

PMM Template Slides: Title of submodule

Author

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Contribution statement and licence

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

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

Acessibility Tips: where applicable, this is a space to add any tips you may have to facilitate the accessibility of your slides and activities.

Prerequisites - table format

! Important

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

Prerequisite	Description	Link/Where to find it
Topic Name	Basic intro to X	Module + Submodule

Prerequisite	Description	Link/Where to find it
Software Name	Configuring the environment	Download Link

Speaker Notes: Script for the presentation here.

Prerequisites - bullet points

! Important

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

- **Aim:** Outline any essential prerequisites (software, tools, other submodules etc.) here in bullet point format.

Speaker Notes: Script for the presentation here.

Questions from previous submodule

- **Aim:** This first slide is dedicated to clarifying questions from the previous submodule and/or to discuss assignments.
- Additional slides may need to be added depending on the nature of the homework assignments.
- Critical for the learning process to ensure that students are on the same page and have been able to achieve the learning goals of the previous workshop.
- Not applicable if this set of slides corresponds to the first submodule of a new module.

Speaker Notes: Script for the presentation here.

Before we start: Survey time!

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

Speaker Notes: Script for the presentation here.

What is your level of familiarity with [Topic] (e.g., basic concepts, terminology, or tools)?

- 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.
-

Which of the following concepts or skills do you feel most confident about in relation to [Topic]? (Select all that apply)

- a. Concept 1
 - b. Concept 2
 - c. Concept 3
 - d. Concept 4
 - e. I am not sure about any of these concepts.
-

On a scale of 1 to 5, how comfortable are you with using [specific tool/technology] related to [Topic]? (1 = Not comfortable at all, 5 = Very comfortable)

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

e. 5

Discussion of survey results

- **Aim**”: Briefly examine the answers given to each question interactively with the group.
- Use visuals from the survey to highlight specific answers.

Speaker Notes: Script for the presentation here.

Where are we at?

- **Aim:** Place the topic of the current submodule within a broader context.
- Remind students what you are working towards and what the bigger picture is.

Speaker Notes: Script for the presentation here.

Learning goals

- **Aim:** Formulate specific, action-oriented goals learning goals which are measurable and observable in line with Bloom’s taxonomy (Anderson et al., 2001; Bloom et al., 1956)
- Place an emphasis on the **verbs** of the learning goals and choose verbs that align with the skills you want to develop or assess.
- Examples:
 - Students will **describe** the process of photosynthesis or
 - Students will **construct** a diagram illustrating the process of photosynthesis

Speaker Notes: Script for the presentation here.

Covered in in this session

- **Aim:** This slides serves as an overview of the topics that are discussed, presented as bullet point:
- Topic 1
- Topic 2
- Topic 3

Speaker Notes: Script for the presentation here.

Key terms and definitions

- **Aim:** Introduce key terms and definitions that students will come across throughout the session.
- **Key Term 1:** Definition
- **Key Term 2:** Definition
- **Key Term 3:** Definition

Speaker Notes: Base yourself on conceptual change theory and examine exisiting concepts in relation to some key terms. Re-examine formation of new concepts at the end of the lesson.

Introduction of submodule topic

- **Aim:** Core theoretical introduction of submodule topic.
- Pair theoretical aspects with practical exercises and group discussions according to the Think-Pair-Share style and according to Cognitive Load Theory (Sweller, 1980).
- Use multiple slides for this part.

Speaker notes: For a 90-minute lesson, the instructor should try to “lecture” for only 20 minutes, students should work in groups/pairs/on their own for at least 55 minutes of the lesson (+ a 15 minute break).

Submodule content slide

- **Aim:** Present relevant content
- Highlight particularly important aspects with Quarto call-out boxes, for example:

! Important with Title

This is an example of a callout box to highlight particularly important information.

💡 Tip with Title

This is an example of a callout box to give important tips.

Speaker Notes: Script for the presentation here.

Practical exercise 1

- **Aim:** Design more practical exercises for students to apply the new skills in practise.
- Depending on the topic, the exercises should be in accordance with the learning objective(s).
- Add a description of the task, as well as a checklist as an overview of that your students need to be doing.

☒ Step 1

☐ Step 2

☐ Step 3

Speaker Notes: Script for the presentation here.

Pre-break survey

- **Aim:** This pre-break survey serves to examine students' current understanding of key concepts of the submodule
- Use free survey software such as or other survey software (particify, formR) to establish the following questions (shown on separate slides):

Speaker Notes: Script for the presentation here.

Which species is the largest type of penguin?

- a. Chinstrap Penguin
 - b. Emperor Penguin
 - c. Adélie Penguin
 - d. King Penguin
-

What is the key biological feature that helps penguins swim efficiently?

- a. Hollow bones for buoyancy
 - b. Webbed feet for paddling
 - c. Waterproof feathers and flipper-like wings
 - d. Gills to breathe underwater
-

Break! 15 minutes

Post-break survey discussion

- **Aim:** To clarify concepts and aspects that are not yet understood
- Highlight specific answers given during the survey

Speaker Notes: Script for the presentation here.

Practical exercise 2

- **Aim:** Design more practical exercises for students to apply the new skills in practise.
- Depending on the topic, the exercises should be in accordance with the learning objective(s).
- Add a description of the task, as well as a checklist as an overview of that your students need to be doing.

☒ Step 1

☐ Step 2

☐ Step 3

Speaker Notes: Script for the presentation here.


Relevance and implications

- **Aim:** To work out the relevance of the topic to your students.
- In an interactive setting, discuss how the new skills could be applied in practise with specific examples.
- Examine downfalls and practical obstacles.

Speaker Notes: Script for the presentation here.

Take-home message

Aim: End lesson on clear take-home message that are interactively compiled by students.

 **Tip with Title**

Add one practical tips or take-home message.

Speaker Notes: Script for the presentation here.

Assignment

- **Aim:** Explain the homework assignment and the rationale behind the homework.
- Examine whether/how it will be assessed
- Mention scoring rubrics, if applicable
- Design a peer-review system for assignments to place students in role of reviewer and author

Speaker Notes: Script for the presentation here.

To conclude: Survey time!

- **Aim:** This post-submodule survey serves to examine students' current knowledge about the submodule's topic.
- Use free survey software such as or other survey software (particify, formR) to establish the following questions (shown on separate slides):

Speaker Notes: Script for the presentation here.

What is your level of familiarity with [Topic] (e.g., basic concepts, terminology, or tools)?

- 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.
-

Which of the following concepts or skills do you feel most confident about in relation to [Topic]? (Select all that apply)

- a. Concept 1
- b. Concept 2
- c. Concept 3
- d. Concept 4

e. I am not sure about any of these concepts.

On a scale of 1 to 5, how comfortable are you with using [specific tool/technology] related to [Topic]? (1 = Not comfortable at all, 5 = Very comfortable)

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

Discussion of survey results

- **Aim:** Briefly examine the answers given to each question interactively with the group.
- Compare and highlight specific differences in answers between pre- and post-survey answers

Speaker Notes: Script for the presentation here.

References

- Provide literature you refer to throughout this lesson.

Speaker Notes: Script for the presentation here.

Thanks!

See you next class :)

Pedagogical add-on tools for instructors

- This section is dedicated to ideas on how to incorporate pedagogical tools into teaching for this specific submodule topic. This could mean:
 - Information about the scientific evidence on the theory of the pedagogical add-on tool and the evidence for its efficacy.
 - Discussion/reflection on how tools can be incorporated into the teaching for this particular content.
 - Extra exercises for faster students.
-

Additional literature for instructors

- References for content
 - References for pedagogical add-on tools
 - Other resources (videos etc.)
-

Formatting elements for instructors

- **Aim:** This section contains templates for different formatting elements, which can be modified and adapted for the instructor's individual purposes.
-

Text with example links

- [Quarto Documentation](#)
 - [Reveal.js Documentation](#)
 - [Markdown Guide](#)
 - [GitHub](#)
-

Basic text formatting

- **Bold:** **`**bold**`** → **bold**
 - *Italic:* *`*italic*`* → *italic*
 - ~~Strikethrough:~~ ~~`~~text~~`~~ → `text`
 - `Inline code:` ``code`` → `code`
 - `Blockquote:` `> Quote` →
“This is a quote”
-

Figure with caption

- Centered image and caption below in italics

This is a Penguin.

Figure with bullet points

- First bullet point
 - Second bullet point
 - Third bullet point
-

Side-by-side figures

Stacked figures with text

- First bullet point
 - Second bullet point
 - Third bullet point
-

Two-column text slide

Column 1

Lorem ipsum dolor sit amet, consectetur adipiscing elit.
Vivamus lacinia odio vitae vestibulum vestibulum.
Cras venenatis euismod malesuada.

Column 2

Sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.
Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris.

Three-column text slide

Column 1

Lorem ipsum dolor sit amet, consectetur adipiscing elit.
Vivamus lacinia odio vitae vestibulum vestibulum.

Column 2

Sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.
Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris.

Column 3

Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla
pariatur.

Simple table

Column 1	Column 2	Column 3
Row 1 Cell	Row 1 Cell	Row 1 Cell
Row 2 Cell	Row 2 Cell	Row 2 Cell
Row 3 Cell	Row 3 Cell	Row 3 Cell
Row 4 Cell	Row 4 Cell	Row 4 Cell

Complex table

Column 1	Column 2	Column 3
Row 1 Cell	Row 1 Cell	Row 1 Cell
Row 2 Cell	Row 2 Cell	Row 2 Cell
Row 3 Cell	Row 3 Cell	Row 3 Cell
Row 4 Cell	Row 4 Cell	Row 4 Cell

Task list

- ☒ Done
 - ☐ To do
-

Embedding videos

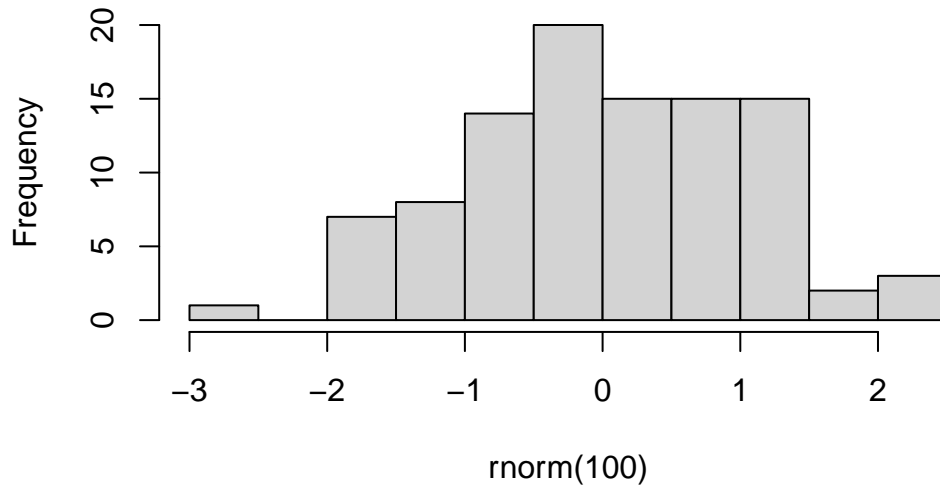
Code blocks

```
# A basic R code chunk  
x <- 1:10  
mean(x)
```

```
[1] 5.5
```

```
# A simple plot  
hist(rnorm(100), main = "Histogram of Random Normals")
```

Histogram of Random Normals



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Credit Statement

Possible roles using the CRediT contribution system:

Name main content creator: Conceptualization, Software, Writing - Original Draft, Visualization. **Sara Lil Middleton:** Writing - Review & Editing, Supervision. **Sarah von Grebmer zu Wolfsthurn:** Conceptualisation, Writing - Review & Editing, Supervision, Project Administration, Validation.
