

BIO-479: Immunology - advances and therapeutic implications

2025/09/10

Course Personnel

- Teacher: Prof. Andrea Ablasser (andrea.ablasser@epfl.ch)
- Teaching assistant: Arianna Dorschel (arianna.dorschel@epfl.ch), Tieliang Gan (tieliang.gan@epfl.ch), Federico Rossi (federico.rossi@epfl.ch), Marin Ollagnon (marin.ollagnon@epfl.ch)
- Secretary of Prof. Ablasser: Sonia Marchegiano (sonia.marchegiano@epfl.ch)

Course Goals

- Deepen knowledge into principles of immunology
- Get an insight into the frontiers of immunological research
- Be exposed to new concepts in immunology
- Understand and interpret primary research manuscripts
- Learn and understand up-to-date technologies applicable in life science research

Course outline

The general course elements are as follows:

- Recorded 45-60 min lectures by the teacher
- Learning material composed of selected primary research papers and/or review articles related to the topic of the lecture
- In person exercises, composed of the following elements:
 - Brief recapitulation of corresponding lecture
 - Immunological research case studies
 - Paper presentation by students

Paper presentation by students

The goal is to intensify your knowledge through reading, understanding, and presenting a current research paper related to one of the lectures contents.

Presentation should include a brief introduction, results and conclusions. The introduction should provide some background information, the results part should cover the major results, and the conclusion should summarize the work and add a perspective. Typically, the presentation should be 30 mins.

Students making the effort to present will receive a **bonus for the final exam.**

The paper and topic can be selected by the students or, alternatively, the teacher can provide suggestions.

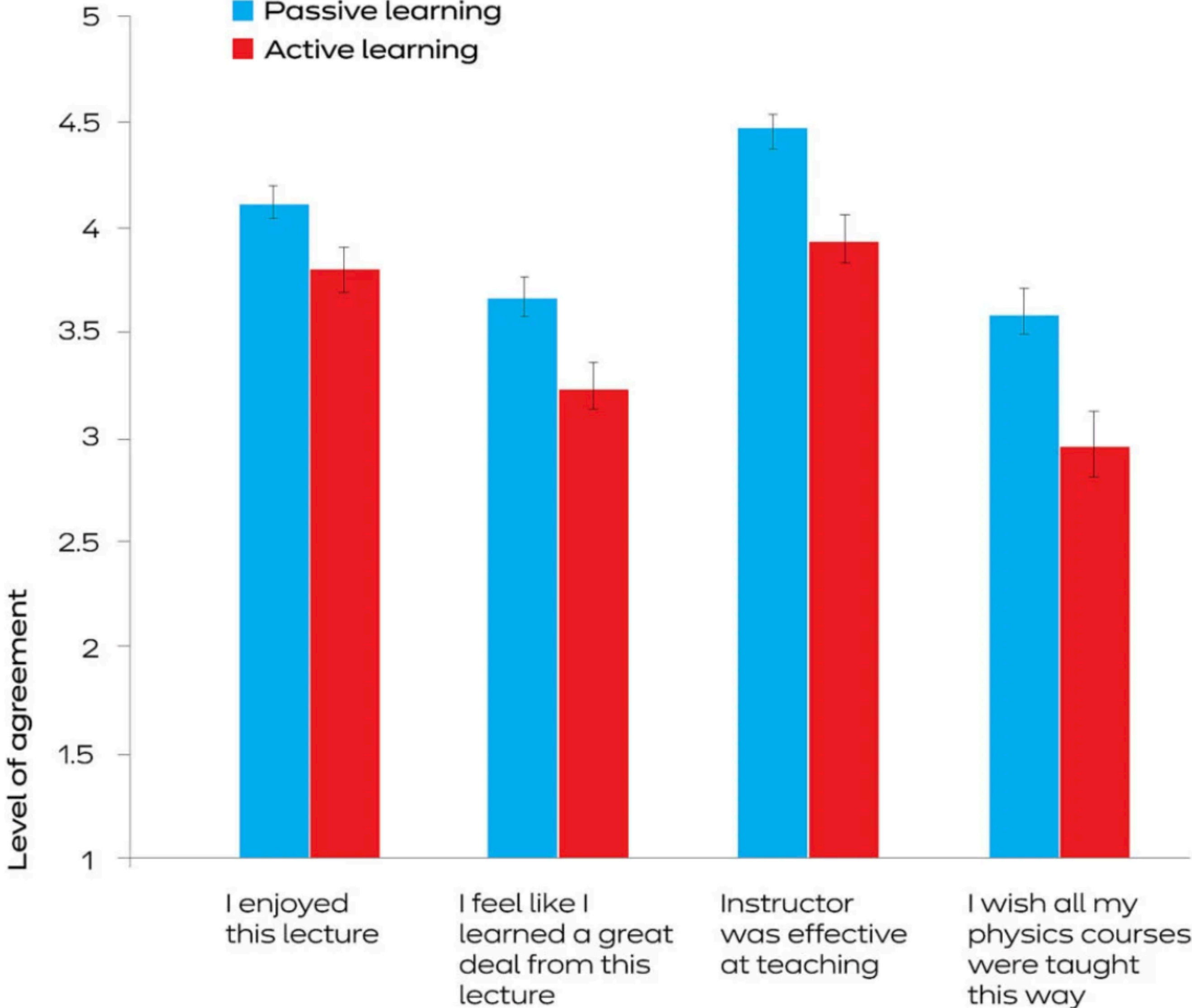
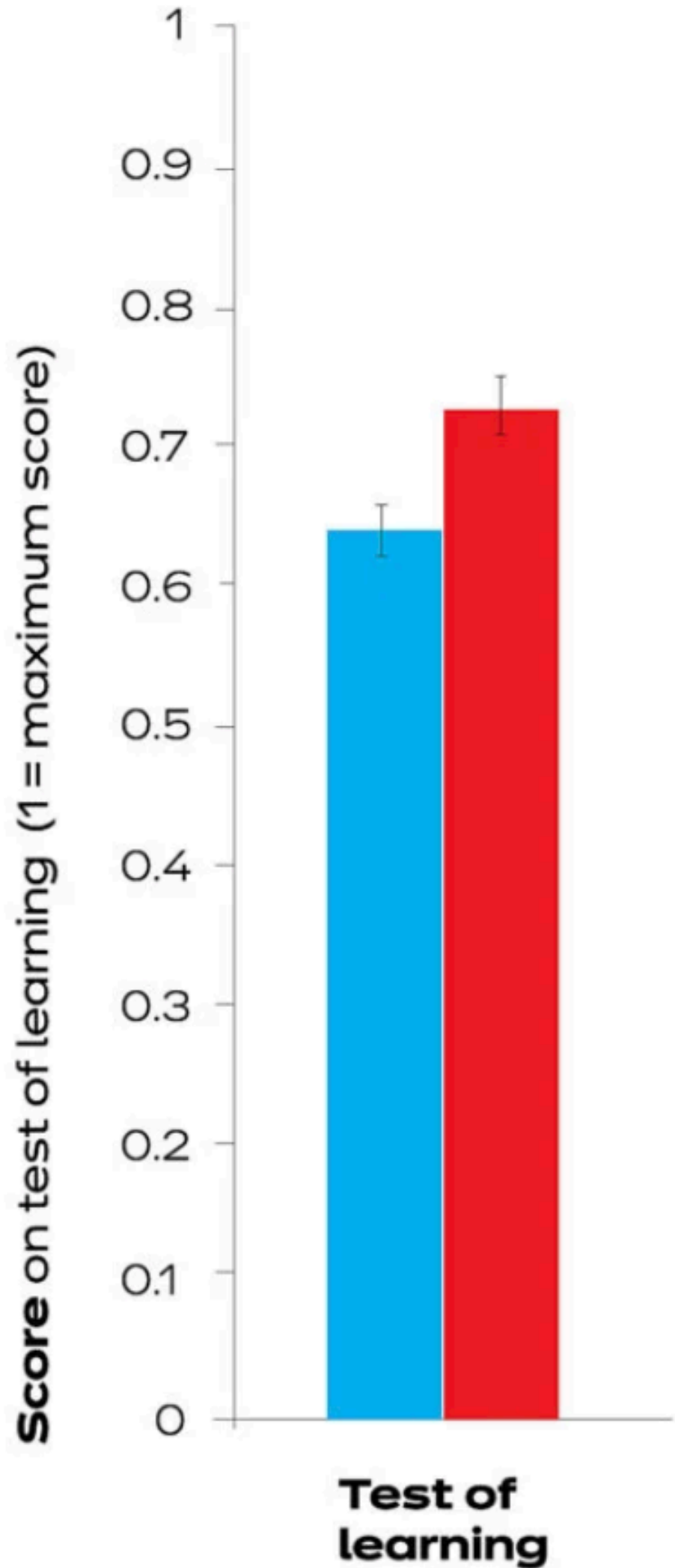
Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom

Louis Deslauriers^{a,1}, Logan S. McCarty^{a,b}, Kelly Miller^c, Kristina Callaghan^a, and Greg Kestin^a

^aDepartment of Physics, Harvard University, Cambridge, MA 02138; ^bDepartment of Chemistry and Chemical Biology, Harvard University, Cambridge, MA 02138; and ^cSchool of Engineering and Applied Sciences, Harvard University, Cambridge, MA 02138

Edited by Kenneth W. Wachter, University of California, Berkeley, CA, and approved August 13, 2019 (received for review December 24, 2018)

Performance vs. perception



Significance

Despite active learning being recognized as a superior method of instruction in the classroom, a major recent survey found that most college STEM instructors still choose traditional teaching methods. This article addresses the long-standing question of **why students and faculty remain resistant to active learning**. Comparing passive lectures with active learning using a randomized experimental approach and identical course materials, we **find that students in the active classroom learn more, but they feel like they learn less**. We show that this negative correlation is caused in part by the increased cognitive effort required during active learning. Faculty who adopt active learning are encouraged to intervene and address this misperception, and we describe a successful example of such an intervention.

Learning material

The basic lectures are based on the following immunology books:

- Janeway`s Immunobiology, Garland Science
- Cellular and Molecular Immunology; Abbas; Elsevier

The slides of the lectures and supplementary material (e.g., manuscripts, reviews, etc.) will be made available on Moodle

Course Exams

- A midterm exam will take place half-way through the course, to offer students the chance to test their knowledge and get familiar with the type of questions that will be part of the final exam. The participation in the midterm exam is not obligatory.
- A written final exam will test the knowledge of the course. Participation and passing is obligatory. The final exam consists of the following parts:
 - Part 1: Multiple choice questions
 - Part 2: Open questions related to the course
 - Part 3: Primary research paper analysis

Course details

DATE	LECTURE TOPIC	Exercise
11/09/2025	Innate Immunity Part I	Course
18/09/2025	Innate Immunity Part II	Student speaker
25/09/2025	Antigen recognition by T cells	Course
02/10/2025	Activation and differentiation of T cells	Student speaker
09/10/2025	Lymphocyte differentiation and signalling	Course
16/10/2025	B cell activation and differentiation	Student speaker
30/10/2025	Antibodies and their effector functions	Course
06/11/2025	Midterm exam	Student speaker
13/11/2025	Immunity to microbes	Course
20/11/2025	Tolerance and autoimmunity	Student speaker
27/11/2025	Tumor immunity	Course
04/12/2025	Transplantation Immunology	Student speaker
11/12/2025	Vaccination	Course
18/12/2025	Q&A session	

Further sources of immunology-related talks

- Global Health Institute Seminar Series (<https://www.epfl.ch/schools/sv/ghi/global-health-institute/ghi-seminars/>)
- https://labs.biology.ucsd.edu/zuniga/global_immunotalks.htm