



Empirical Research Methods I

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Tutors: Heidi & Mamun



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Before we start

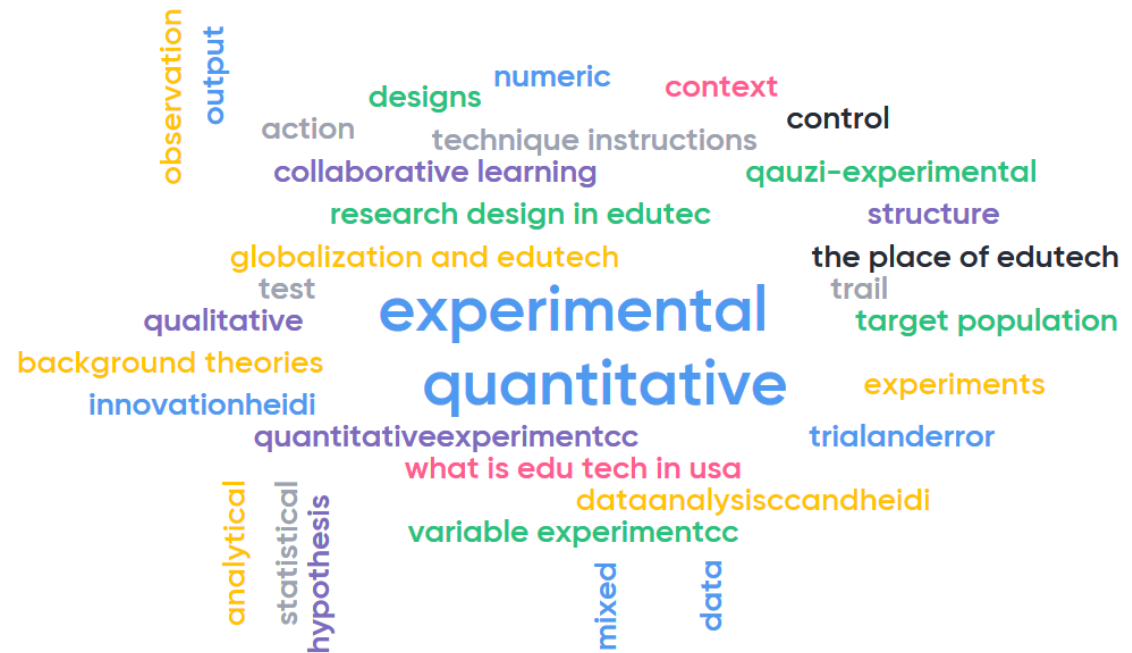
- ◇ You will get a copy of this presentation in the moodle
- ◇ For any question during the presentation write it in the chat. There will be a moment for questions at the end of the presentation

Today's agenda

- ◇ 1.1: Introduction, organisation
- ◇ 1.2: Basic concepts

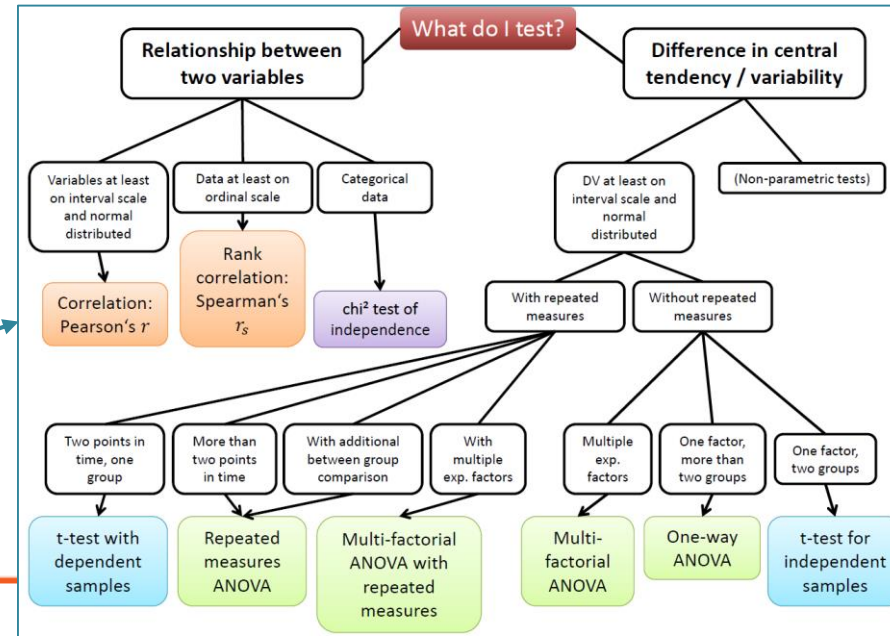
Let's brainstorm

What are research methods in the context of educational technology?



Empirical Research Methods I

- ◇ Important to understand and conduct scientific work
- ◇ Contents:
 - ◇ Empirical work, scientific experiments, important concepts
 - ◇ Experiment design
 - ◇ Quality criteria
 - ◇ Scientific publications
 - ◇ Questionnaires
 - ◇ Qualitative and quantitative methods
 - ◇ SPSS: Introduction und data input / import
 - ◇ Descriptive statistics
 - ◇ Correlation, χ^2
 - ◇ ANOVA and t-tests



What do I test?

Relationship between two variables

Difference in central tendency / variability

Variables at least on interval scale and normal distributed

Correlation: Pearson's r

Data at least on ordinal scale

Rank correlation: Spearman's r_s

Categorical data

chi² test of independence

DV at least on interval scale and normal distributed

(Non-parametric tests)

With repeated measures

Without repeated measures

Two points in time, one group

t-test with dependent samples

More than two points in time

Repeated measures ANOVA

With additional between group comparison

Multi-factorial ANOVA with repeated measures

With multiple exp. factors

Multiple exp. factors

Multi-factorial ANOVA

One factor, more than two groups

One-way ANOVA

One factor, two groups

t-test for independent samples

Platforms

- ◇ Moodle
- ◇ MS Teams
- ◇ Among others...

Moodle

The screenshot shows a Moodle course page in a browser window. The browser's address bar displays the URL `lms.sulb.uni-saarland.de/moodle/course/view.php?id=1824`. The page header includes the logo of the University of Saarland and the course title "Empirical Research Methods I". A search bar is located in the top right corner. Below the header, there is a navigation menu with options like Home, Dashboard, Events, My Courses, This course, and Hilfe & Kontakt. The main content area is titled "My courses > Empirical Research Methods I" and features a "Your progress" indicator. The course overview section, titled "About the Empirical Research Methods I (ERM1)", provides introductory text and details about the course structure. The structure is listed as follows:

- Topic of the week presentations:
 - Every week, one (or several) course participants will give a short presentation on the [topic of the week](#). Your presentation should not last longer than 20 minutes.
 - An overview on the most important aspects of each [topic of the week](#) you should include can be found in the file "ERM1 Overview of Weekly Presentation Topics" located on this page.
 - The [topic of the week](#) presentation will be discussed beforehand with your tutors. Please send your presentation two weeks before the seminar to the tutors, and they will give you feedback and the chance to revise the presentation. A revised version needs to be sent to the tutors one week before presentation. For some presentations, these 1 and 2 week deadlines will be reduced.

A right-hand navigation sidebar is visible, containing a "Navigation" section with links to Dashboard, Site home, Site pages, My courses (with sub-links for Tutorin + Supervision 20/21, ERM I, Tutor Training SoSe 20, Empirical Research Methods II, and Empirical Research M...), Empirical Research Methods I (with sub-links for Participants, Badges, Competencies, Grades, General, Course Overview, and a numbered list of topics), and other site-wide navigation options.

MS Teams

The screenshot displays the Microsoft Teams interface. On the left is a dark navigation pane with icons for Activity, Chat, Calls, Teams, Assignments, Calendar, Files, UoS Config, Apps, and Help. The main area shows a team chat for 'Empirical Research Methods 1 WiSe 20-21'. The chat header includes a search bar, a search icon, and a user profile. Below the header, there are tabs for 'General', 'Posts', 'Files', 'Class Notebook', and '2 more'. The 'General' tab is active, showing a welcome message: 'Welcome to Empirical Research Methods 1 WiSe 20-21. Choose where you want to start.' Below this are two buttons: 'Upload Class Materials' and 'Find help & training'. The chat history shows two messages from Miguel Angel Rejón Zamudio, each scheduling a meeting. The first message is 'ERM1 - First session (class)' on Tuesday, November 3, 2020 @ 10:00 AM, with a 'Meeting ended: 14s' status. The second message is 'ERM1 - First session (tutorial)' on Wednesday, November 4, 2020 @ 10:00 AM, with a 'Meeting ended: 15m 27s' status. At the bottom of the chat is a 'New conversation' button.

Why is this course important?

- ◇ Intro to the empirical aspects of Edutech (both the field and the master)
- ◇ Relates to ERM2 (instruments and experimental design) and ERM3 (content analysis)
- ◇ Relates to your Master's Thesis!

Expectations

- ◇ Gain a foundation about: research, statistics, and how science and Educational Technology come together
- ◇ Learn from me, from your tutors, from your fellow students. I don't know everything! There's always something to learn from anyone
- ◇ Come up with questions, share resources and other media
- ◇ Start to develop a critical eye of how science happens on different contexts: academia, private sector, daily life...
- ◇ Start to see daily life from an educational science researcher

Challenges → Solutions

1. Course fully online → Use of Moodle and Teams. Learning never stops!
 2. Less sessions + same content = more stress
→ Availability of course resources since first session; continuous support
- ◇ In-person sessions? Depends on the situation. Could be arranged

Course structure

Individually preparing
the topic of the week
with the online
resources

Presentations about
the topic of the week

Individually
completing of
exercise sheets

Further information are also to be found in the Moodle of the course.

Individually preparing the topic of the week with the online resources

- ◇ You will find resources (a.k.a. the “online resources”) that help you prepare for the seminar in the Moodle
- ◇ Work through them before the seminar
- ◇ If there are questions, we can discuss them in class
 - If you send me the questions early enough, I can prepare additional materials / slides for class

Presentations about the topic of the week

- ◇ Every week, one (or several) participants will give a short presentation on the topic of the week (max. 20 minutes)
- ◇ A file with an overview on the most important aspects you should include can be found in the course moodle. Course Overview > File: “Overview of Weekly Presentation Topics”
- ◇ The presentation will be checked beforehand by the tutor
 - ◇ Send your draft to the tutor in advance, usually two weeks before the seminar session (see exceptions)
 - Feedback und potentially revisions
- ◇ Revision is due one week before the seminar session

→ This is an exam requirement!

Individual completion of exercise sheets





- ◇ Exercise sheets (to be found in course moodle) need to be completed individually
 - ◇ Deadline: Monday evening at 11:59 p.m. Click on each submission assignment to view each specific deadline
 - ◇ Submission method: moodle
 - ◇ Submission format: add your last name in square brackets at the beginning of each file you submit. Example: “[Rejon] 2020 - Exercise sheet 1 Introduction, basic concepts.pdf”
 - ◇ Correction by tutors
- **Exam requirement:** In total, at least 50% of the points
- ◇ In the tutorial, you will have the chance to discuss the exercise sheets

Individual completion of exercise sheets

◇ Special cases:

1. Exercise sheet 1: submission until 8pm (today!(Nov 3))
2. Exercise sheets 3.1 and 3.2: two submissions on the same day

3.1 Quality criteria, structure, and content of scientific texts; 3.2 Standardized questionnaires and construction of a new questionnaire

 Topic 3.1 online resources	<input type="checkbox"/>
 Exercise sheet 3.1	<input type="checkbox"/>
<hr/>	
 Topic 3.2 online resources	<input type="checkbox"/>
 Exercise sheet 3.2	<input type="checkbox"/>

Exam

◇ Requirements:

1. Submitting your presentation draft in time (two weeks in advance) and giving the presentation
2. At least 50% of the points in the exercise sheets
3. Registering for the exam in LSF

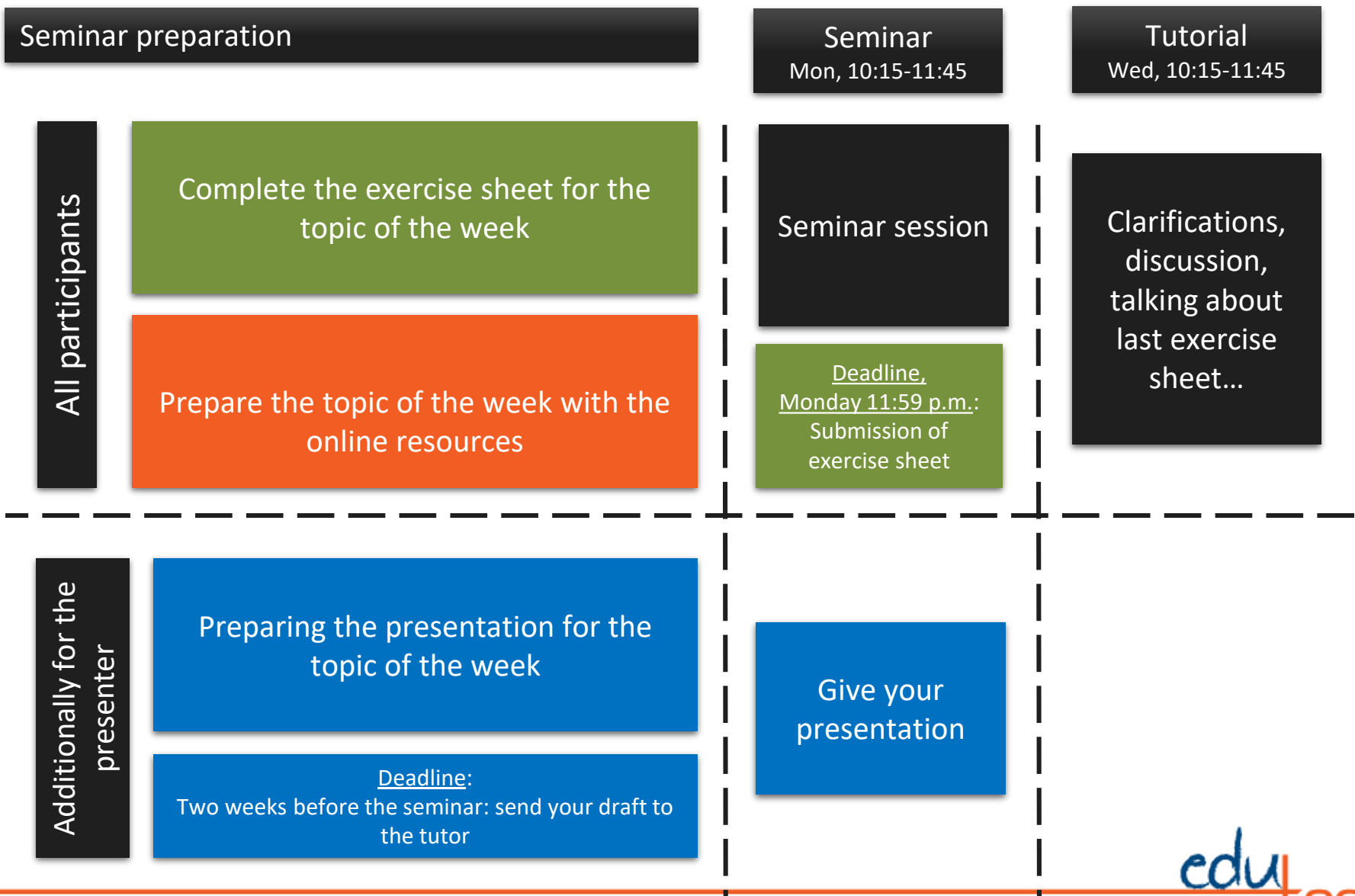
◇ Exam:

- ◇ Pen & paper
- ◇ Graded (1.0 – 4.0)
- ◇ Date: 1st February, 2021

Tutorial

- ◇ Date: Wednesday 10:15-11:45 (starting from Nov 4)
- ◇ Where: Online, in our ERM1 Team (on MS Teams)
- ◇ Discuss exercise sheets
- ◇ Talk about things you did not understand

Overview



This is all nice and cool but...

... I don't think I should be taking this class. I already know this.

If you took stats and research methods courses during your Bachelor's, contact me in private to verify your transcript of records. You may be able to exempt the course but without obtaining the CP of it

List of topics

Open excel and let's assign topics!

People who think they can exempt taking ERM1, still pick a topic.

Questions?

Moodle

Question: Open the Exercise sheet 1 assignment. Can you see the submission deadline?

The screenshot shows a Moodle course page for '1. Introduction, basic concepts'. On the left sidebar, 'Exercise sheet 1' is highlighted with a red box. The main content area shows the assignment details for 'Exercise sheet 1'. It includes instructions to download a .docx file, answer it, and upload it back. It also contains two important notes: 'IMPORTANT: Bear in mind the submission deadline' and 'IMPORTANT 2: To adequately submit the file, you need to click the "Submit" button and accept the submission statement'. Below this, a file named '2020 - Exercise sheet 1 Introduction, basic concepts.docx' is shown as 'Queued'. The 'Submission status' section contains a table with the following information:

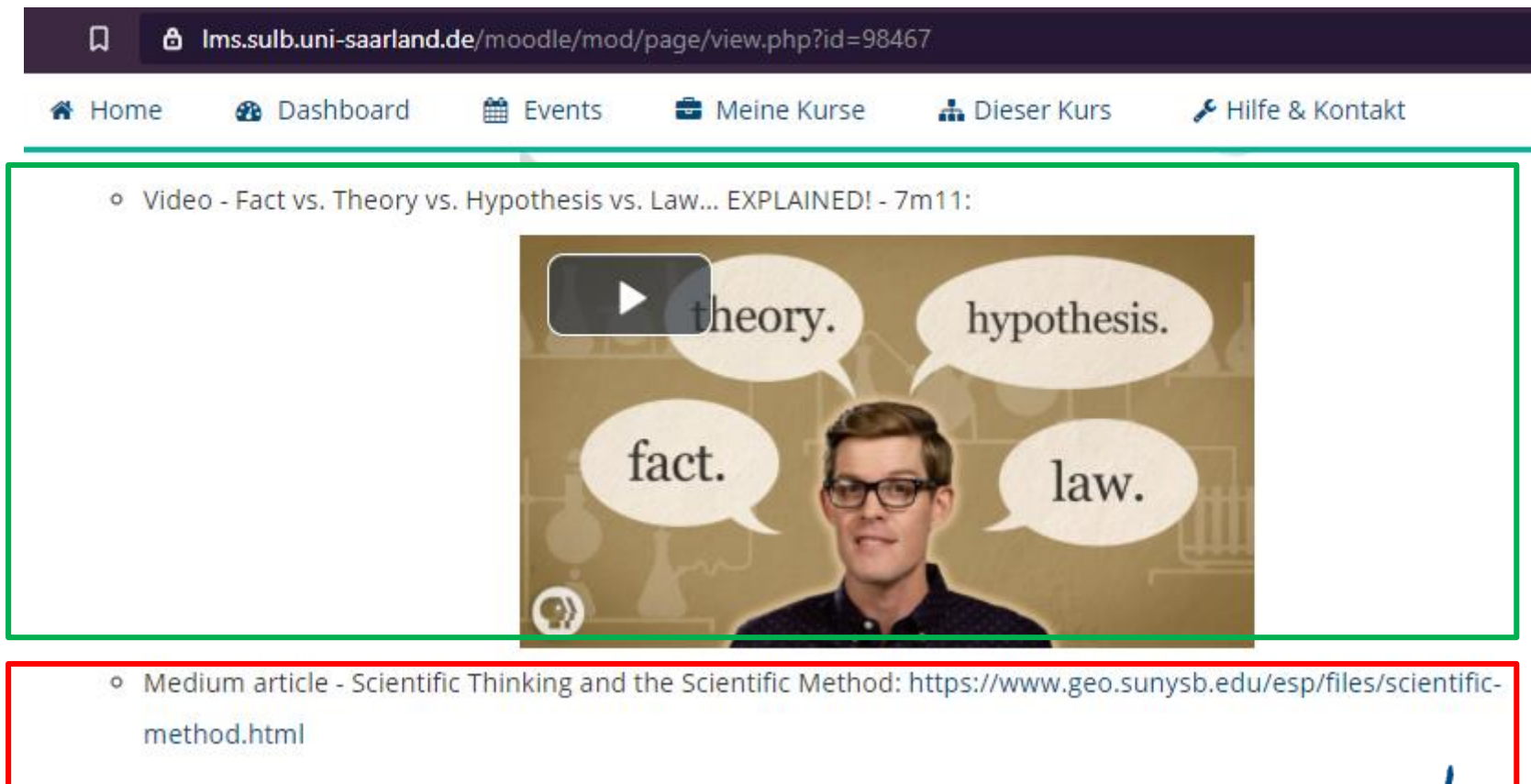
Submission status	No attempt
Grading status	Not graded
Last modified	-

Below the table, there is a link for 'Submission comments' with '(0)' next to it. At the bottom right, there is an 'Add submission' button. A large red question mark is overlaid on the right side of the submission status area, indicating the question about the submission deadline.

Moodle

Visibility issue: Bear in mind the text resources

Accessibility issue: some videos have external play disabled; to solve this you need to open the videos directly on Youtube. All resources should be working



The screenshot shows a Moodle course page with a dark header bar containing the URL `lms.sulb.uni-saarland.de/moodle/mod/page/view.php?id=98467`. Below the header is a navigation menu with icons and labels for Home, Dashboard, Events, Meine Kurse, Dieser Kurs, and Hilfe & Kontakt. The main content area is enclosed in a green border and contains a video resource titled "Video - Fact vs. Theory vs. Hypothesis vs. Law... EXPLAINED! - 7m11:". The video thumbnail features a man with glasses and four speech bubbles containing the words "theory.", "hypothesis.", "fact.", and "law.". Below the video resource, a red border highlights a medium article resource titled "Medium article - Scientific Thinking and the Scientific Method: <https://www.geo.sunysb.edu/esp/files/scientific-method.html>".

Let's move on to the next topic