Lesson plan

Student

|  |  |  |  |
| --- | --- | --- | --- |
| Name: | Alexander Botzki | Subject-didactic cluster: Science and Technology | Academic year: 2025 - 2026 |

Lesson topic

|  |  |
| --- | --- |
| Reusing teaching materials – tips and tricks | Subject: Designing FAIR teaching materials |

Internship Lessons

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name and address: VIB, Technologiepark 75, 9052 Ghent |  | Finality/field of study : / | | | School year: 2025 |
|  | Number of students: 10 |
| Subject mentor: Bruna Piereck |  | Date: 22/10/2025 | Time: from: 15:00 | until : 16:40 | Local: L4 |

|  |  |  |
| --- | --- | --- |
| Initial situation | | |
|  | Description of relevant features for this lesson | Concrete actions based on the characteristics recorded in the initial situation |
| Pupils | Through survey for the course | / |
| Class group - group dynamics | - usually a fairly quiet group of adults  - encouraging interaction between participants is appropriate | - I provide an interactive exercise and also group work  - I ask review questions where possible  - I provide a summary reflection document at the end of the session |
| Class group – content-related | Through survey for the course | - I provide tips and tricks that can be applied directly in the final exercise |
| School/situational data | - Participants will be informed by email to set up access to certain software in advance  - Participants will work on their own laptop | - if possible before the start of the lesson: check whether wireless internet works on all computers |

Points of interest

|  |  |
| --- | --- |
| Personal points of attention taken from previous lesson(s): | * Developing a new slide layout to enable activities to be displayed during the lesson |

Sources Appendix n

|  |  |  |
| --- | --- | --- |
| Curriculum/notebook: not applicable  Other:  Piereck Moura, B., Jaworski, J., Norgren, N., Kronander , E., Schroeder, K., Botzki, A., & Lindvall, J. (2025, March 7). Training material made FAIR by design. Zenodo . https://doi.org/10.5281/zenodo.14987327 |  | Presentation:  - <https://liascript.github.io/course/?https://raw.githubusercontent.com/elixir-europe-training/ELIXIR-TrP-FAIR-Material-By-Design/refs/heads/main/docs/supplementary/presentations/ch_04_Type_of_training_material/chapter04-Types_of_training_material-presentation.md#1>Exercises:  [shared document](https://docs.google.com/document/d/1ZEC3eZutm4RibyV7rurcnh3lnhvrzVPbE5wUTVfp-U8/edit?usp=sharing)  Other material:  exercise-training-material-types.docx ( categories for wall)  [file with reflection questions](https://github.com/elixir-europe-training/ELIXIR-TrP-FAIR-Material-By-Design/blob/main/docs/supplementary/presentations/ch_04_Type_of_training_material/exit_card_interoperable_formats.odt) |

z

|  |
| --- |
| **Other** |
| **Select a school year:** |
| **Other** |

Curriculum objectives/final terms

|  |
| --- |
| Objectives of this course:   * Explain the concepts of reusability, interoperability and extensibility of teaching materials * Assess the degree of reusability of teaching materials * Developing a presentation with a storyline using Liascript |

| LESSONS OBJECTIVES | LEARNING CONTENT | WORKING FORMS/MEDIA/ORGANIZATION | TIME |
| --- | --- | --- | --- |
|  | Lesson Beginning |  |  |
|  | Reiteration of the FAIRness concept for training materials, with emphasis on the letters **I** (Interoperability) and **R** (Reusability). | *Working method: relevant content + interview + teaching*  *Media:* [*https://www.ebi.ac.uk/training/materials/from-sequences-to-structures-materials/uniprot/*](https://www.ebi.ac.uk/training/materials/from-sequences-to-structures-materials/uniprot/) *, slides 1-3*  *Organization/Conversation format:*   * The teacher welcomes the participants and briefly introduces himself. * The teacher projects the [UniProt slides](https://www.ebi.ac.uk/training/materials/from-sequences-to-structures-materials/uniprot/) . * Question: Imagine a colleague requests a training session for which three slides will be modified and your own notes added, but you only receive the material in PDF format. What would you do? * Question: What do you think are the advantages and disadvantages of using a PDF as teaching material? Can anyone name a disadvantage? * The teacher receives answers: "You can't easily change it," or "Not everyone can easily add things." * Suppose you want to combine these slides with those from another lesson, or share them with a classmate – can this be done easily with PDF, and why or why not? * The instructor notes that students rightly point out that reusability and extensibility are not self-evident with every file format." * The teacher writes down the concepts on a flip chart and says, "Remember these three concepts today: *reusability* , *extensibility* . They determine whether teaching materials can be used flexibly." * In slide 2, the teacher explains where the lesson topic fits in terms of FAIRness. Focus on the letters I and R. * The teacher shows slide 3 and briefly explains the different topics of the lesson. * Transition: "Now we will look together at what other training materials exist." | 00:00  (13:20)  -00:08 |
|  | Lesson Center |  |  |
| -       - The student can categorize types of training materials based on own experience.  - The student can justify his or her own choices for material formats using practical arguments.  - The student can analyze popular formats for their advantages and disadvantages in a training context. | **LESSON PHASE 1 : What are common formats of training materials and the reasons for their use?**   * Overview of types such as slides, video, dataset, software, exercises, VM/container, tutorial, text, website. * List reasons for using training materials. * For each type, possible formats (files) are discussed. * Examples of reasons for use include editability, stability, accessibility, version control, compatibility. | *Working method: class discussion with debriefing, teaching*  *Media: Powerpoint (slides 4-7),*  *Organization/Conversation format:*   * Before the lesson, the teacher hangs 3 sheets of paper (A3 size) on the wall, each with a category (type of material, possible sizes, reasons). * The teacher explains the activity and distributes Post-It notes. Slide 4 serves as a reminder during the exercise. * The instructor asks the class to list several types of training materials. * Instructor Question: What types of training materials do you use besides slides? * For each new answer, the teacher writes down the option on paper and posts it. We expect about nine options. * The instructor then asks the students to write on each Post-It note a format of training material they use as an instructor, along with their reasons. The Post-It note is placed next to the relevant format under "Possible Formats" and "Why This Format?" * The teacher views and discusses the results together with the participants. * The instructor shows slide 4 as a summary of this exercise. The instructor notes that the formats are likely to change over the years due to the rise of Generative AI. * The instructor explains the second activity: listing the most popular formats (slides, text documents, software/scripts) and their pros and cons. Slide 5 serves as a reminder during the presentation. * Students complete the table in [the shared document](https://docs.google.com/document/d/1ZEC3eZutm4RibyV7rurcnh3lnhvrzVPbE5wUTVfp-U8/edit?tab=t.0#heading=h.gjdgxs) . * The instructor reviews and discusses the results with the participants and compares them with the results of [the article](https://journals.plos.org/ploscompbiol/article/figure?id=10.1371/journal.pcbi.1007854.t001) (documents are displayed side by side on a large screen). * Slide 6 shows the comparison from a third perspective. * Transition: “In the future, we will look at how reusability relates to interoperability.” | 00:08 -  00:30​ |
| - The student can explain the concept of interoperability of training materials.  - The student can define the concept of interoperability of training materials through text analysis.  - The student can critically evaluate aspects of reusability and interoperability.  - The student can evaluate material formats for interoperability and reusability. | **LESSON PHASE 2 : How do interoperability and reusability of training materials relate to each other in a realistic context?**  - reusability: features:  exact reuse and reuse in other contexts.  - Interoperability: features such as being able to adapt, share, extend, and integrate material into other contexts.  - Examples of formats that support both.  - Reflections on limitations of certain formats (e.g., video, PDF). | *Working method: individual assignment with debriefing, teaching, interview, group assignment (2 persons)*  *Media: Powerpoint (slides 8-12), shared document for collaborative notes*  *Organization/Conversation format:*   * The instructor explains the activity to arrive at a definition of interoperability. Slide 8 serves as a reminder during the exercise. * The teacher asks the class about the participants' results and also shows the prepared notebook in their NotebookLM. * The instructor summarizes the aspects of interoperability and asks the participants to review what the aspects of reusability are. * On slide 10 the teacher raises the question whether interoperable material is reusable. * The teacher suggests we briefly look at a slide deck by Lars Juhl Jensen. * The instructor asks three questions. The conclusion is that we often need more context to reuse training materials. * Students complete the table in [the shared document](https://docs.google.com/document/d/1ZEC3eZutm4RibyV7rurcnh3lnhvrzVPbE5wUTVfp-U8/edit?tab=t.0#heading=h.gjdgxs) . * The teacher discusses the participants' reflections. * Transition via slide 12: We briefly review the most important aspects of interoperable and reusable training materials. | 00:30  -  00:50 |
| - The student can identify three ways for trainers to provide more context for training materials.  - The student can identify elements that enrich and clarify the content of slides.    - The student can identify the components of a lesson plan and apply them to their own teaching materials. | **LESSON PHASE 3 : What additional documents do we provide to create high-quality training materials?**  - (1) extended narratives for slides, (2) trainer notes, (3) lesson plans.  - Explanation of enrichment elements such as: annotations, narratives, references to external sources, visual aids, trainer notes. Examples of templates for instruction notes (e.g., Carpentries).  - Lesson plan: time allocation , content overview , description of the activities , links with the individual lesson objectives , lesson organization , reproduction of the lesson by another expert | *Working method: teaching*  *Media: Powerpoint (slides 13-16)*  *Organization/Conversation format:*   * The instructor explains three approaches for trainers to provide more context to the teaching material. * In slide 14, the instructor explains which elements enrich the slide content.  The instructor also provides examples of note-taking templates for instructors. * On slide 1 5 the teacher provides an overview of the benefits of a lesson plan. * On slide 16, the teacher shows an overview of a simple lesson plan and its various columns. * Transition: “In the next section, you'll look at practical tips and tricks and apply them in assignments.” | 00:50 -  01:00​ |
| - The student can identify small interventions that increase the interoperability and reusability of material formats.         - The student can create a presentation of approximately four slides with narratives.  - The student can save this presentation in a publicly accessible location.  - The student can explain the impact of Markdown on interoperability of training materials. | **LESSON PHASE 4 : How do we easily apply these concepts and recommendations in practice?**  - Review of types such as presentations, text documents, scripts/software, datasets, tutorials.  - Discussion of formats such as PPTX, PDF, Markdown, HTML, Jupyter Notebooks, Datasets.  Tips such as exporting to open formats (ODP), version control via Git, and using Markdown.  Examples of minimal effort per type of material. | *Working method: teaching, individual assignment*  *Media: Powerpoint (slides 17-20)*  *Organization/Conversation format:*   * The instructor looks back at common types of training material. * During slide 18, the instructor explains how you can make certain formats more interoperable and reusable with minor adjustments. * On slide 19.0 the teacher provides an overview of a textual material and a presentation tool that uses Markdown. * In slide 19.1, the instructor explains the assignment for creating a presentation of about four slides. Students can choose between LiaScript, the Markdown tool, and Google Slides. * During slide 20, the instructor explains that interoperability automatically increases with markdown.   Transition: “After this applied assignment, let us conclude with some reflection questions.” | 01:00  -  01:25 |
|  | Lesson Closing |  |  |
|  | Key concepts related to training materials:  - reusability - interoperability -  Strategy for choosing  the appropriate file format - reflection on application in own practice | We conclude the lesson with a moment of reflection using a form to fill out.  Media: [file with reflection questions](https://github.com/elixir-europe-training/ELIXIR-TrP-FAIR-Material-By-Design/blob/main/docs/supplementary/presentations/ch_04_Type_of_training_material/exit_card_interoperable_formats.odt) | 01:25  -  01:30 |