Inverted classroom instead of pure classroom teaching

The pandemic-related switch to fully online teaching has resulted in many digital teaching materials, including a wealth of video material.

Perhaps you have already asked yourself how you can continue to use your videos and integrate them into your teaching in a didactically valuable way in the future?

The method of choice could be the inverted classroom, for example.

> In this guide, we would like to give you a compact overview of the options you can use for your teaching. Please note that these instructions will be updated regularly.

Overview

> Important notes are marked in yellow.

> Additional information is marked in blue.
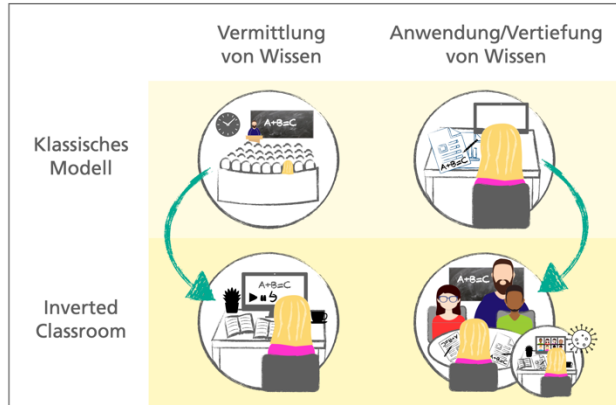
What is an inverted classroom?

Fig.: Comparison of the traditional teaching model at universities and the inverted classroom model

In the *inverted classroom*, the usual activities of the teaching process, such as the synchronous transfer of **knowledge** "inside" the (virtual) lecture hall and the asynchronous consolidation of knowledge, e.g. through homework "outside" the (virtual) lecture hall, are simply **reversed:**

This means the learning content is not taught on site at the university, but students use the **asynchronous phases** to acquire the relevant learning content independently.

The content is made available to students in advance in the form of instructional videos or lecture recordings, written documents, digital media or annotated slides. It is important that the textbooks are well structured and that students are consistently guided through the learning material.

During the **synchronous phases** - whether in person at the university or in virtual form - knowledge is consolidated or deepened.

What **added value** does this model offer in contrast to the traditional approach?

Tab.: Overview of the added value of Inverted Classroom in the various learning phases

	For students	**For teachers**
Asynchronous phase "outside" of the lecture hall	- Self-directed learning - Individual learning pace - Free time management	- Reuse and reprocessing of existing digital teaching materials - Less effort when adapting events
Synchronous phase "within" of the lecture hall	- Intensive exchange of knowledge - Intensive discussion of the course content - Clarification of questions and individual feedback - Promotion of important meta-skills such as discussion, presentation and teamwork	- More time to consolidate content and exercises - Opportunity to specifically address your students' problems - Development and discussion of scientific issues at a different level

How do I reverse my apprenticeship?

Preparing and providing the teaching materials and planning the attendance phases for an inverted classroom format can be quite a challenge. This document offers you suggestions and concrete assistance with implementation.

> You will find a short checklist at the end of this document to help you make a consistent and targeted changeover.

> A collection of helpful instructions for ILIAS and for creating tests and exercises can be found in the chapter "Next steps and help" on page 5.

Preparations for the start of the semester - preparing and structuring materials

First of all, the central questions and learning objectives must be formulated. What should the students be able to do after each session?
Based on these learning objectives, the learning materials are compiled and loaded into your ILIAS course in a structured manner (help under "Next steps and help", p.5). In addition, use your ILIAS space to actively communicate with your students: a welcome letter picks up your students and can clarify initial organizational questions, a forum for getting to know each other and a member gallery or list as well as a place for work instructions and appointment announcements are very valuable for a good workflow (tip: send all announcements by e-mail as well).
Divide your lecture videos into meaningful learning portions and provide suitable questions or task materials on ILIAS. Quiz questions and online tests (see "Next steps and help", p.5) are also suitable for a more intensive examination of the material. Additional material, such as annotated slides, means little effort and a lot of benefit. A good mix of media appeals to all types of learners and thus facilitates the learning process.

> You can find out how to transfer the videos from the last summer semester to the current ILIAS course here: „Transfer bestehender Kurse incl. Ihrer Inhalte"

If you do not yet have any recordings from previous semesters, the instructional videos can also be produced from home oder professionally by the Center for Technology-Enhanced Learning.

> The Center for Technology-Enhanced Learning will be happy to help you with any questions you may have about the inverted classroom. Please contact us at: svenja.geissler@kit.edu, carolin.henken@kit.edu

At the start of the semester - providing orientation

Even if the objectives and content of the course are known to the students from your welcome letter, it is advisable to go over all the points in detail again in your first lesson. Explain that all the necessary materials are available online and show your students which support services will be offered in synchronous phases during the semester to deepen their knowledge of the course content.

But above all, clarify the "how": How do students submit assignments? How can students exchange ideas or ask questions? How are examinations held at the end of the semester? How many ECTS credits can be earned and what do you have to do to earn them? What is the timetable? And most importantly: How will the meetings between lecturers and students take place in the future (MS Teams, Zoom, present...)?

Tips and tricks:

Christian Spannagel, Professor of Mathematics and Mathematics Didactics with a focus on computer science and the implementation of new media at Heidelberg University of Education, has been successfully using the *inverted classroom* method in his teaching for many years.

In the following video, Christian Spannagel explains how to get off to a successful start with students using the inverted classroom method: https://youtu.be/ws3liOeHWBc?t=1598 (26:40 – 28:45)

During the semester - show presence

Use your forum in ILIAS to reach your students, make organizational announcements or give a thematic review and/or outlook on the week/learning unit. Remember to also send new information by e-mail to reach everyone.

Give feedback in the forum or during the online session or encourage discussions. This will encourage interactivity even during the pandemic.

It is important that students are informed about what they should achieve with the learning material at the start of the semester and again and again during the semester. The previously developed guiding questions are important for this.

It is also helpful to link to suitable content and additional information. Students' learning progress can be recorded using quiz questions, self-tests or tests, for example (see "Next steps and help", p. 5).

Even under pandemic conditions, it is possible to solve exercises during synchronous meetings or (with the appropriate equipment) to show experiments and discuss them. Use MS Teams or Zoom and discuss the content, questions or problems in plenary.

Other possible formats are: Open question rounds, Structured brainstorming, Groups or partner work, Active plenary

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Tips and tricks:

Christian Spannagel provides useful tips on the following topics in the upcoming video segments:

How do I get off to a good start in the second week of the *inverted classroom* semester, how do I make sure my students come prepared and what could synchronous phases look like as part of an *inverted classroom* concept?

https://youtu.be/ws3liOeHWBc?t=1727 (28:47 – 35:10)

How can students be encouraged to actively engage with videos?

https://youtu.be/3ddbzXKfTTE?t=355 (5:55 – 7:53)

How can I work with large groups?"

https://youtu.be/Dh84n80g2Bs?t=4

Exam preparation

It is essential that students know what to expect in the (online) exam. Ideally, this should take place after each learning unit. At the end of the semester, what has been learned can be summarized and discussed again. A (guided) question and answer session often proves to be practical here, as students often recognize and close gaps in their knowledge.

Offering virtual office hours can also support students. Both Q&A sessions and consultation hours can be outsourced to the forum in ILIAS if required.

Next steps and help

- You can find out how to create and provide instructional videos here:
  https://www.zml.kit.edu/corona-screenrecording.php
- The use of Zoom is described here:
  https://www.zml.kit.edu/corona-live-vortrag.php
- You can attend a course on creating ILIAS courses here:
  https://ilias.studium.kit.edu/goto.php?target=crs_177107&client_id=produktiv
- Click here for instructions on how to create a course room:
  https://www.zml.kit.edu/downloads/2020_ILIAS_Kurserstellung.pdf
- You can find a guide to the course room settings here:
- https://www.zml.kit.edu/downloads/2020_ILIAS_Kurseinstellungen.pdf
- You can learn how to upload and structure materials in ILIAS here:
- https://www.zml.kit.edu/downloads/2020_ILIAS_Materialien_hochladen.pdf
- This document describes step-by-step how to optimally structure the information in the ILIAS course:
- https://www.zml.kit.edu/downloads/2020_ILIAS_Informationsdistribution.pdf
- Having trouble uploading videos in ILIAS? Find help here:
- https://www.zml.kit.edu/downloads/Anleitung_OpenCastPlugin.pdf
- Learn how to create exercises in ILIAS here:
- https://www.zml.kit.edu/downloads/2020_ILIAS_Uebungen.pdf
- And here, how you can create tests:
- https://www.zml.kit.edu/downloads/2020_ILIAS_Testverfahren_Tests.pdf
- Here is a guide to question types in ILIAS.
- Find the help and support area for ILIAS and on ILIAS here:
- https://ilias.studium.kit.edu/ilias.php?ref_id=52&cmd=render&cmdClass=ilrepositorygui&cmdNode=uk&baseClass=ilRepositoryGUI

Checklist for a successful Inverted Classroom

Preparations for the start of the semester – Structuring content

Clear formulation of learning objectives and key questions of the course
Prepare and structure materials (breaking down into smaller sections? Is there a clear path for students?)
Guide students through self-Learning materials (e.g., with guiding questions, quizzes, practice tasks, etc.)
Build course space in ILIAS and provide materials

The Center for Technology-Enhanced Learning is happy to assist you with the creation and preparation of digital learning material as well as with questions about the inverted classroom. Contact us under: svenja.geissler@kit.edu, carolin.henken@kit.edu

At the start of the semester – providing orientation!

Have you informed your students about the following?

Goals, content and (time) organization of your learning unit
Dates and deadlines
Assessment criteria or evaluations
Communication channels between you and students
Communication channels among students

During the semester – show presence!

Establish a framework for good collaboration (introduction round, member gallery, etc.)
Clarify the course learning objectives for the students
Provide feedback through forums
Promote students` professional exchange
Create space for the application of learned concepts (case studies, practical exercises, student presentations, etc.)
Adress any issues or problems

Possible formats: Open question rounds, structured brainstorming, groups or partner work, active plenum

Exam preparation

Secure the course results with your students
Offer consulation hours for questions

Infos & contact

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