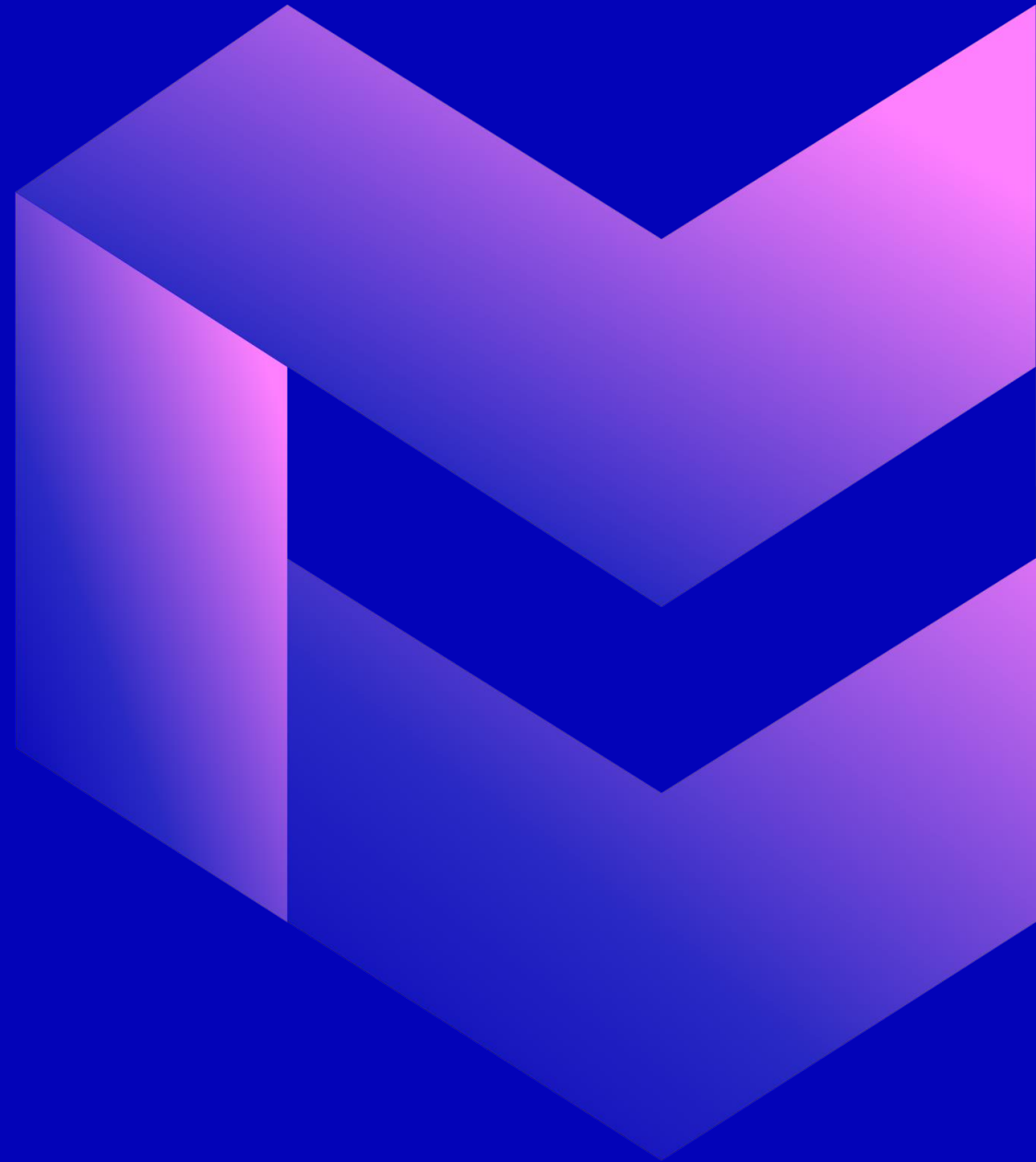


STEM EDUCATION IN FOCUS

Perspectives from schools:
The GEA STEM survey

Jill Meiburg, SVP Group Communications & Brand
GEA Group



Who did we survey?

Nearly 4,500 participating students and teachers from 9 countries worldwide

Survey period

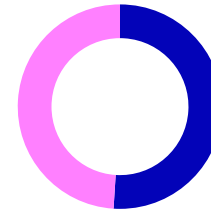
January 2025



4,018 Students

Ages: 13-19 years

49%
female



51%
male

From 9 countries:

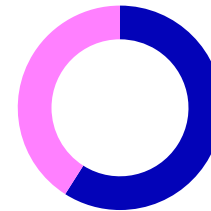
- Brazil
- Denmark
- Finland
- Germany
- India
- Italy
- Japan
- Sweden
- USA

Looking at STEM

- Science
- Technology
- Engineering
- Mathematics

442 Teachers of STEM subjects

41%
female



59%
male

PERCEPTION AND INTEREST

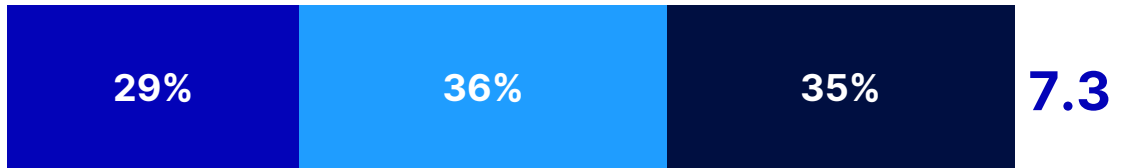
What is the general view of STEM?



How motivated are students for going to school?

Mixed picture: One-third highly motivated, nearly one-third unmotivated

How high is motivation for going to school among students?



7.3



Country ranking:
highest to lowest school motivation

1. India (8.7)
2. USA (8.0)
3. Brazil (7.9)
4. Italy (7.6)
5. Germany (6.8)
6. Finland, Denmark, Sweden (6.5)
7. Japan (5.7)



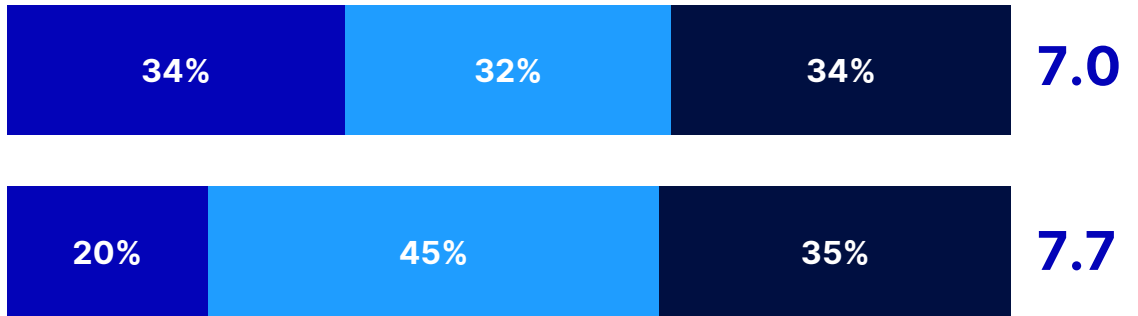
■ Not motivated (0-6) ■ Neutral (7-8) ■ Very motivated (9-10)

How high is interest in STEM subjects?

Teachers slightly overestimate the (diverse) student interest

How interested are students in STEM subjects overall? What do their teachers estimate?

Students



Teachers

■ Not interested (0-6) ■ Neutral (7-8) ■ Very interested (9-10)

Ranking student interest in subjects by ...

... Students

1. Technology
2. Science
3. Mathematics
4. Engineering

... Teachers

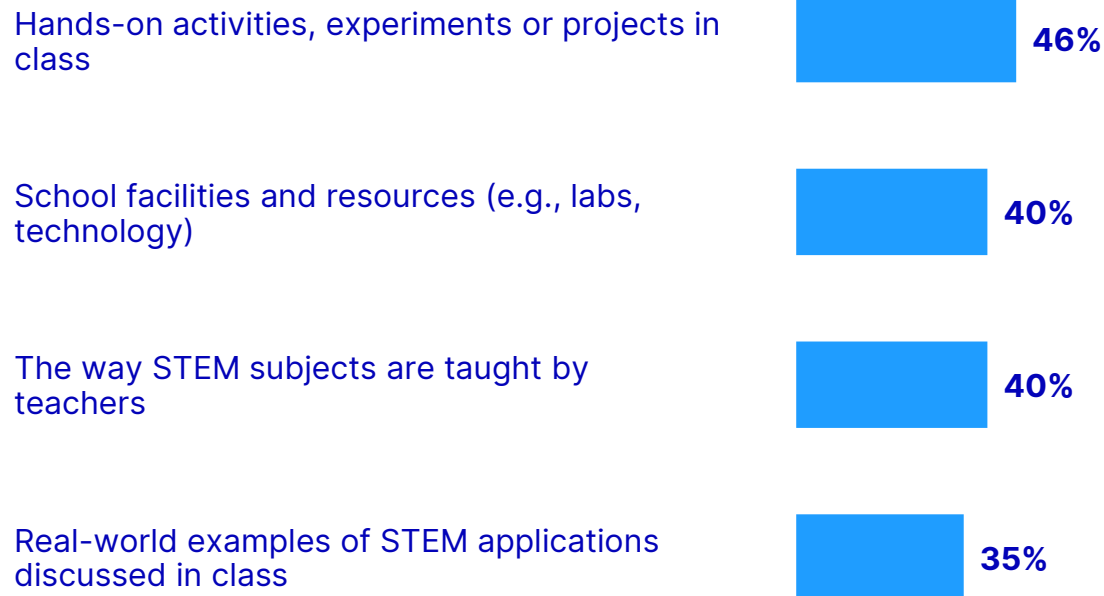
1. Science
2. Technology
3. Mathematics
4. Engineering

How can we increase interest in STEM subjects?

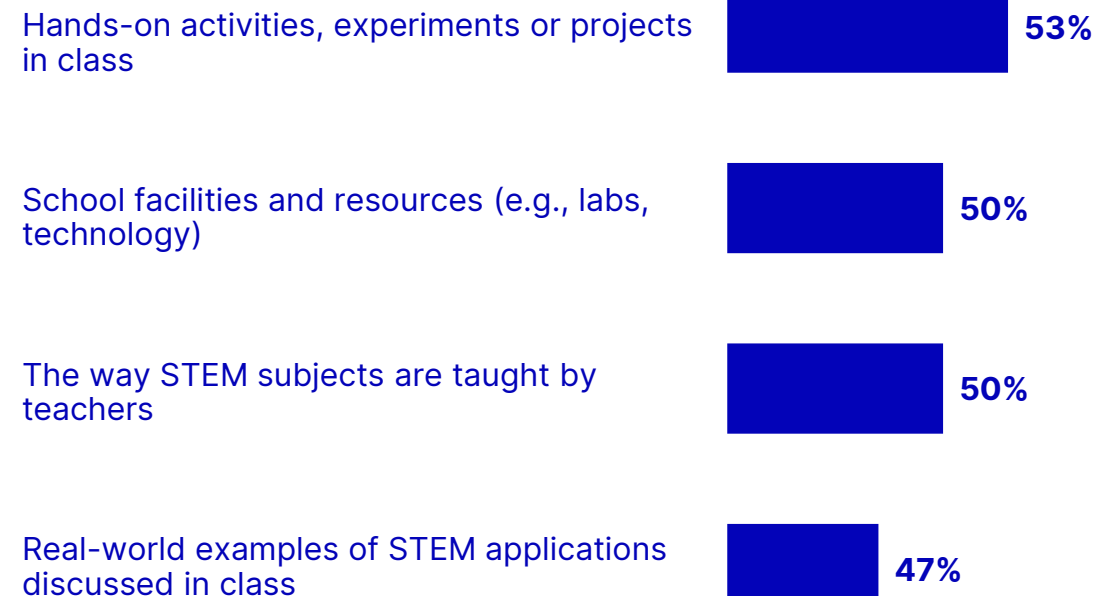
Clear consensus: Hands-on activities, modern facilities and good teachers are important

Top 4 factors as ranked by ...

... Students



... Teachers

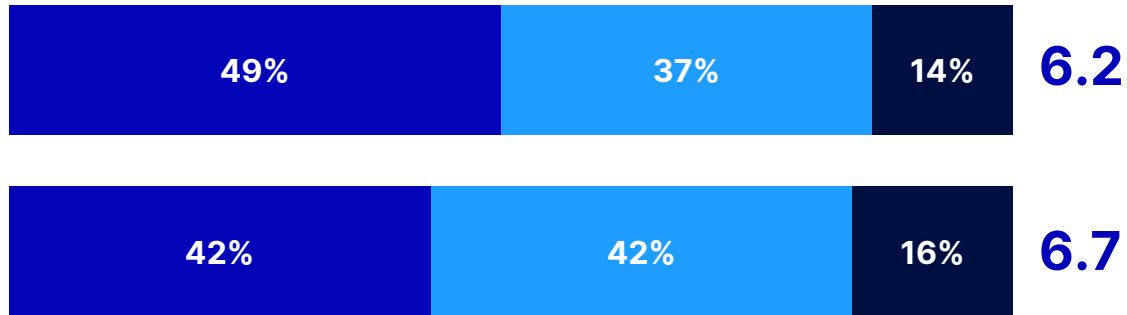


The STEM challenge: Myth or reality?

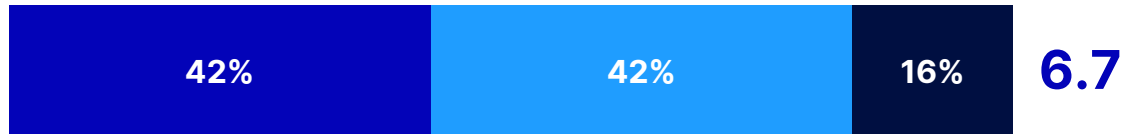
Only 14% find STEM subjects very difficult – math is considered the most demanding subject

How difficult do students find STEM subjects overall?

Students



Teachers



■ Not difficult (0-6) ■ Neutral (7-8) ■ Very difficult (9-10)

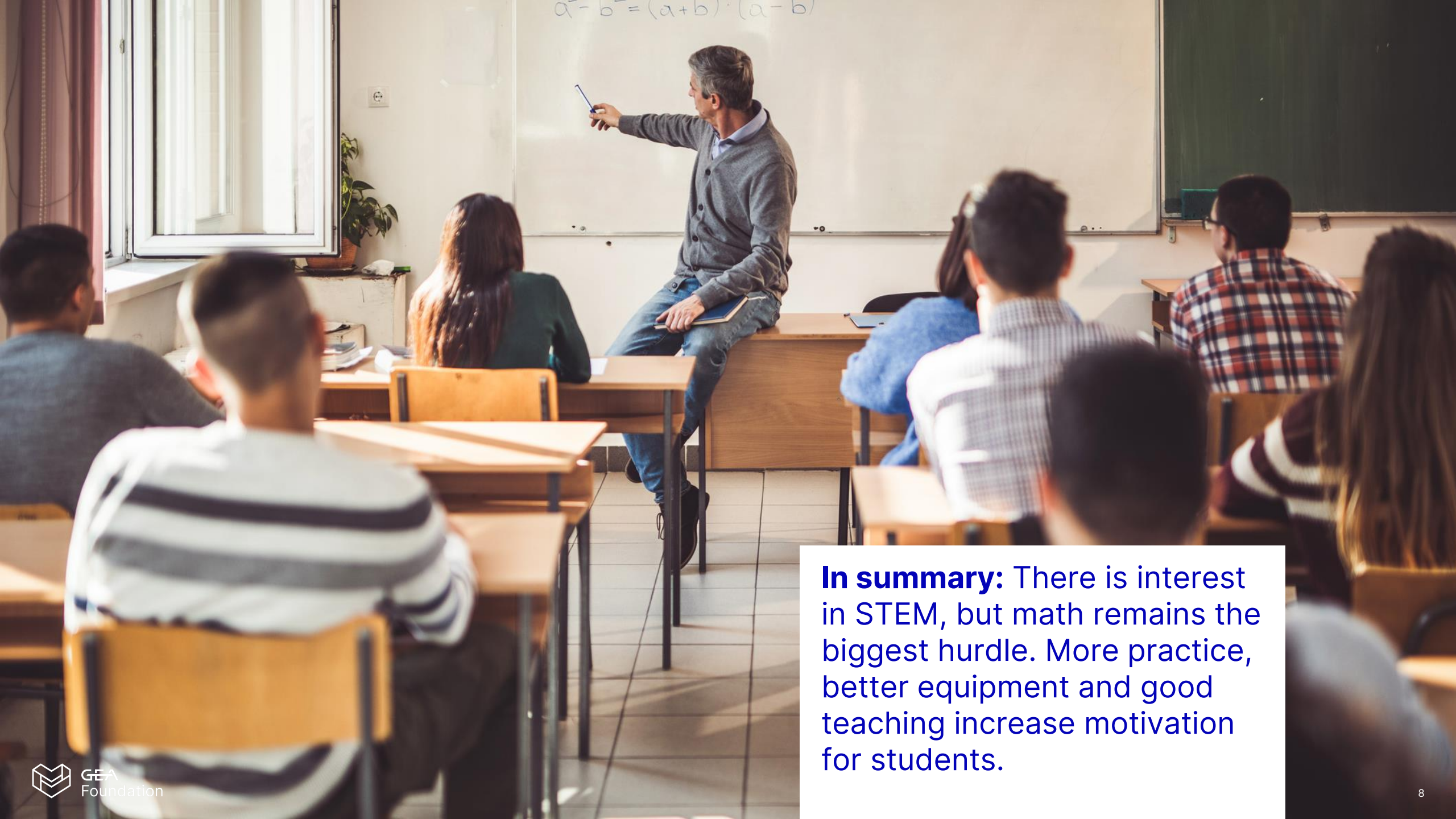
Difficulty of subjects for students ranked by ...

... Students

1. Mathematics
2. Engineering
3. Technology
4. Science

... Teachers

1. Mathematics
2. Science
3. Engineering
4. Technology



In summary: There is interest in STEM, but math remains the biggest hurdle. More practice, better equipment and good teaching increase motivation for students.

STEM IN COMPARISON

How do disciplines like mathematics rank against other subjects?



Popularity of school subjects: What ranks ahead?

STEM subjects come out on top; disagreement only in sports

Ranking student interest in subjects by ...

... Students

1. STEM subjects
2. Languages
3. Sports
4. Social studies
5. Art²

... Teachers

1. Sports
2. STEM subjects
3. Art
4. Languages
5. Social studies

Popularity of STEM by country

Group 1: STEM as top choice³

Brazil, India, USA

Group 2: STEM as 2nd choice:

Italy

Group 3: STEM in place 4/5:

Germany, Finland, Denmark, Sweden, Japan



¹ Social studies / history / geography | ² Artistic subjects such as music, painting or theater

³ Rank 1 = STEM is the most popular subject in the country from a student perspective

How do STEM careers compare?

Three top scores: STEM leads in terms of prestige, salary and social impact

Classification of the various school subjects in terms of ...

Prestige

Students	Teachers
1. STEM	1. STEM
2. Languages	2. Sports
3. Social studies	3. Languages
4. Sports	4. Social studies
5. Art	5. Art

Salary

Students	Teachers
1. STEM	1. STEM
2. Languages	2. Sports
3. Sports	3. Languages
4. Social studies	4. Social studies
5. Art	5. Art

Social impact

Students	Teachers
1. STEM	1. STEM
2. Social studies	2. Social studies
3. Languages	3. Languages
4. Art	4. Art
5. Sports	5. Sports



In summary: STEM subjects are the most popular. From the students' perspective, STEM jobs promise a high reputation, good income and added social value.

BARRIERS AND MOTIVATORS

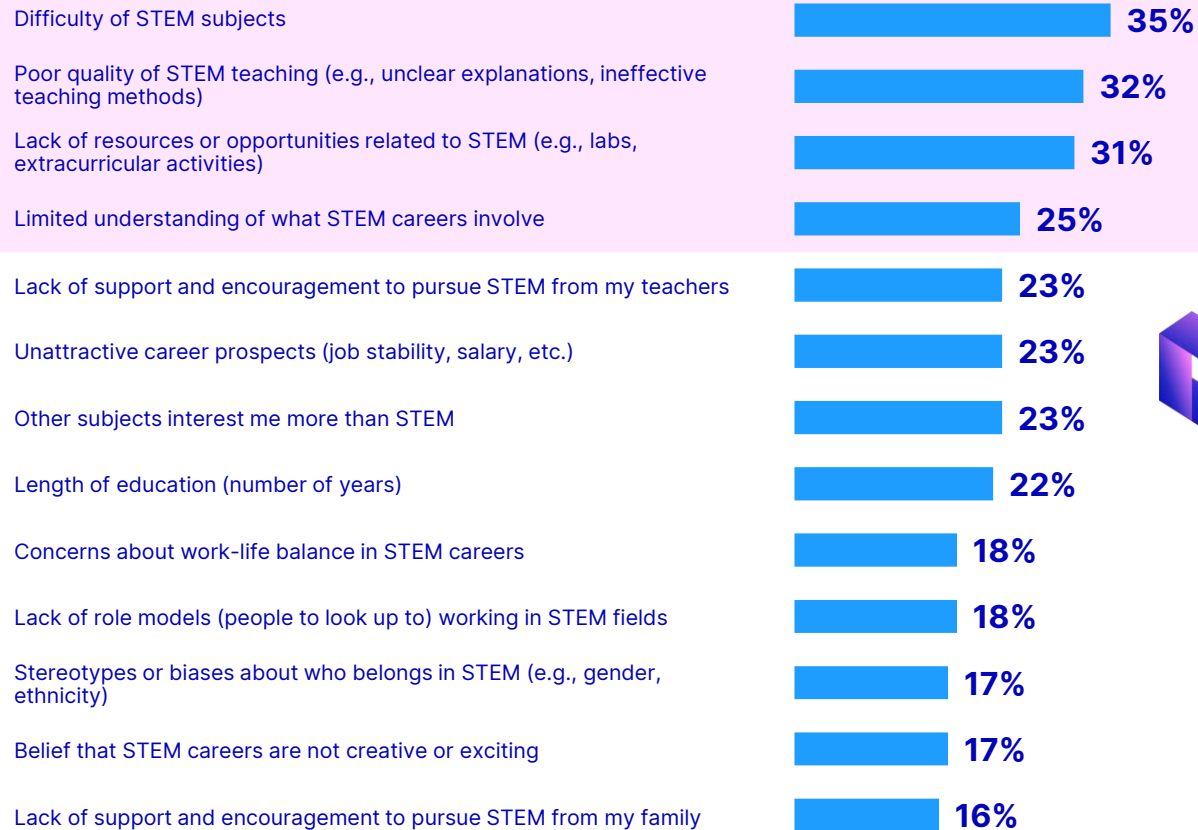
How can STEM education be strengthened?



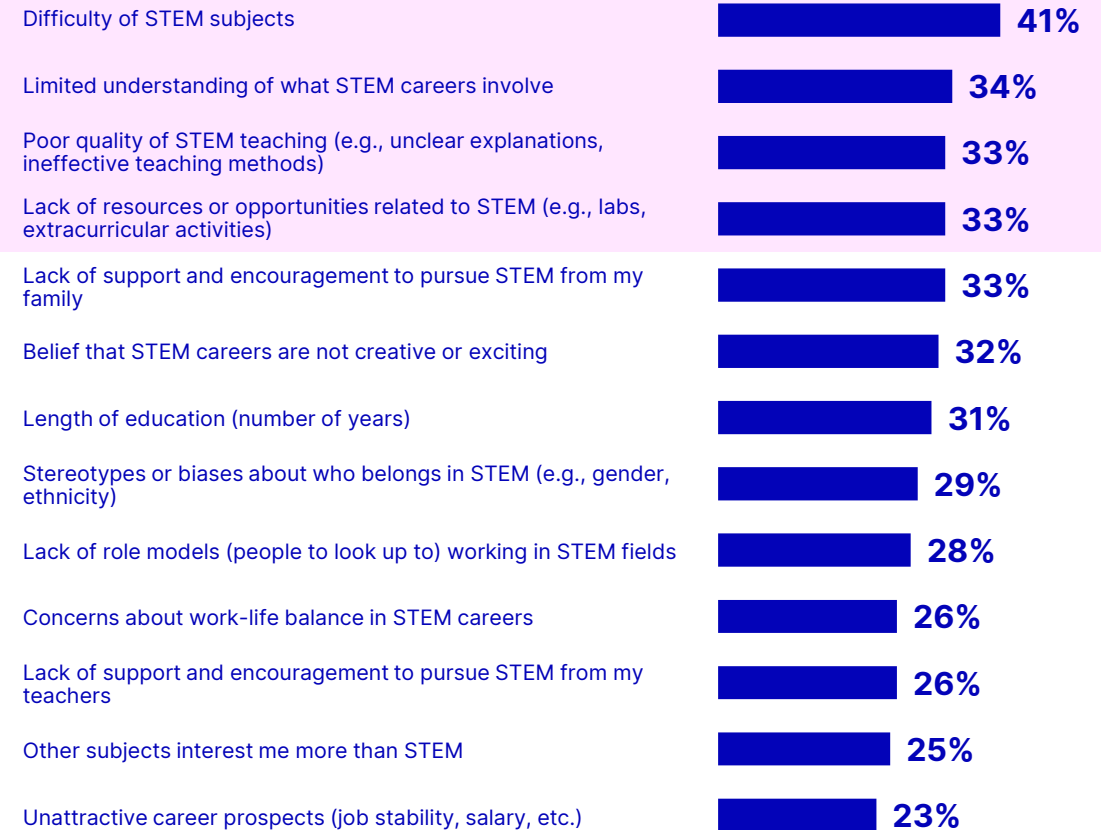
What keeps students from choosing STEM (studies/job)?

Main difficulties: Technical complexity, lack of resources/info and teaching quality

What do students see as the biggest obstacles?



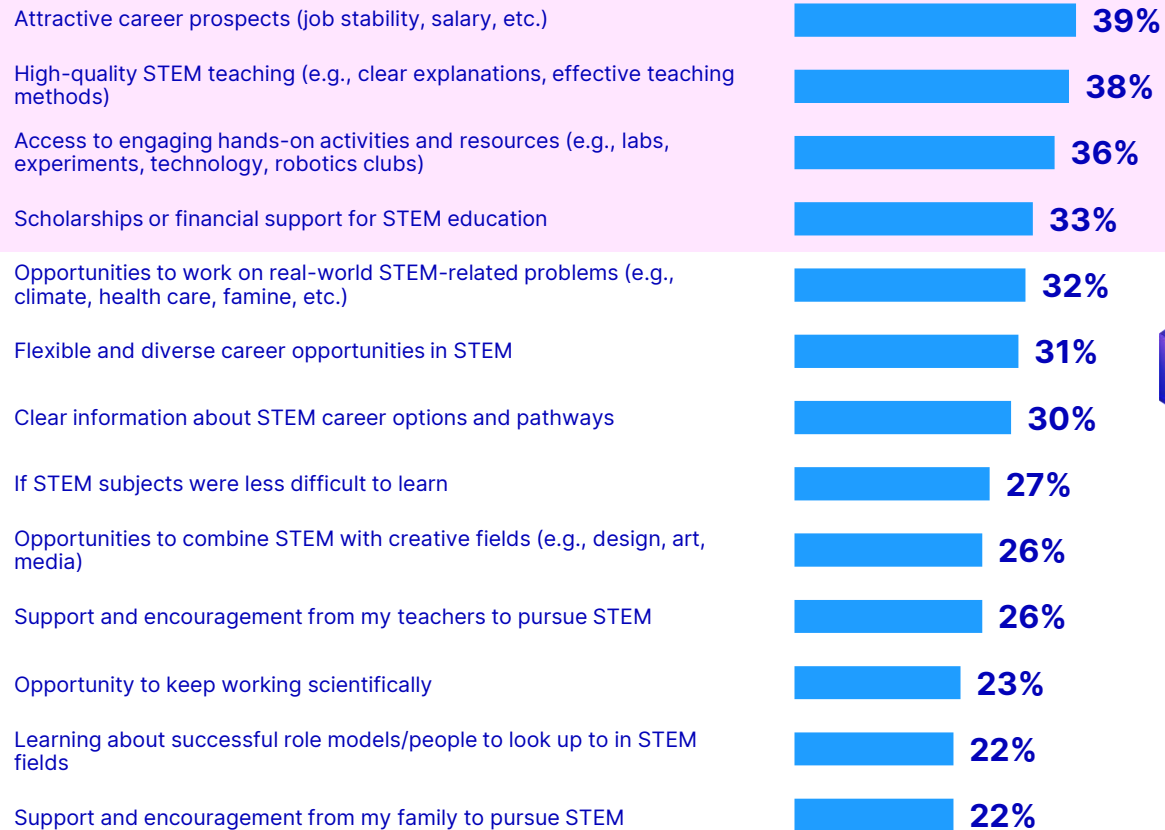
What do teachers see as hurdles for students?



What factors encourage greater STEM education?

Practical experience, good teaching, scholarships and job prospects as strong motivators

What would motivate you to study STEM?



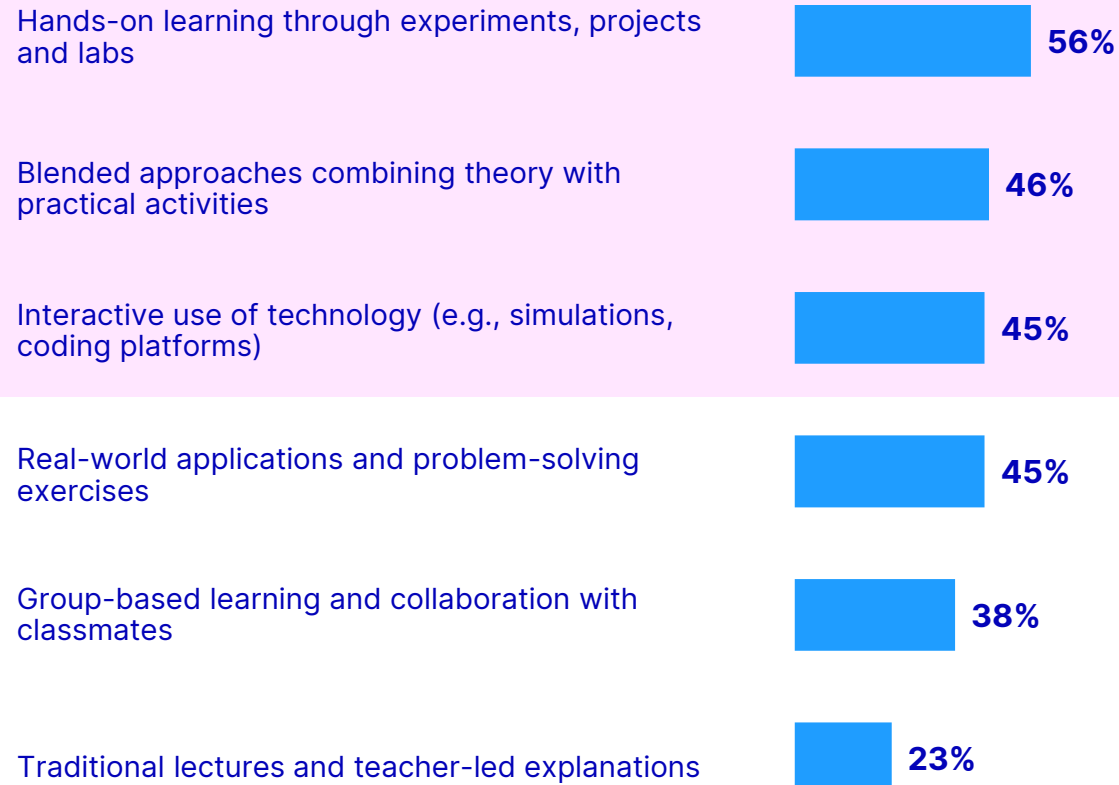
What do teachers think would motivate students to study STEM?



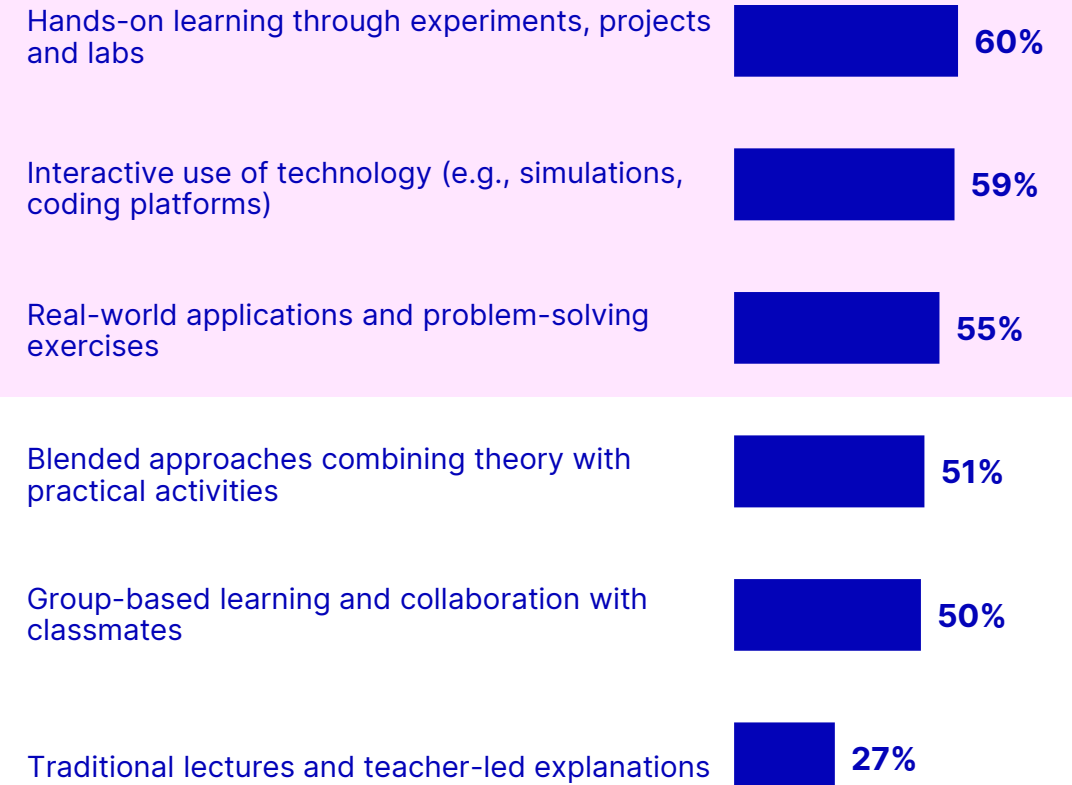
Which teaching methods are popular?

Practical and interactive learning are enjoyable, group work and lectures are unpopular

Which teaching methods do students prefer?



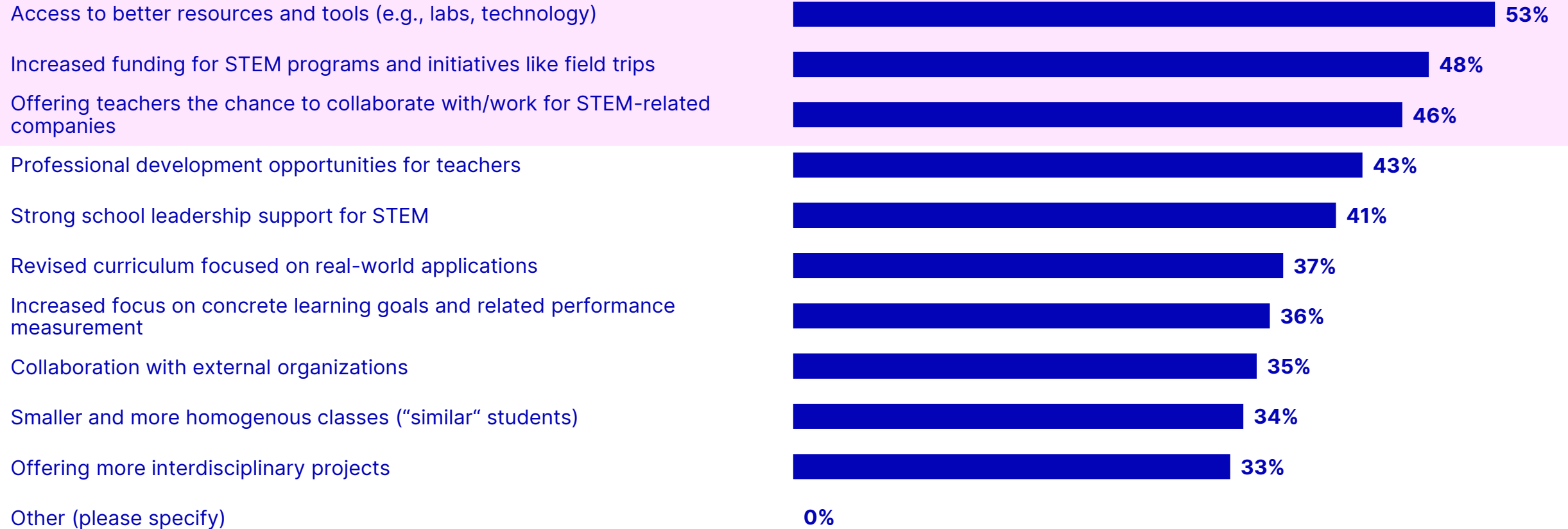
What do teachers think are students' preferred teaching methods?

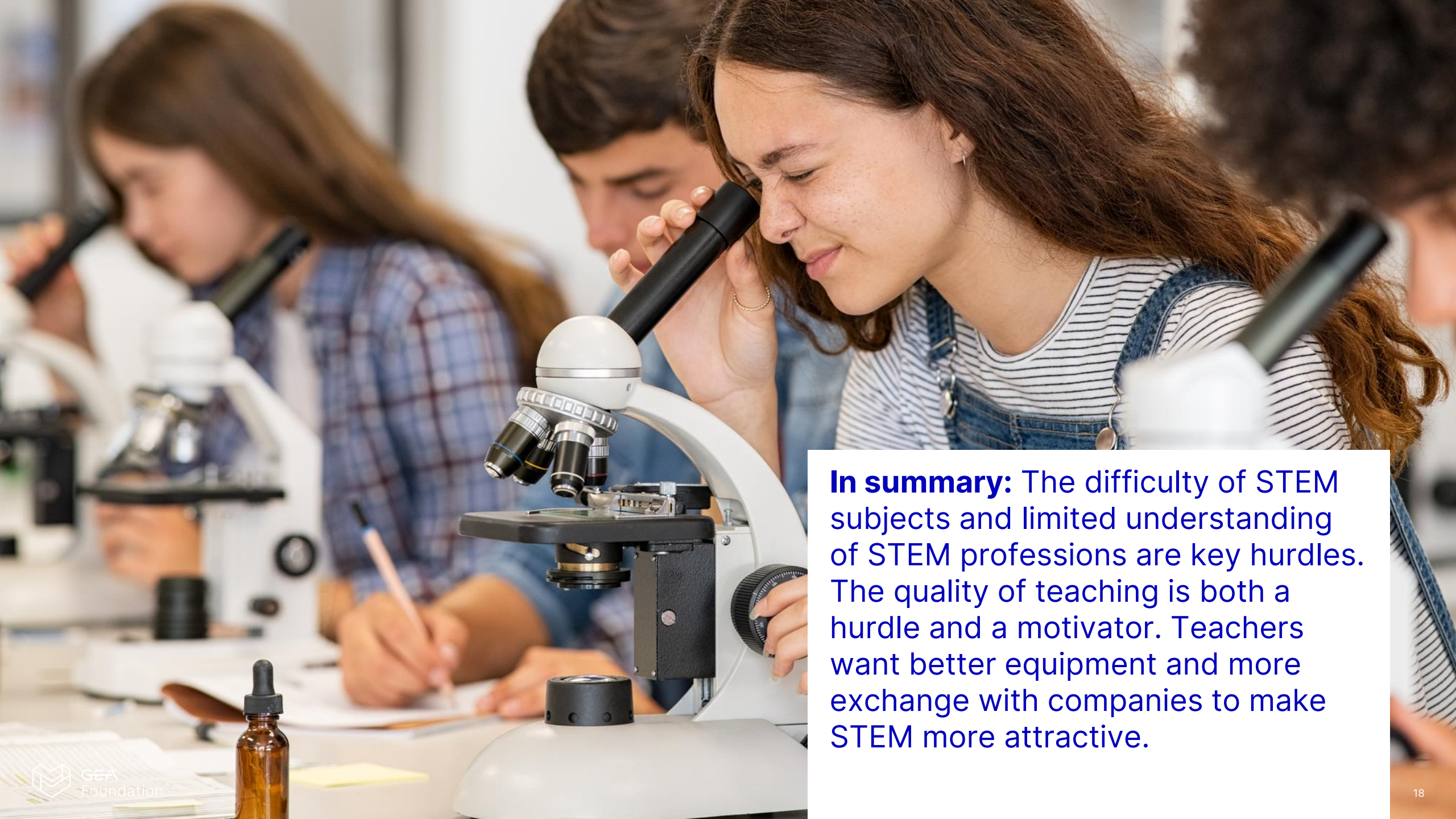


How can schools help teachers make STEM more engaging?

Main wishes: Better equipment, more funding and stronger networking with the field

How can schools make STEM lessons more engaging?





In summary: The difficulty of STEM subjects and limited understanding of STEM professions are key hurdles. The quality of teaching is both a hurdle and a motivator. Teachers want better equipment and more exchange with companies to make STEM more attractive.

Summary: Great potential in STEM subjects



STEM is at the **top** in popularity



STEM subjects clearly lead in terms of **prestige, salary opportunities and social impact**



The survey shows a **discrepancy**: On the one hand, only 14% of students find STEM “very difficult,” while on the other hand, the **difficulty of STEM subjects** is named as the top obstacle

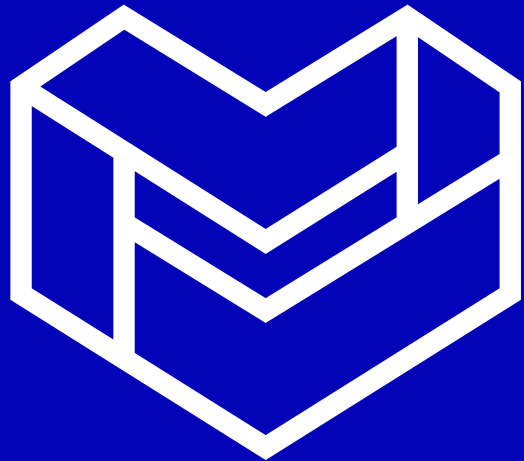


Many **improvement levers** are concrete and can be implemented: practical relevance, modern equipment and interactive teaching methods



High level of **consensus** between students and teachers on key issues





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