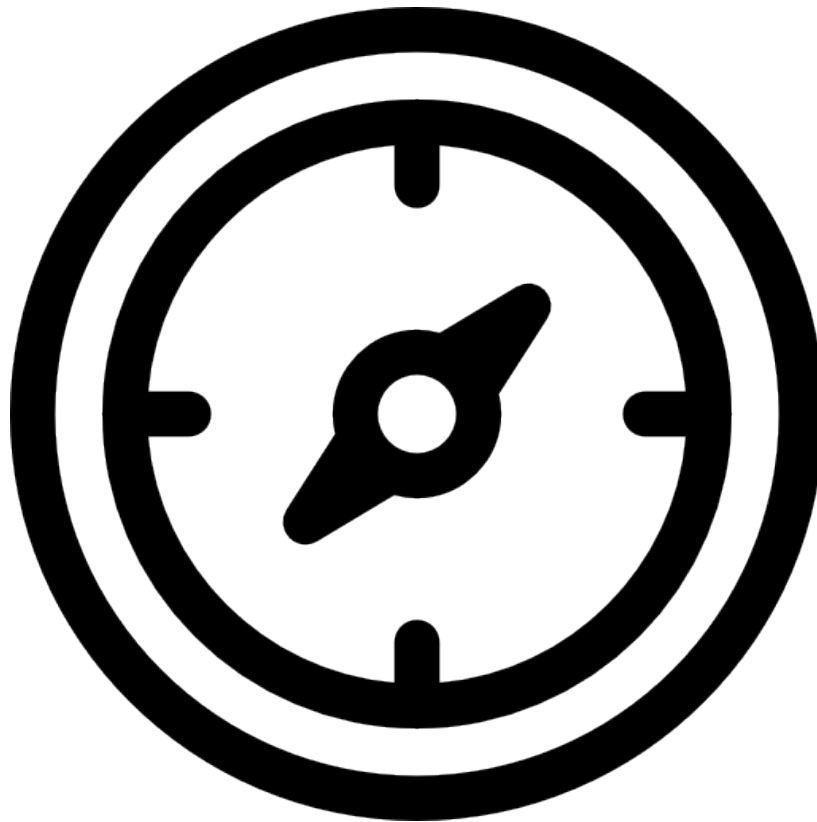
In practice, you move back and forth between the phases and do not necessarily follow this linear trend.

Instructor Notes: While the model is presented as a linear framework, in practice you may move back and forth between phases depending on your learners and context.

ARIFE: Arrive and adjust

Orientation

- Provide **orientation** at the start and the end
 - Accessibility and **equipment** needed (*laptop, software installed, internet access ...*)
 - Explain what **materials** will be needed (*slides, cheatsheets, Moodle, GitHub*) and where to find them)
 - Highlight the **modality** (*hybrid/in-person/online*)
 - Communicate **milestones** and important dates (*deadlines, homework assignments, intermediate and final assessments*)
 - Clarify your **expectations** to the learners (*attendance, homework, criteria for obtaining a certificate, assessments, general conduct...*)
 - Let your learners find **common goals** and shared interests



Icon from <https://icons8.com/>.

Presenter Notes: The *Arrive and Adjust* phase starts before you teach any content. Your goal is to help learners feel prepared and know what to expect.

Begin by checking that everyone has what they need. For example, do they have a laptop, the required software installed, a stable internet connection, or access to the online platform? Solving technical issues early saves time later.

Next, explain what materials you'll be using and where learners can find them. This might include the slides, cheat sheets, Moodle, GitHub, or any other resources. Make it easy for learners to know where to look during and after the session.

Be clear about how the course will run. Is it in person, online, or hybrid? If some learners are joining remotely, explain how they can ask questions, join discussions, or take part in activities.

Point out important milestones such as homework, deadlines, assessments, or major activities. This helps learners plan their time and reduces uncertainty.

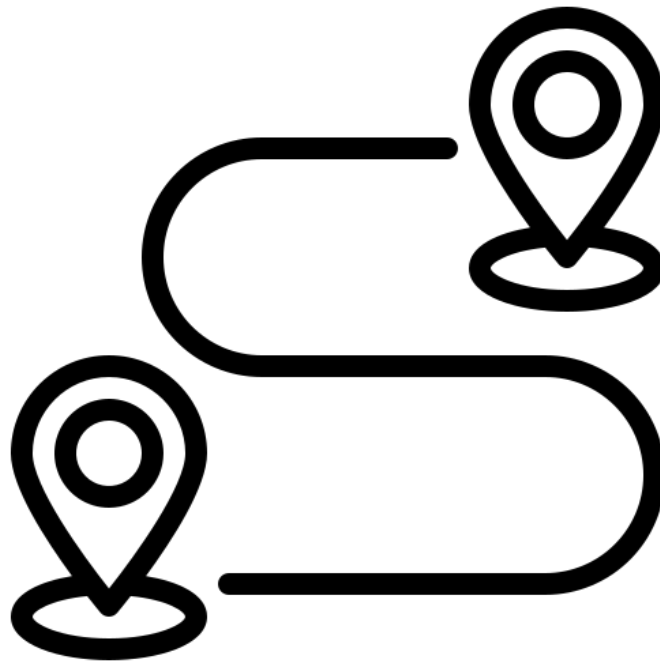
Finally, be clear about your expectations. Explain practical matters such as attendance, participation, homework, assessment methods, requirements for a certificate, and expectations for respectful behavior. Setting these expectations from the beginning helps create a positive and productive learning environment.

If possible, help learners get to know each other. A short introduction or discussion can help learners discover shared interests or common goals of why they are together in this session. This creates a more welcoming learning environment and makes collaboration easier.

ARIPE: *Arrive and adjust*

Journey and bigger picture

- Clearly communicate where learners are headed and the **vision** or **bigger picture**
 - e.g., “*Today’s workshop helps you move from using open research practices yourself to learning how to teach these practices to the next generation of researchers using evidence-based methods.*”



Presenter Notes: People are more motivated when they understand not just what they are learning, but why it matters.

At the beginning of a session, explain the bigger picture. Help learners see how today’s topic fits into the overall curriculum, the course, or the wider impact of their work.

For example, instead of simply saying, “Today we’ll learn about teaching methods,” you could say: “Today’s workshop helps you move from using open research practices yourself to

learning how to teach these practices to the next generation of researchers using evidence-based methods.”

This gives learners a sense of purpose. It shows that the workshop is not just about learning a new skill, but about more than that.

Instructor Notes: You can return to this vision at the end of the session. Briefly remind learners what they have achieved today and how it moves them one step closer to that larger goal. This helps connect individual activities to the overall learning journey and reinforces motivation.

ARIFE: *Arrive and adjust*

Communicate learning objectives

- Clearly communicate the **learning objectives**
 - State the **learning objectives** for the course/event series and provide an outlook on how you are planning to achieve them with your audience



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- **Examples:**
 - “Learners will **compare** traditional publishing models with open-access publishing models

- “Learners will **create** a reproducible research document using Quarto and **publish** it on GitHub”

Presenter Notes: From the broader picture, define specific learning objectives for individual sessions, workshops, or activities. These should contribute to the broader objectives of the event and provide a clear sense of purpose for your learners.

Clearly communicate these learning objectives. Explain what learners should be able to do by the end of the session or course and how they should be able to achieve them.

In the first example, “Learners will compare traditional publishing models with open-access publishing models.” The key action is compare. This tells us that learners are expected to analyze similarities and differences, not just remember definitions.

In the second example, “Learners will create a reproducible research document using Quarto and publish it on GitHub.” Here, the actions are create and publish. These are practical skills that learners can demonstrate by producing a real output.

Instructor Notes: Remember: A useful question to ask when writing a learning goal is: “How will I know that learners have achieved this?” If you can clearly observe or assess the action, your learning goal is likely well-written.

Your turn! Providing orientation for an R workshop

Thought experiment: Imagine that you give a half-day workshop on *R* to a group of ten learners. In groups, write down concrete examples on how you could provide orientation at the start of the R workshop.

- **Milestones to achieve during the workshop:**
- **Expectations:**
- **Materials:**

In pairs, discuss and write down your thoughts. Take 10 minutes for this activity.

Presenter Notes: Now it’s your turn to put all of this into practice. Imagine that you are teaching a half-day workshop on R to a group of ten learners. Your task isn’t to plan the technical content yet. Instead, focus only on the Arrive and Adjust phase.

Working in small groups, think about how you would help learners feel prepared, motivated, and ready to learn before introducing R itself.

For each of the prompts on the slide, write down one or two concrete examples. For example, what equipment or materials would participants need? How would you explain the workshop format? What activity could help learners discover shared interests or goals? What milestones would you communicate? What learning objectives would you share? And what expectations would you set from the beginning?

You have 10 minutes to discuss and write down your ideas. Afterwards, we'll come back together and compare approaches to see the range of possibilities.

We will use this example for a workshop later on this session.

ARIPE: *Arrive and adjust*

Motivation

Why does motivation (and demotivation!) matter when teaching and learning?

- Applying didactic tools can be unsuccessful if learners are **demotivated**
- Motivation (and demotivation) are **contagious**
- Motivation can be **positively influenced** by the instructor



Icon from <https://icons8.com/>.

Presenter Notes: Motivation is a critical element in the learning process. It matters because you can have excellent content and well-planned exercises on open research topics, but if learners are disengaged, learning becomes much harder. Motivation is especially important in the context of open research, because some of its practices are difficult to implement in

different contexts, learners may face obstacles or challenges within their research groups etc.

Motivation is contagious! When learners are curious, engaged, and willing to participate, that energy often encourages others to join in. The opposite is also true, if frustration or disengagement spreads, it can affect the whole learning environment. This can come from both the other learners, or the instructor.

The good news is that instructors can influence motivation. You can't control every learner's level of interest, but you can create conditions that support motivation. We will talk about some concrete strategies for boosting motivation next.

Probing and enhancing motivation in your learners

What do *you* find motivating or demotivating?

Think back to **open research courses**, workshops or seminars you attended in the past. Consider things that a **teacher or trainer** has **said or done** that you found either **motivating** or **demotivating**. *In pairs, write down your thoughts. Take 5 minutes for this activity.*

<https://zenodo.org/records/18905547> <https://carpentries.github.io/instructor-training/08-motivation.html#brainstorming-motivational-impacts>

Presenter Notes: How would you know if your learners are motivated? And what could you do to motivate them in the first place?

Think back to an open research course, workshop, or seminar that you've attended. Focus on the instructor rather than the content. What did the teacher or trainer say or do that made you feel more motivated to learn more about this open research topic? And what did they say or do that had the opposite effect and reduced your motivation?

Try to come up with at least two examples of motivating behaviors and two examples of demotivating behaviors.

Once you've had a minute or two to think individually, turn to the person next to you and share your examples. As you listen to each other, see if you notice any common themes.

We'll then bring some of these ideas back to the whole group and discuss what they tell us about creating a motivating learning environment.

Take 5 minutes for this activity.

Instructor Notes: Some examples: how the instructor responded to questions, how they introduced the topic, how they gave feedback, or how they interacted with the group.

Motivation: Lessons

What can *you* do to enhance motivation in your learners?

Presenter Notes: Bringing it all together, let us now discuss concrete strategies how you can actively increase motivation in your learners.

Lesson 1: Explore why the topic matters

Learning is most successful when we **care about the topic** and when learners believe they can acquire a skills with **reasonable time and effort**.

💡 What you can do:

Start by exploring **what brought learners to this lesson** and **what motivates and interests them** about the topic, e.g., through short questions or an interactive poll.

<https://zenodo.org/records/18905547>

Presenter Notes: Learning works best when two things come together: first, when learners actually care about the topic, and second, when they feel that they can realistically learn it with the time and effort available. If either of these is missing, engagement drops quickly. At the beginning of a lesson, take time to understand what brought learners here. Here, you also need to keep in mind that learners may not attend by choice, but because your lesson is part of a compulsory curriculum.

A simple way to do this is to ask short questions, run a quick poll, or have a short pair discussion at the start of the session.

Lesson 2: Establish an early feeling of success

Kick-start the learning process by focusing on something **useful** and **relevant** that requires comparatively **low effort** and connects the materials to their **own interests/goals**.

💡 What you can do:

Begin the lesson with something that is **quick to learn** and **useful to your learners**. Use examples and task from real-life scenarios, e.g., things you encountered before.

<https://carpentries.github.io/instructor-training/08-motivation.html#invite-participation>

Presenter Notes: When people start learning something new, confidence matters a lot. If the first task feels too difficult or too abstract, learners can quickly feel overwhelmed. But if they achieve something useful early on, it builds confidence and momentum. The idea here is to begin with something that is simple to understand, quick to complete, and clearly relevant to the learners' own goals or work.

For Open Research, in the context of file naming, an example for such an activity would be for you to show learners a folder with a less-than-optimal" folder structure and ask learners to rename and reorganize the files. It would only take about 2-3 minutes and would leave them feel more competent and motivation would be increased because of this early feeling of successfully solving this task. The key is also that learners should quickly see: "I can do this," or "this is useful for me."

Another effective approach is to use real-life examples or scenarios that learners can relate to. In this example, you could show learners your own folder structure from your early work.

Lesson 3: Invite participation from learners

Encourage and foster an **interactive environment** for learners to ask questions, discuss difficulties and demonstrate prior knowledge.

- Actively engage learners **early on** in the lesson

 What you can do:

Introduce an **interactive activity** early on in the lesson, e.g., "*What brings you here today?*" and then discuss in the big group.

<https://carpentries.github.io/instructor-training/08-motivation.html#invite-participation>

Presenter Notes: Learning is not something that happens by just listening, as we know from the framework of constructivism. As instructors, we can involve learners early on and create an interactive environment. Like this, learners are also more likely to stay active throughout.

A simple way to do this is to start with a short interactive activity. For example, you might ask: "What brings you here today?" Then give learners a moment to think, discuss with a neighbor, or share in the group.

Instructor Notes: Get learners to think back about their own experiences when starting this session.

Lesson 4: Encourage learners to learn from each other

Encourage learners to **talk through** the learning process **with peers** to maximize learning.

- Helps to (partially) **level out** potential differences in prior knowledge or experience

💡 What you can do:

Integrate activities **in pairs** to foster the exchange.

<https://carpentries.github.io/instructor-training/08-motivation.html#invite-participation>

Presenter Notes: Learning is often more effective when learners talk to each other, not just to the instructor. When they explain ideas in their own words to a peer, ask questions, or compare approaches, they deepen their understanding.

Peer learning also helps manage differences in prior knowledge. In any group, some learners will already have experience with the topic, while others are completely new. When learners work together, they can support each other and help close these gaps in understanding.

A simple and effective approach is to use pair activities. Instead of only addressing the whole group, ask learners to discuss a question with a partner, explain a concept to each other, or compare their solutions to a task.

Instructor Notes: Working in pairs can help learners who are less confident to engage in whole group discussions.

Lesson 5: Acknowledge and integrate confusion

Make confusion an integral **part of your teaching**.

- **Explore** confusion with **kindness**
- **Reward learners** for sharing vulnerable information, e.g., “**I do not understand**”



💡 What to do:

Integrate **formative assessments** or quizzes to pinpoint misunderstandings. **Validate** the thinking process and ask for **collaboration** from other learners on resolving any confusion.

<https://carpentries.github.io/instructor-training/08-motivation.html#invite-participation>

Presenter Notes: A key aspect of boosting motivation is confusion, which at first maybe feels counter-intuitive. Confusion is not something to eliminate as quickly as possible. In fact, a certain amount of confusion is often a sign that learning is taking place. When learners

encounter information that challenges their existing understanding, they have an opportunity to build stronger mental models and add connections between nodes.

The first point is to make confusion an integral part of your teaching and to normalize it. Tell learners at the beginning that feeling confused is a natural part of learning something new, especially when discussing topics like Open Research, where practices and terminology may be unfamiliar or evolving.

When someone expresses uncertainty or gives an incomplete answer, avoid immediately correcting them or moving on, but be curious. Ask questions like, “Can you tell us what led you to that conclusion?” or “What part feels unclear?”

It is equally important to reward learners for sharing vulnerable information. Admitting “I don’t understand” or “I thought it worked differently” requires some form of safe space. Thank learners for raising these questions, because chances are others are wondering the same thing. A simple response such as, “Good that you asked, that’s an important question,” reinforces that speaking up contributes to everyone’s learning.

One practical strategy is to integrate formative assessments throughout the workshop. These can be quick polls, multiple-choice questions, short reflective prompts, or think–pair–share activities (Mundelsee & Jurkowski, 2021). Their purpose is not to evaluate learners but to give both you and the learners insight into current understanding and identify misconceptions before they become entrenched.

Lesson 6: Praise effort and improvement

Leverage the **power of “yet”**.

- Learner **perseverance** is best supported in the long term by **praising effort or improvement** rather than ability or performance.

 What you can do:

Transform quests for help or support by learners by **adding the word *yet*** : “I cannot submit a preregistration *yet*”, “I do not understand *yet* how to create a GitHub repository”.

Presenter Notes: Another lesson is about how the way we give feedback can influence motivation and learning. Evidence suggests that learners are more likely to persevere when we praise their effort and improvement rather than their ability or performance. This reinforces that learning happens through practice and persistence.

A simple but powerful way to support this mindset is to use the word *yet*. Encourage learners to reframe statements such as “I can’t do this” or “I don’t understand” as “I can’t do this

yet” or “I don’t understand yet.” This emphasizes that learning is an ongoing process and that understanding can develop over time.

When learners ask for help or support, model this language yourself and encourage them to adopt it. This small change can help learners approach challenges with greater confidence and persistence.

Lesson 7: You can be learning too!

Present **yourself** (the instructor) as a **learner**.

- Let your learners **relate** to you
- **Make useful mistakes!**
- Leverage your own mistakes or knowledge gaps for **positive error framing**

💡 What you can do:

When discussing an activity involving coding, use the opportunity when you make mistakes to **embrace them with enthusiasm** and present them as a learning opportunity rather than an index for failure or incompetence.

<https://carpentries.github.io/instructor-training/08-motivation.html#brainstorming-motivational-impacts>

Presenter Notes: Remember that instructors are learners too. By presenting yourself as someone who is still learning, you help create a more open learning environment.

Don’t be afraid to make useful mistakes. For example, when live coding, a mistake can become a valuable teaching moment. Instead of apologizing or hiding it, show learners how you identify the problem, think through possible solutions, and correct it.

This is an example of positive error framing. You show that errors are a normal and useful part of learning. This can help learners feel more confident to experiment, ask questions, and learn from their own mistakes.

Your turn! Boosting motivation in your R workshop

Let us get back to our planned **R workshop** for a group of learners.

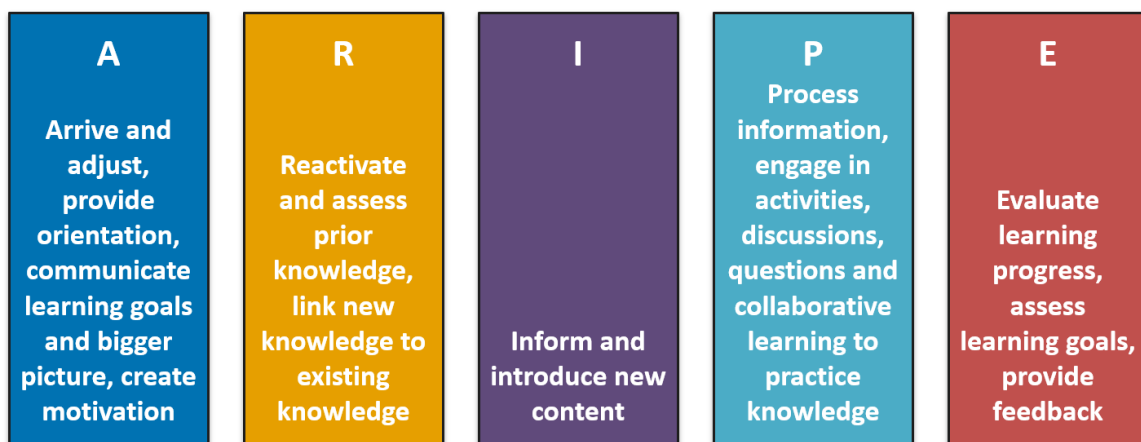
1. What are two **concrete activities** where you could **actively boost motivation** in your learners?
2. What could be two R-specific **factors** be that could **demotivate** your learners at the workshop?

Work in pairs. Take 5 minutes for this activity.

Presenter Notes: Thinking about the R workshop that we started planning earlier: What are **concrete activities** where you could **actively boost motivation** in your learners? What could some Git-specific **factors** be that could **demotivate** your learners at the workshop?

Work in pairs. Take 5 minutes for this exercise.

ARIPE+ scheme



Städli et al. (2013)

Presenter Notes: For a quick orientation, we have just been discussing the A - arrive and adjust phase of the ARIPE scheme. Lots went in there. Let us now move onto the next phase.

ARIPE: *Reactivate*

! Important

Remember: Learners *bring* prior knowledge into the learning environment, which can *help* or *hinder* learning.

How could you **explore** and **activate** prior knowledge on *Open Research* in your learners?

<https://zenodo.org/records/18905547>

Presenter Notes: Moving onto the second phase of the ARIPE scheme, we are now in the reactivate phase. Before introducing new concepts, it is important to remember that learners already bring knowledge, experiences, and ideas into the learning environment.

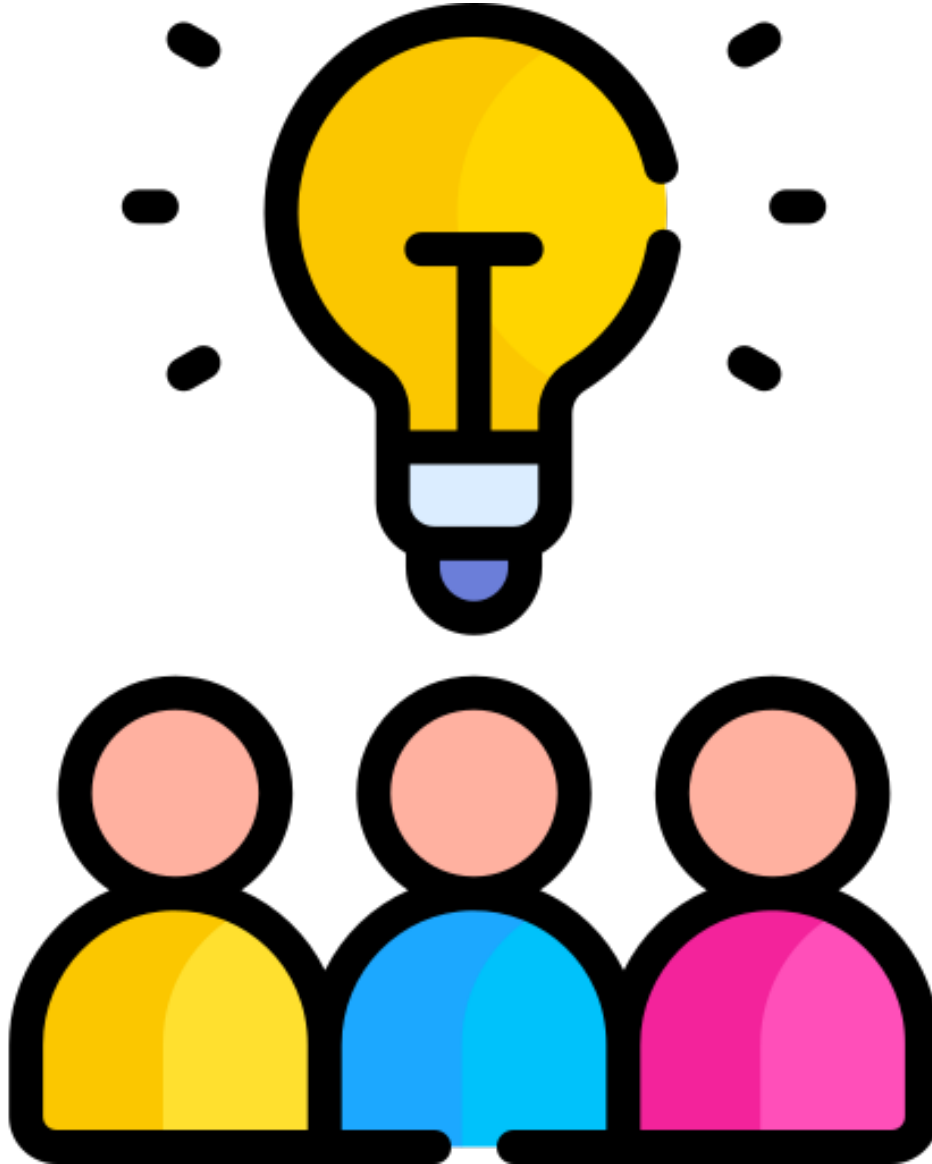
This prior knowledge can support learning if it is accurate, but it can also make learning more difficult if learners have misconceptions or different understandings of key concepts. Taking time to explore what learners already know helps you build on their existing knowledge and identify areas that may need clarification.

For this activity, think about how you as the instructor could explore and activate prior knowledge in an Open Research workshop.

Instructor Notes: Encourage using examples from this session, or examples such as asking learners what Open Research means to them, using a short poll or quiz, or having learners discuss their previous experiences in pairs before introducing new content, see also the next slide for an overview.

ARIPE: *Reactivate*

Methods to explore and activate prior knowledge



- Exchange with other teaching colleagues about the content of preceding workshops and integrate **recaps**
- Use **pre-session surveys** and quizzes to identify existing knowledge
- **Brainstorm** with learners about specific concepts
- Check for **error patterns** in the homework assignment
- Explicitly **link new materials** to elements from previous sessions
- Use **analogies** and examples that connect to existing knowledge
- ...

Presenter Notes: Some ideas and concrete strategies to explore and reactivate prior knowledge:

- **Exchange** with other teaching colleagues about the content of preceding workshops
- **Pre-session surveys** and quizzes to identify existing knowledge
- **Brainstorm** with learners
- Check for **error patterns** in the homework assignment
- Explicitly **link new materials** to elements from previous sessions
- Use **analogies** and examples that connect to existing knowledge
- ...

Instructor Notes: Visualize these ideas on a whiteboard or an online visualization tool for everyone to see.

Reactivating prior knowledge: analogies



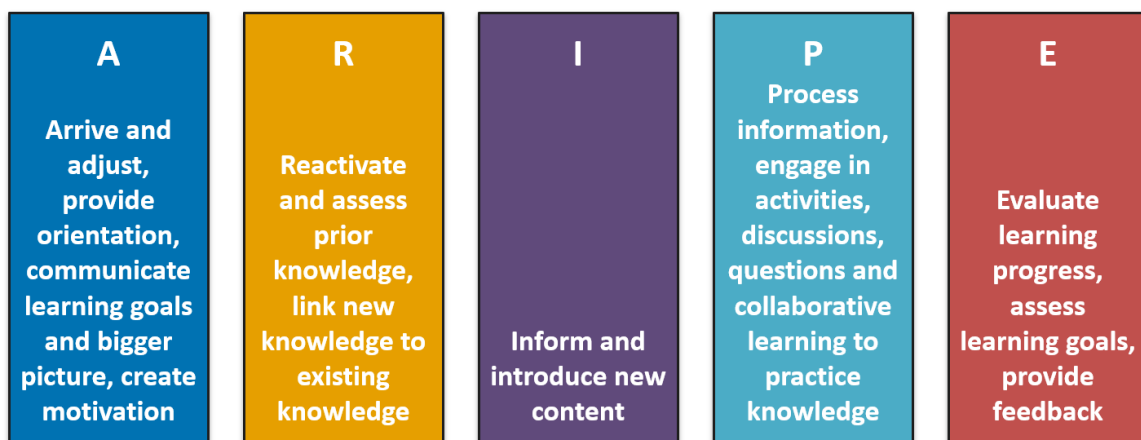
Image generated with AI and adapted from [Felix Schönbrodt](#).

Presenter Notes: One possible analogy:

*Imagine that being a researcher can go two different ways: you can be the **used car dealer** (= researcher), who hides the main parts of the used car (= scientific work) under the hood (= non-transparency), so that from the outside it all looks nice and shiny. Or you can be the **skeptical buyer** (= researcher supporting open research) who would want to look under the hood and also opens the hood for everyone to see (= transparency. **Which researcher do you want to be?**)*

Instructor Notes: This analogy will be familiar to learners who have completed previous sessions.

ARIPE+ scheme

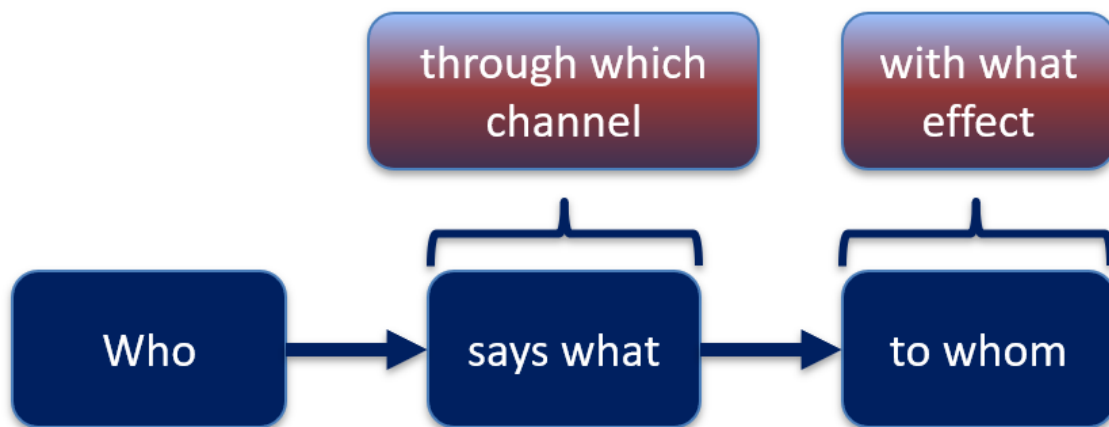


Städli et al. (2013)

Presenter Notes: Moving onto the third phase of the ARIPE scheme: Inform.

ARIPE: *Inform*

Communication model by *Lasswell (1948)*:



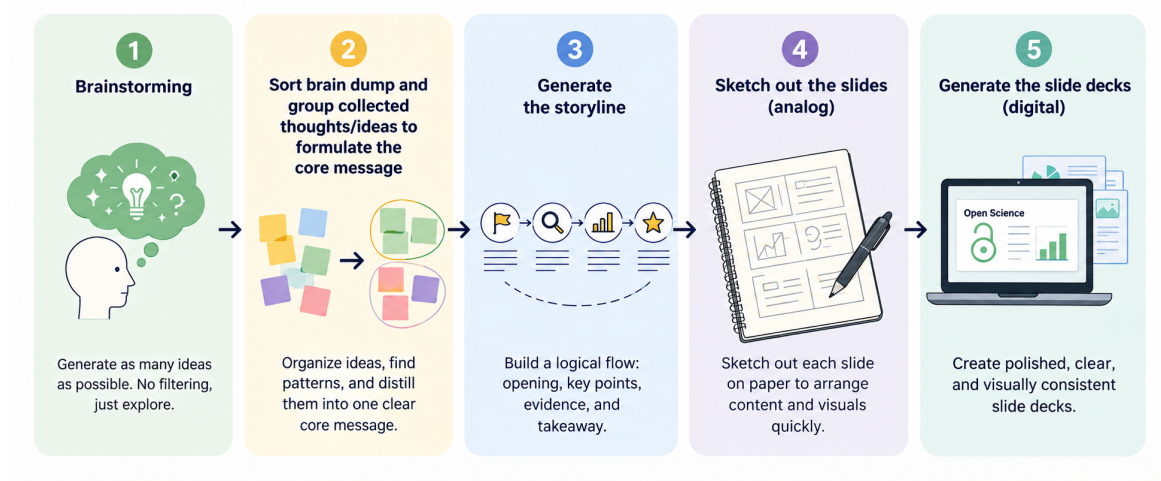
Sapienza et al. (2015)

Presenter Notes: The next phase is all about informing or conveying content. At this stage, the instructor provides core concepts, explanations, and models that learners need to understand the topic. The goal is to give learners a shared foundation of accurate information. Lasswell's communication model is a simple way to describe communication using five questions: **Who says what, in which channel, to whom, and with what effect?**

- Who: the instructor or facilitator
- Says what: the key concepts or content being taught
- Channel: the teaching method (lecture, slides, demo, discussion)
- To whom: the learners
- Effect: learners understand and build a shared knowledge base

ARIFE: *Inform*

Designing slides.....is a **process**:



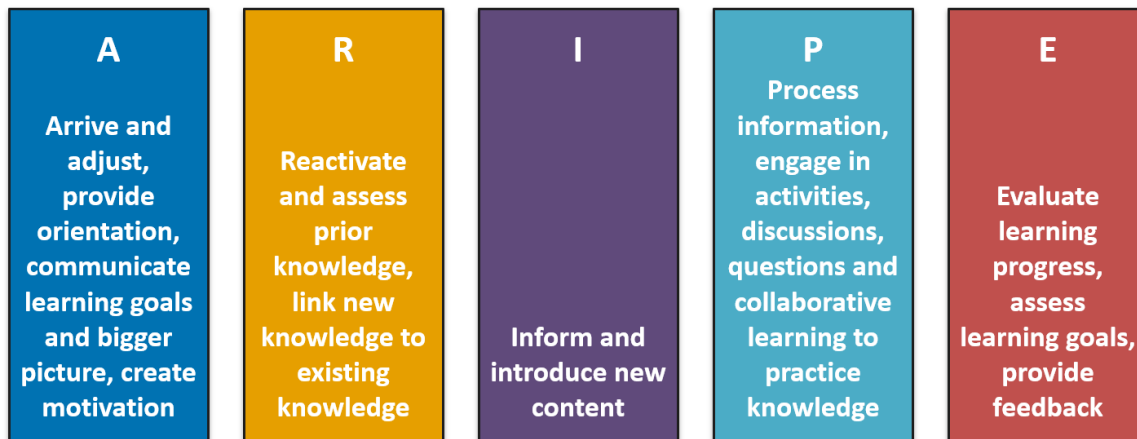
Made with generative AI.

Presenter Notes: The Lasswell model is particularly important when using slides to inform your learners about content, concepts, models, explanations, skills etc. It is a useful framework to think about the purpose and message of your slides, not just the content and to design slides with intent.

Designing slides is a process. While it is beyond the scope of this session to go into detail, keeping the Lasswell model in mind can help you move through the basic stages of designing slides. First, you braindump your ideas. Next, you sort your brain dump and formulate the core message. Next, you generate the flow of the story you are trying to tell. Next, you sketch out the slides in an analog format. Finally, you create them digitally.

Instructor Notes: Emphasize that this could be a session in itself and is merely intended as a brief overview. Welcome questions about this at the end.

ARIPE+ scheme



Städli et al. (2013)

Presenter Notes: We have reached the fourth stage of successful learning, the processing stage.

ARIPE: *Process*

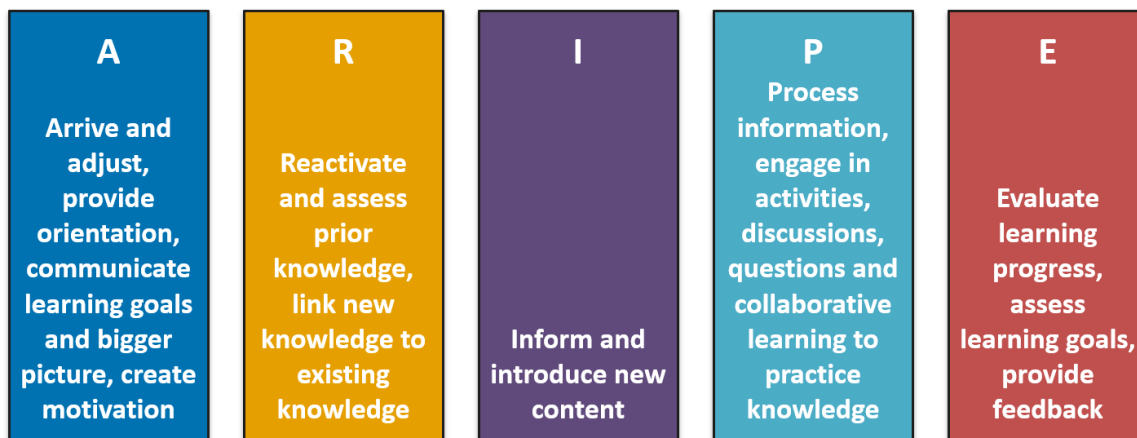
Practice and **consolidate** learning:

- Incorporate **activities, discussions** and **collaborative learning**
 - *Examples:* Exercises, quiz, group work, summaries, homework assignments..
 - Use **activation methods** for maximizing learning outcomes (*next session!*)

Presenter Notes: The Process stage of ARIPE focuses on what learners do with new information. This is where activities, discussions, and collaborative learning become central. For example, learners might solve a problem together, discuss a concept in pairs, or apply new knowledge to a short task. These interactions help learners test and refine their understanding.

Activation methods are especially useful in this stage. They support learners in engaging with the material in different ways and help strengthen learning outcomes. We will explore specific activation methods in the next session.

ARIFE+ scheme



Städli et al. (2013)

Presenter Notes: Reaching the evaluation stage! This is where learners and instructors assess understanding and learning outcomes to determine what has been achieved and what may need further development.

ARIFE: Evaluate

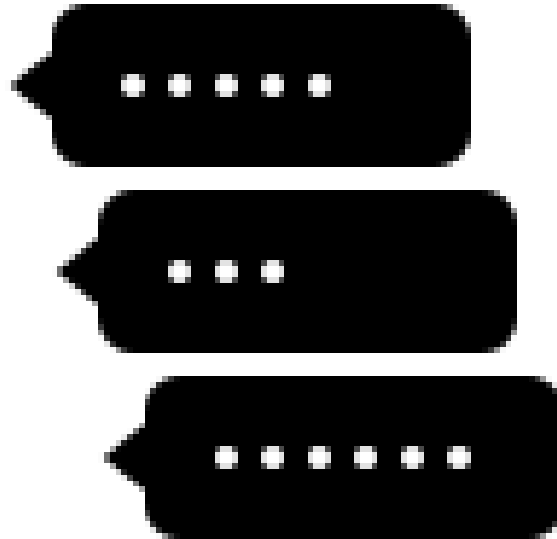
Providing feedback



<https://carpentries.github.io/instructor-training/11-practice-teaching.html#feedback-is-hard>

Presenter Notes: Depending on the types of people and learners we are, you may encounter learners who are biased towards weighing the negative feedback more than the positive, because our brain seeks survival and not happiness, so it tries to extract information necessary for survival from negative feedback whenever possible. This makes feedback an extremely important tool in your teaching, particularly when you are teaching about Open Research practices where confidence with the topic might be low to begin with.

Providing feedback to learners to enhance learning



- Provide **targeted** feedback **early on** in the process so that learners can adapt
- Be **constructive** in your feedback: What is a next step from here?
 - **Connect** it to the learning objectives
 - **Balance** positive and negative feedback (*“feedback sandwich”: positive - constructive criticism - positive*)
- Your **words matter!**
 - Giving and receiving feedback can be **hard**
 - Lead the feedback conversation with **empathy**
 - Consider the **cultural context**

O’Brien et al. (2022), Prochazka et al. (2020), Wu & Schunn (2023); <https://zenodo.org/records/18905547>. See also this [article](#) by Erin Meyer (*The Culture Map*).

Presenter Notes: Some strategies where you can use feedback to enhance the learning process:

- Provide **targeted feedback early** so learners can adjust during the learning process
- Make feedback **constructive** by focusing on **clear next steps**
 - **Link** feedback explicitly to the learning objectives
 - **Balance** positive and corrective feedback to support learning and motivation (*“feedback sandwich”: positive - constructive criticism - positive*)
- Your **words matter!**
 - Giving and receiving feedback can be **hard**
 - Lead the feedback conversation with **empathy**

- Consider the **cultural context**

The main take-home from providing feedback is that your words matter, so it is important to choose them wisely.

Giving and receiving feedback can be challenging, especially when it involves uncertainty or differing perspectives, as is often the case for Open Research. Here, it can help to lead feedback conversations with empathy, and to pay attention to how messages may be received and creating space for dialogue.

Finally, consider the cultural context in which the other person is in can help preventing misunderstandings. We will talk about this more in the last session.

ARIFE: Evaluate

Wrapping up

- **Summarize and recap** covered content
 - Reiterate the **learning objectives**
 - Highlight important **take-home** messages
 - Small **check-in assessment** to see where your learners are at
 - Clearly communicate **expectations** and timeframe for **homework** (*if applicable*)
 - Provide an **outlook** on the following sessions
 - Open the floor for **questions**
- “**What are your questions?**” instead of “*Do you have any questions?*”

Presenter Notes: Wrapping up is equally part of the evaluation process. Some important elements of concluding a lesson and the learning process:

- **Summarize and recap** covered content
 - Reiterate the **learning objectives**
 - Highlight important **take-home** messages
 - Small **check-in assessment** to see where your learners are at
 - Clearly communicate **expectations** and timeframe for **homework**
 - Provide an **outlook** on the following sessions
 - Open the floor for questions
- “**What are your questions?**” instead of “*Do you have any questions?*”
-

Don'ts during an Open Research event

Do not:



- **Overwhelm** learners with Open Research facts early on
- Dive into complex or detailed technical discussions
- Talk with **scorn** about an Open Research tool or practice
- **Pretend** to know more than you do
- Do not use the word “*just*” or other demotivating words/phrases
- Express surprise at unawareness (“*Funny, you have never heard about Git!?*”)

- **Take over** the learner’s keyboard to **complete the task yourself** (*e.g., when doing an R demonstration*)
- ...

<https://carpentries.github.io/instructor-training/08-motivation.html#first-do-no-harm>

Presenter Notes: There are some things that can seriously tamper with the learning success of your learners. Here are a few things you as the instructor should not do in your workshop:

- Talk contemptuously or with scorn about any tool or practice, or the people who use them. Regardless of its shortcomings, many of your learners may be using that tool, and may have invested time in learning to do so. Convincing someone to change their practices is much harder when they think you disdain them.
- Dive into complex or detailed technical discussion with the one or two people in the audience who clearly don’t actually need to be there. Reserve those conversations for breaks or follow-up emails.
- Pretend to know more than you do. People will actually trust you more if you are frank about the limitations of your knowledge, and will be more likely to ask questions and seek help.
- Use the word “just”. This signals to the learner that the instructor thinks their problem is trivial and by extension that they therefore must be deficient if they are not able to figure it out.
- Take over the learner’s keyboard. Doing so can be demotivating for the learner because it implies you don’t think they can do it themselves or that you don’t want to wait for them. It also wastes a valuable opportunity for your learner to develop muscle memory and other skills that are essential for independent work.
- Express surprise at unawareness. Saying things like “I can’t believe you don’t know X” or “You’ve never heard of Y?” signals to the learner that they do not have some required pre-knowledge of the material you are teaching, that they don’t belong at the workshop, and it may prevent them from asking questions in the future.

Take-home messages

- **Start from the beginning:** logistics and practical considerations
- Structure your open research lesson so that it includes **orientation**, **reactivation of prior knowledge**, **transfer** and **processing** of content and **wrapping up elements**
- Actively foster **motivation** early on and throughout
- **Assess** and **activate prior/existing knowledge** about open research to boost the learning process
- Use **feedback procedures** as a foundational element of the learning process

Presenter Notes: Implementing immediately what we have just heard, here is a quick recap of what is important when planning for an Open Research event.

- **Start from the beginning:** logistics and practical considerations
 - Structure your lesson so that it includes **orientation**, **reactivation of prior knowledge**, **transfer** and **processing** of content and **wrapping up elements**
 - Actively foster **motivation** early on and throughout
 - **Assess** and **activate prior/existing knowledge** to boost the learning process
 - Use **feedback procedures** as a foundational element of the learning process
-

Learning objectives - Recap

At the end of this session, you are now able to:

- **Consider** practical and logistical challenges of organizing an Open Research event
 - **Structure** an Open Research event according to the five phases of the ARIPE+ scheme (Städli et al., 2013) to facilitate the learning process
 - **Apply** techniques to **enhance** motivation in your learners
 - **Understand** key elements of constructive feedback
-

To conclude: Survey time!

Question 1

Which of the following pedagogical elements do you now feel most confident about in your teaching? (*Select all that apply*)

- a. Probing and boosting motivation in your learners
- b. Formulating and communicating learning objectives for your event
- c. Conceptualizing and communicating the bigger vision of the event
- d. Reactivating prior knowledge in your learners
- e. Providing constructive feedback
- f. None of the above

Question 2

Which of the following elements or skills do you feel most curious about to implement in your future teaching?

- a. Planning for the logistics of the workshop
- b. Designing orientation activities
- c. Boosting motivation through specific activities
- d. Balancing positive and negative feedback
- e. Other

Question 3

On a scale of 1 to 5, how comfortable are you with using the ARIPE+ scheme to structure your future Open Research workshop? (1 = Not comfortable at all, 5 = Very comfortable)

- a. 5
 - b. 4
 - c. 3
 - d. 2
 - e. 1
-

Discussion of survey results

What do we see in the results?

Presenter Notes: Let us have a look at these results.

Instructor Notes: Briefly examine the answers given to each question interactively with the group. Use visuals from the survey to highlight specific answers.

Accessibility Tip: Have people work in pairs if someone did not bring their phone/does not have a phone. This survey also cannot be completed in an asynchronous setting.

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-

Your own stereotypes and biases about learners



Tip

Want to know more about your own **stereotypes and biases** about learners? <https://carpentries.github.io/instructor-training/09-eia.html#what-are-stereotypes>.

Presenter Notes: Want to know more about your own stereotypes and biases about your learners? Then see the link for more information.

LMU: Want to know more about designing slides?

For LMU students, researchers and staff: Check out **PROFiL** and their courses on slide design!

Presenter Notes: If you want to know more, please visit the website of Profil if you are an LMU member or contact your local didactics expert!

Contribution statement

Creator: Von Grebmer zu Wolfsthurn, Sarah ( 0000-0002-6413-3895)

Reviewer: Middleton, Sara ( 0000-0001-5307-8029)

Reviewer: Schönbrodt, Felix ( 0000-0002-8282-3910)

Consultant: Ihle, Malika ( 0000-0002-3242-5981)

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