

# Easy livin' in Moodle – Student and teacher perspectives on cognitive load

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Faculty of Pharmacy, University of Helsinki



UNIVERSITY OF HELSINKI

# Cognitive load

= The amount of working memory capacity in use during a (learning) task

Necessary for learning:

Deleterious for learning:

Intrinsic cognitive load: task's inherent complexity

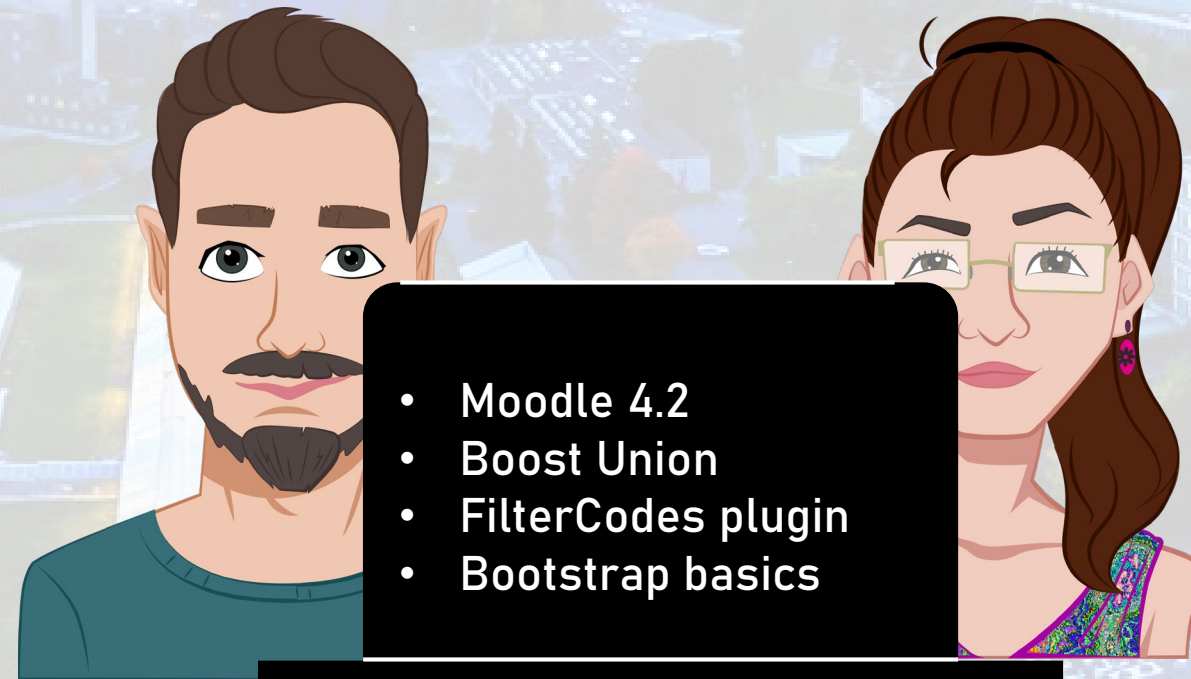
Germane cognitive load: integrating new information into existing knowledge

Extraneous cognitive load: burden from irrelevant factors, like poor information presentation



# Introduction

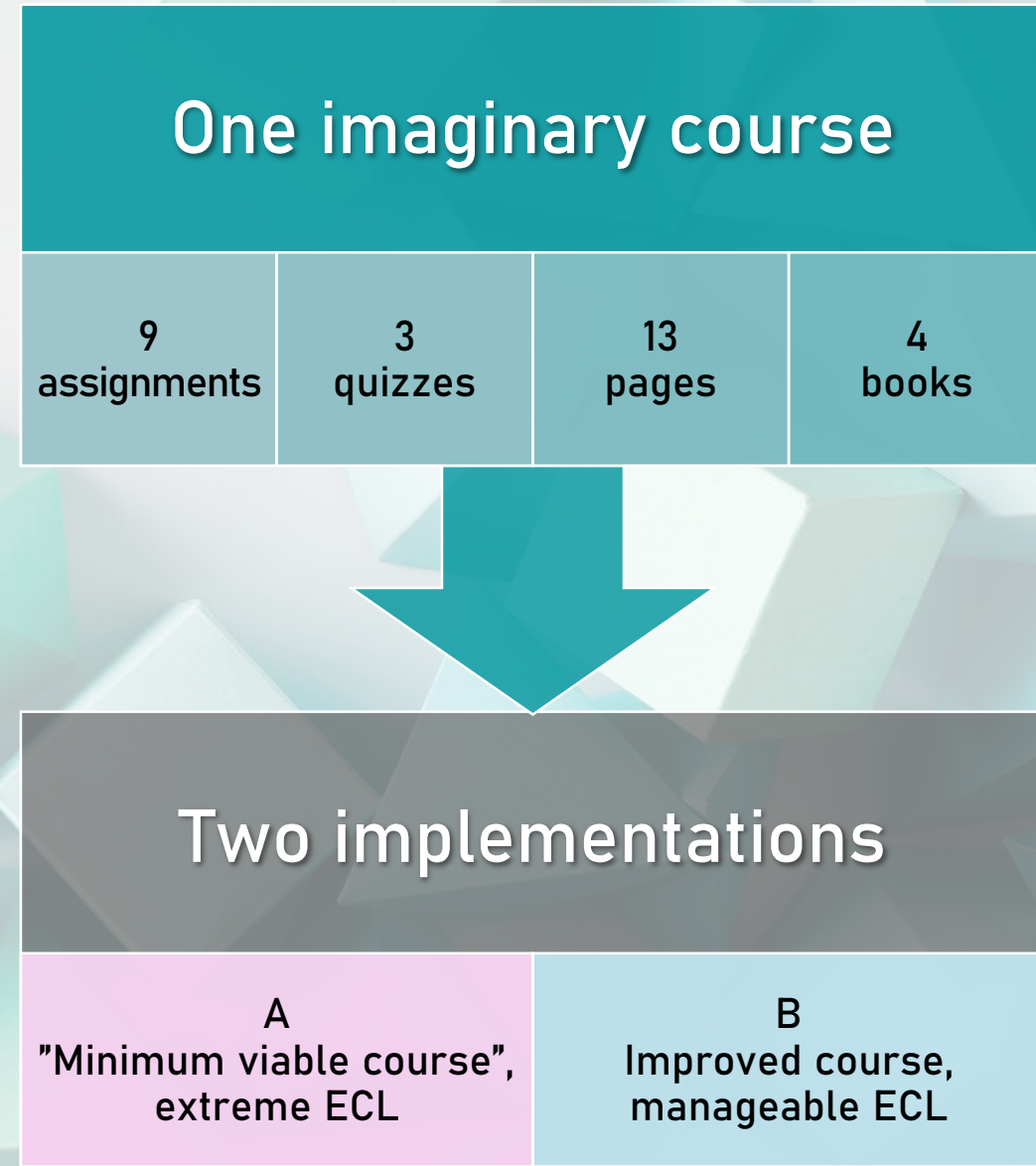
- About us
  - Digital teaching developers from the UH Viikki campus
- The typical challenge
  - Content-heavy courses from busy teachers and researchers
  - Moodle used as a content repository and considered a necessary evil



- Moodle 4.2
- Boost Union
- FilterCodes plugin
- Bootstrap basics

# Today's presentation

- Course design principles and practices for mitigating extraneous cognitive load (ECL)
- Demonstrated through three imagined cases
  - At different stages of course implementation
- Student and teacher viewpoints
  - Based on true events and experiences



# Case 1: The course is beginning

Student  
Implementation A

# Case 1, student Implementation A

# Case 1: The course is beginning

Teacher  
Implementation A



# Case 1, teacher Implementation A

x

## Welcome

Announcements

Course Name: Introd...

## WEEK 1 (The Phylogen...

Separate File

Return your assignment...

Evolution (WEEK 1)

Opossum playground a...

Opossums and other m...

Course discussion (us...

Lecture (copy) (copy) (co...

Reading

Page 4

Page 5

Page 6

Book 1: Opossums in o...

Book 2

Web page

Files Page

## Basic information

lecturematerials (see 20...

27/03 (course use)

Important steps of evol...

Individual assignment 5...

## Glossary

Lecture.pdf

Note! YOUR ATTENDAN...

270324\_Didelphis virgin...

## A Sad and Dull Example Course

Course Settings Participants Grades Reports More

## Welcome

Collapse all



Announcements

Course Name: introduction to [Subject Area]

## Learning Objectives:

Understand the fundamental concepts and theories of [Subject Area].

Develop the ability to apply learned concepts in practical situations.

Enhance critical thinking and problem-solving skills in [Subject Area].

Deepen knowledge of current issues in [Subject Area].

## Course Structure:

1. First Module: Fundamentals of [Subject Area]

Lecture 1: Introduction to [Subject Area]

Lecture 2: Historical Context

Assignment 1: Analysis of a concept related to [Subject Area]

2. Second Module: Application of [Subject Area]

Lecture 3: Practical Applications of [Subject Area]

Exercise 1: Case Study - [Example Company]

Group Discussion: Ethical perspectives in [Subject Area]

3. Third Module: Current Issues in [Subject Area]

Lecture 4: Current Challenges and Opportunities

Assignment 2: Article Analysis - [Current Research]

Dear students,

Welcome. The course starts January 15th. Remember, January 15th.

On February 3rd, the first assignment is due. Don't forget that. It's important. **March 10th is the midterm exam.** Make sure you're ready for it. It's on March 10th.

Group project submissions are April 20th. That's another important date. April 20th. The final exam is June 1st. June 1st. Mark it in your calendar. Don't miss any of these dates. They're all important. Keep track of them. **Check the course page for updates.** It's important to stay informed. Thank you.

## Recommended Literature:

[Main Book on Subject Area]

[Additional Reading 1]

[Additional Reading 2]



# First things first

What the student needs to know to begin completing the course?

- Present that on the front page.
- Details are better left out of sight & mind until needed.

Which resources are the students likely to view most often?

- Provide ubiquitous access to these.
- Prioritise the design of these materials.

What needs to be done already in the beginning?

- Use **conditional** reminders.
- Apply captivating visuals.

# Case 1: The course is beginning



Student  
Implementation B



# Case 1, student Implementation B

## A Fun and Easy-to-Use Example Course



Course Participants Grades More ▾

### Welcome



Announcements



Start here: Information on course completion and assessment

To do: View



Course structure – activities by weeks



You have not selected your preferred method of final assessment. Please make your selection using the **method selection activity** until June 25, 2024.



### General resources

Forum: 1 Group choice: 1 Pages: 2

Progress: 0 / 1



### Week 1 – The Phylogeny of Opossums

#### Contact

Responsible teachers:

Sara Lindholm & Ilkka Miettinen

Please prioritize the forum for questions about the course.

[Forum](#)

[Course info](#)

#### Mandatory activities



Progress: 0%

Mouse over or touch bar for info.

#### Optional assignments, complete min. 4 of these

NOW



Mouse over or touch bar for info.

[Review course activities](#)

#### Upcoming events



**How opossums are relate...**

Friday, 7 June, 11:59 PM



**Maintenance break**

Wednesday, 12 June, 8:00 AM »

×

Welcome

Remember to update...

Announcements

Start here: Informati...

Course structure – ac...

You have not selected y...

General resources

General discussion a...

Choose your method...

Course literature

Course structure

Week 1 – The Phylo...

Lecture info: Monday 1...

Lecture slides: Week 1 – ...

Additional reading for W...

Mandatory activities of t...

How opossums are re...

Optional activities of the...

Mindmap of opossum...

Phylogenetic tree dra...

Text and media area

Week 2 – Opossum i...

Lecture info: Tuesday 10...



# Case 1: The course is beginning



Teacher  
Implementation B



# Case 1, teacher Implementation B

- Welcome
  - Remember to update th...
  - Announcements
  - Start here: Information...
  - Course structure - ac...
  - You have selected fi...
  - You have not select...
- General resources
  - General discussion a...
  - Choose your method...
  - Course literature
  - Course structure
- Teacher's lounge
  - Notes and updates
  - Course background and...
- Learning diary
  - Learning diary - instruct...
  - Submit your learning ...
  - Additional tips for creati...
- Week 1 - The Phylo...
  - Lecture info: Monday 1....
  - Lecture slides: Week 1 ...
  - Additional reading for ...
  - Mandatory activities of t...
  - How opossums are re...
  - Optional activities of th...
  - Mindmap of opossum...
  - Phylogenetic tree dra...

## A Fun and Easy-to-Use Example Course



Course Settings Participants Grades Reports More

### Welcome

- Announcements
- Start here: Information on course completion and assessment [View](#)
- Course structure - activities by weeks
- Not available unless: You belong to any group (hidden otherwise)
- !** You have not selected your preferred method of final assessment. Please make your selection using the **method selection activity** until June 25, 2024.
- Not available unless: You do not belong to any group (hidden otherwise)

### General resources

Forum: 1 Group choice: 1 Pages: 2  
Progress: 0 / 1

### Teacher's lounge

Hidden from students

Page: 1 Book: 1

#### Contact

Responsible teachers:  
Sara Lindholm & Ilkka Miettinen

Please prioritize the forum for questions about the course.

[Forum](#) [Course info](#)

Teacher shortcuts:

[Teacher's notes](#) [Grading](#)

#### Mandatory activities

Progress: 25%

Mouse over or touch bar for info.

[Overview of students](#)

#### Optional assignments, complete min. 4 of these

**NOW**

Mouse over or touch bar for info.

[Overview of students](#)

[Review course activities](#)

#### Upcoming events

- Final examination avaut...**  
Monday: 3 June, 9:00 AM
- Final examination sulke...**  
Monday: 3 June, 2:00 PM
- Maintenance break**



# Toolbox

	Mandatory activities	Optional assignments (choose min. 4 of these)
ie week		
ie Phylogeny ms	<b>Complete:</b> How opossums are related to others (quiz)	<ul style="list-style-type: none"><li>• Mindmap of opossum phylogeny</li><li>• Phylogenetic tree dra</li></ul>
possums in y	<b>Read:</b> Pre-reading before lecture <b>Read:</b> Introduce yourself with the fascinating world of opossums (book) <b>Submit:</b> Me and my opossum (assignment)	<ul style="list-style-type: none"><li>• The story of Opossum</li></ul>
possums as	<b>Complete:</b> Test your knowledge: Opossums as Friends (quiz) <b>Create a post and comment one:</b> Forum: Opossums as Friends (forum)	<ul style="list-style-type: none"><li>• Providing enrichment opossum friends</li><li>• Create House Rules fr Opossum park</li></ul>

## Optional assignments, complete min. 4 of these

NOW



Phylogenetic tree drawing (optional)  
Completed ✓

You have selected learning your method of assessment. You modify your selection through the **method selection activity** until 25, 2024.

A screenshot of a course management interface. At the top, there are navigation links: 'course', 'settings', 'participants', 'grades', 'reports', and 'more'. Below this is a 'Welcome' section with a pencil icon. A red banner contains the text: 'Remember to update the course - all details for updates are in the Teacher's notes!'. Below the banner are two main sections: 'FORUM' with a sub-section 'Announcements' and a pencil icon, and 'PAGE' with a sub-section 'Start here: Information on course completion and assessment' and a pencil icon. A plus sign icon is visible at the bottom right of the page content area.

Interactive  
and  
responsive  
tables  
(Bootstrap)

Only relevant  
activities in  
completion  
tracking

Visually  
consistent  
alerts and  
reminders  
(FilterCodes)

•Notes for  
editors  
(FilterCodes)

# Case 2: The course is underway

The background of the slide features a close-up, low-angle view of an open book. The pages are densely packed and curve upwards, creating a sense of depth. The lighting is a cool, monochromatic blue, highlighting the texture of the paper and the spine of the book. The overall mood is professional and academic.

Student  
Implementation A

# Case 2, student Implementation A





# Case 2: The course is underway

Teacher  
Implementation A

# Case 2, teacher Implementation A

- Welcome
  - Announcements
  - Course Name: Introd...
- WEEK 1 (The Phylogen...
  - Separate File
  - Return your assignment...
  - Evolution (WEEK 1)
  - Opossum playground a...
  - Opossums and other m...
    - Course discussion (us...
  - Lecture (copy) (copy) (co...
  - Reading
    - Page 4
    - Page 5
    - Page 6
  - Book 1: Opossums in o...
  - Book 2
  - Web page
  - Files Page
- Basic information
  - lecturematerials (see 20...
  - 27/03 (course use)
  - Important steps of evol...
  - Individual assignment 5...
- Glossary
  - Lecture.pdf
  - Note! YOUR ATTENDAN...
  - 270324\_Didelphis virgin...

## A Sad and Dull Example Course

Course Settings Participants Grades Reports More

### Welcome

Collapse all



Course Name: Introduction to Opossums

#### Learning Objectives:

Understand the fundamental concepts and theories of opossums.  
 Develop the ability to apply learned concepts in practical situations.  
 Enhance critical thinking and problem-solving skills related to opossums.  
 Deepen knowledge of current issues in opossums.

#### Course Structure: Topic of the week

Mandatory activities Optional assignments (choose min. 4 of these)  
 Week 1: The Phylogeny of Opossums Complete: How opossums are related to others (quiz)  
 Mindmap of opossum phylogeny Phylogenetic tree drawing  
 Week 2: Opossums in Our Society Read: Pre-reading before lecture Read: Introduce yourself with the fascinating world of opossums (book) Submit: Me and my opossum (assignment)

#### The story of Opossum King

Week 3: Opossums as Friends Complete: Test your knowledge: Opossums as Friends (quiz) Create a post and comment one: Forum: Opossums as Friends (forum) Providing enrichment to opossum friends  
 Create House Rules for Opossum park Week 4: Taking care of Opossums Read: The basic biology and welfare requirements of opossums (book)  
 The daily routines If opossums had restaurants - Opossum dietary

#### Dear students,

Welcome. The course starts January 15th. Remember, January 15th.

On February 3rd, the first assignment is due. Don't forget that. It's important. **March 10th is the midterm exam.** Make sure you're ready for it. It's on March 10th.

Group project submissions are April 20th. That's another important date. April 20th. The final exam is June 1st. June 1st. Mark it in your calendar. Don't miss any of these dates. They're all important. Keep track of them. **Check the course page for updates.** It's important to stay informed. Thank you.

#### Recommended Literature:

- [Main Book on Subject Area]
- [Additional Reading 1]
- [Additional Reading 2]

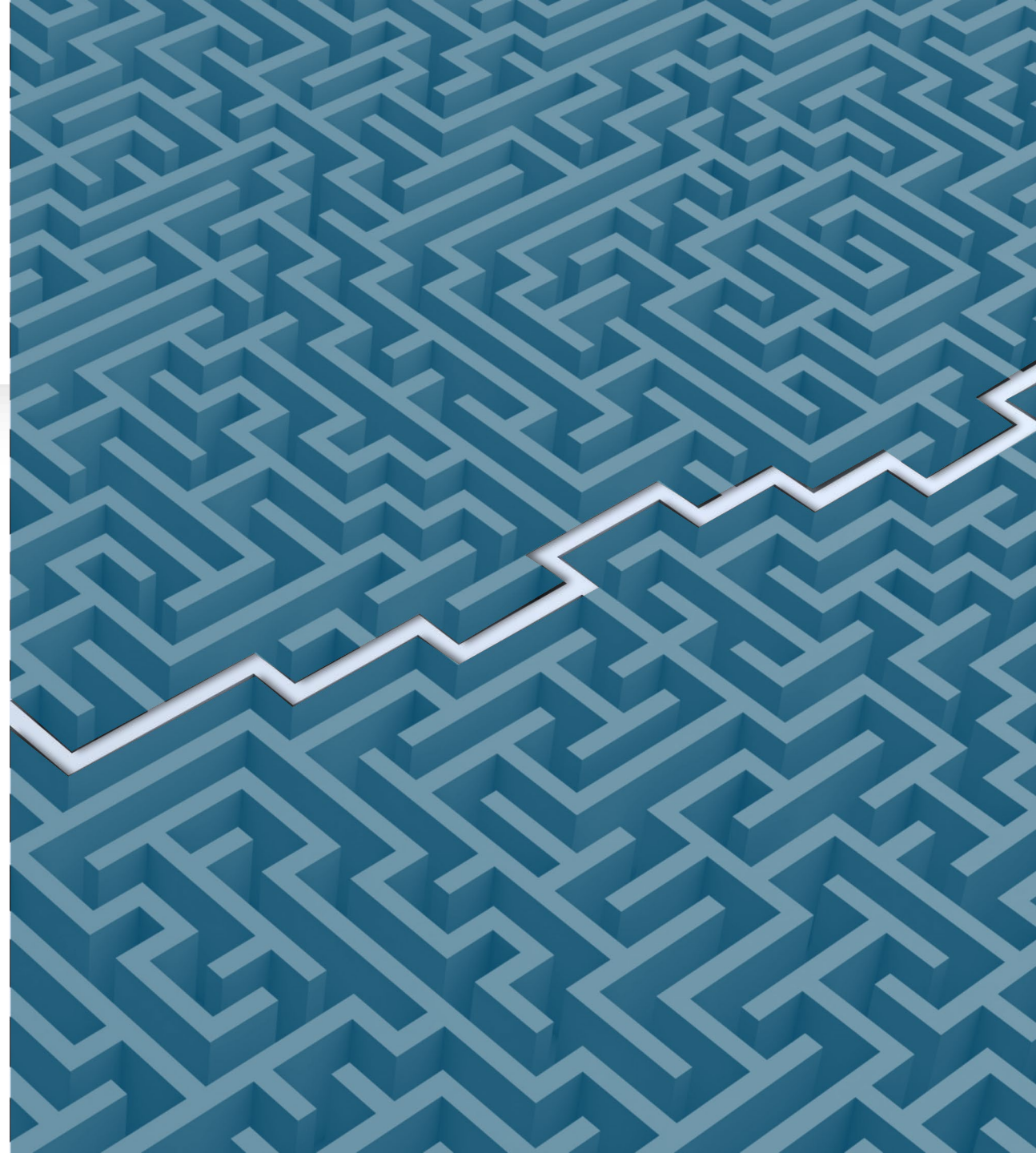
#### Student Responsibilities:

Participate actively in lectures and group discussions.  
 Submit assignments and exercises on time.



# Navigating the maze

- Consistent instructions in relevant context
  - Conditional visibility: learning paths via group choice
- Fixed terminology
  - 'Exam'/'quiz'/'test'...
  - 'Task'/'assignment'/'exercise'...
  - Optional or mandatory?
- Thematic colours and illustration
  - Sense of location and context
- Centralised communication and support



# Case 2: The course is underway

Student  
Implementation B



# Case 2, student Implementation B

## A Fun and Easy-to-Use Example Course



Course Participants Grades More ▾

### Welcome



Announcements



Start here: Information on course completion and assessment

Done: View



Course structure - activities by weeks



You have selected learning diary as your method of assessment. You can modify your selection through the **method selection activity** until June 25, 2024.



General resources

Forum: 1 Group choice: 1 Pages: 2

Progress: 1 / 1



Learning diary

Contact

Responsible teachers:

Sara Lindholm & Ilkka Miettinen

Please prioritize the forum for questions about the course.

Forum

Course info

### Mandatory activities



Progress: 13%

Mouse over or touch bar for info.

### Optional assignments, complete min. 4 of these

NOW



Mouse over or touch bar for info.

Review course activities

### Upcoming events



How opossums are relate...

Friday, 7 June, 11:59 PM



Maintenance break

Wednesday, 12 June, 8:00 AM »

- ×
- Welcome
  - Remember to update...
  - Announcements
  - Start here: Informati...
  - Course structure - ac...
  - You have selected final ...
- General resources
  - General discussion a...
  - Choose your method...
  - Course literature
  - Course structure
- Learning diary
  - Learning diary - instruct...
  - Submit your learning ...
  - Additional tips for creati...
  - Week 1 - The Phylo...
    - Lecture info: Monday 1...
    - Lecture slides: Week 1 - ...
    - Additional reading for W...
    - Mandatory activities of t...
    - How opossums are re...
    - Optional activities of the...
    - Mindmap of opossum...



# Case 2: The course is underway

Teacher  
Implementation B

# Case 2, teacher Implementation B

Page 1 of 1

### Submission

Submitted for grading  
Not graded  
Assignment was submitted 44 days 14 hours late  
Student can edit this submission

+ (46 words)  
Welcome to your journey into the intriguing world of opossums! This course is designed to offer you comprehensive insights ...

Comments (0)

### Grade

Grade out of 42

Current grade in gradebook  
Not graded

### Feedback comments


Rich text editor toolbar with icons for bold, italic, underline, link, unlink, list, indent, outdent, undo, redo, and a text color picker.


Words: 0

### Feedback files

Maximum size for new files: 50 MB

# Toolbox

 **Learning diary**



Not available unless: You belong to **Learning diary** (hidden otherwise)

Review course activities

**Mandatory** Optional

**Week 1: The Phylogeny of Opossums**

**How opossums are related (quiz)**

Mindmap of opossum phylogeny

Phylogenetic tree drawing

Please prioritize the forum for questions about the course.

[Forum](#) [Course info](#)

---

**Mandatory activities**

 Week 1 - The Phyloge...

 Week 2 - Opossum in...

 Week 3 - Opossums a...

 Week 4 - Taking care ...

Lecture info: Tuesday 26.4...

Lecture slides: Week 4 - T...



Accepted file types

PDF document .pdf

> Feedback types

**> Submission settings**

> Group submission settings

> Notifications

> Grade

•Group choice  
→ restrict  
access

•Collapsible  
information  
(H5P/Bootstrap)

•Links to  
support forum  
and instructions  
always  
available  
(HTML block)

•Section  
illustration,  
icons, and  
emojis

•Careful choice  
of *Assignment*  
settings



# Case 3: The course is ending

Student  
Implementation A



# Case 3, student Implementation A

# Case 3: The course is ending

Teacher  
Implementation A



# Case 3, teacher Implementation A

## A Sad and Dull Example Course

Course Settings Participants Grades Reports More

- Welcome
  - Announcements
  - Course Name: Introduct...
- WEEK 1 (The Phylogen...
  - Separate File
  - Return your assignment...
  - Evolution (WEEK 1)
  - Opossum playground a...
  - Opossums and other m...
    - Course discussion (us...
  - Lecture (copy) (copy) (co...
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- Basic information
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  - Important steps of evol...
  - Individual assignment S...
- Glossary
  - Lecture.pdf
  - Note! YOUR ATTENDAN...
  - 270324\_Didelphis virgin...

### Welcome

Collapse all



Course Name: introduction to Opossums

#### Learning Objectives:

Understand the fundamental concepts and theories of opossums.  
 Develop the ability to apply learned concepts in practical situations.  
 Enhance critical thinking and problem-solving skills related to opossums  
 Deepen knowledge of current issues in opossums.

#### Course Structure:Topic of the week

Mandatory activities Optional assignments (choose min. 4 of these) Week 1: The Phylogeny of Opossums Complete: How opossums are related to others (quiz)  
 Mindmap of opossum phylogeny Phylogenetic tree drawing  
 Week 2: Opossums in Our Society Read: Pre-reading before lecture Read: Introduce yourself with the fascinating world of opossums (book) Submit: Me and my opossum (assignment)

#### The story of Opossum King

Week 3: Opossums as Friends Complete: Test your knowledge: Opossums as Friends (quiz) Create a post and comment one: Forum: Opossums as Friends (forum) Providing enrichment to opossum friends  
 Create House Rules for Opossum park Week 4: Taking care of Opossums Read: The basic biology and welfare requirements of opossums (book)  
 The daily routines If opossums had restaurants - Opossum dietary

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#### Recommended Literature:

- [Main Book on Subject Area]
- [Additional Reading 1]
- [Additional Reading 2]

#### Student Responsibilities:

Participate actively in lectures and group discussions.  
 Submit assignments and exercises on time.



# Wrapping it up

## Track

Make ample use of completion progress tools.

- Separate blocks for mandatory and optional assignments, weeks, etc.

## Annotate

Be helpful to future you and other instructors.

- Teacher-only guides and update notes

## Arrange

Design the gradebook mindfully.

- Descriptive categories, managed visibility
- Methods and formulae documented in teacher notes

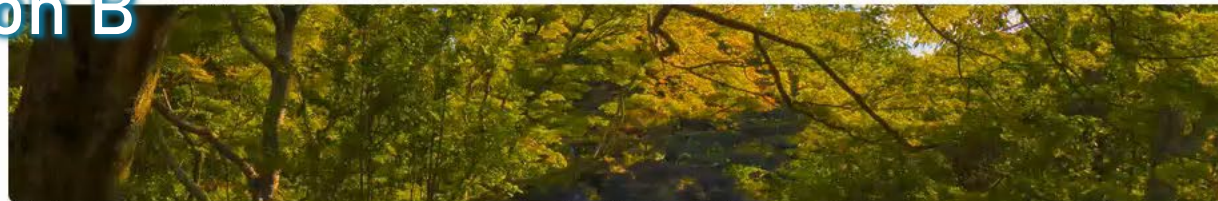
# Case 3: The course is ending

Student  
Implementation B



# Case 3, student Implementation B

## A Fun and Easy-to-Use Example Course



Course Participants Grades More ▾

### Welcome



Announcements



Start here: Information on course completion and assessment

Done: View



Course structure - activities by weeks



You have selected learning diary as your method of assessment. You can modify your selection through the **method selection activity** until June 25, 2024.



General resources

Forum: 1 Group choice: 1 Pages: 2

Progress: 1 / 1



Learning diary

Contact

Responsible teachers:

Sara Lindholm & Ilkka Miettinen

Please prioritize the forum for questions about the course.

Forum

Course info

### Mandatory activities



Progress: 100%

Mouse over or touch bar for info.

### Optional assignments, complete min. 4 of these

NOW



Mouse over or touch bar for info.

Review course activities

### Upcoming events



Maintenance break

Wednesday, 12 June, 8:00 AM »  
10:00 AM

Go to calendar...

×

Welcome

Remember to update L...

Announcements

Start here: Informati...

Course structure - ac...

You have selected final ...

General resources

General discussion a...

Choose your method...

Course literature

Course structure

Learning diary

Learning diary - instruct...

Submit your learning ...

Additional tips for creati...

Week 1 - The Phylo...

Lecture info: Monday 1...

Lecture slides: Week 1 - ...

Additional reading for W...

Mandatory activities of t...

How opossums are re...

Optional activities of the...

Mindmap of opossum...



# Case 3: The course is ending

Teacher  
Implementation B



# Case 3, teacher Implementation B

## A Fun and Easy-to-Use Example Course



Course Settings Participants Grades Reports More

### Welcome

Announcements

Start here: Information on course completion and assessment Done: View

Course structure - activities by weeks

You have selected learning diary as your method of assessment. You can modify your selection through the **method selection activity** until June 25, 2024.

Not available unless: You belong to any group (hidden otherwise)

You have not selected your preferred method of final assessment. Please make your selection using the **method selection activity** until June 25, 2024.

Not available unless: You do not belong to any group (hidden otherwise)

### General resources

Forum: 1 Group choice: 1 Pages: 2 Progress: 1 / 1

#### Contact

Responsible teachers:  
Sara Lindholm & Ilkka Miettinen

Please prioritize the forum for questions about the course.  
[Forum](#) [Course info](#)

Teacher shortcuts:  
[Teacher's notes](#) [Grading](#)

#### Mandatory activities

Progress: 30%  
Mouse over or touch bar for info.  
[Overview of students](#)

#### Optional assignments, complete min. 4 of these

**NOW**  
 Mouse over or touch bar for info.  
[Overview of students](#)

[Review course activities](#)

#### Upcoming events

- Final examination avaut...**  
Monday, 3 June, 9:00 AM
- Final examination sulke...**  
Monday, 3 June, 2:00 PM
- How opossums are relat...**

- Welcome
- Remember to update th...
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- Additional reading for ...
- Mandatory activities of t...
- How opossums are re...
- Optional activities of th...
- Mindmap of opossum...
- Phylogenetic tree dra...

# Toolbox

**Mandatory activities**

Progress: 100%

Me and my opossum (mandatory)  
Completed ✓

**Optional assignments, complete min. 4 of these**

**NOW**

The daily routines (optional)  
Not completed ✗

**Course total** 40.0

**Mandatory assignments total**

- How opossums are related to others? (mandatory)
- Test your knowledge: Opossums as Friends (mandatory)
- Me and my opossum (mandatory)

**Optional assignments total** 30.0

- Mindmap of opossum phylogeny (optional)
- Create House Rules for Opossum park (optional)
- Phylogenetic tree drawing (optional)

Please prioritize the forum for questions about the course.

[Forum](#) [Course info](#)

**Teacher shortcuts:**

[Teacher's notes](#) [Grading](#)

**Teacher's lounge** Hidden from students

- Notes and updates  
Hidden from students
- Course background and development history  
Hidden from students

• Distinct completion progress blocks

• Gradebook categories

• Role-specific shortcuts (FilterCodes)

• Teacher-specific housekeeping resources

# Conclusions

- **Having made the effort:**
  - You receive less email from confused students.
  - It is easier for you and your students to keep up with course progress.
  - The decreased extraneous cognitive load leaves more bandwidth for learning and teaching.