



## Lehrveranstaltungen „*just in time*“

Wenn Studierende durch ihren Lernfortschritt Vorlesungen mitgestalten





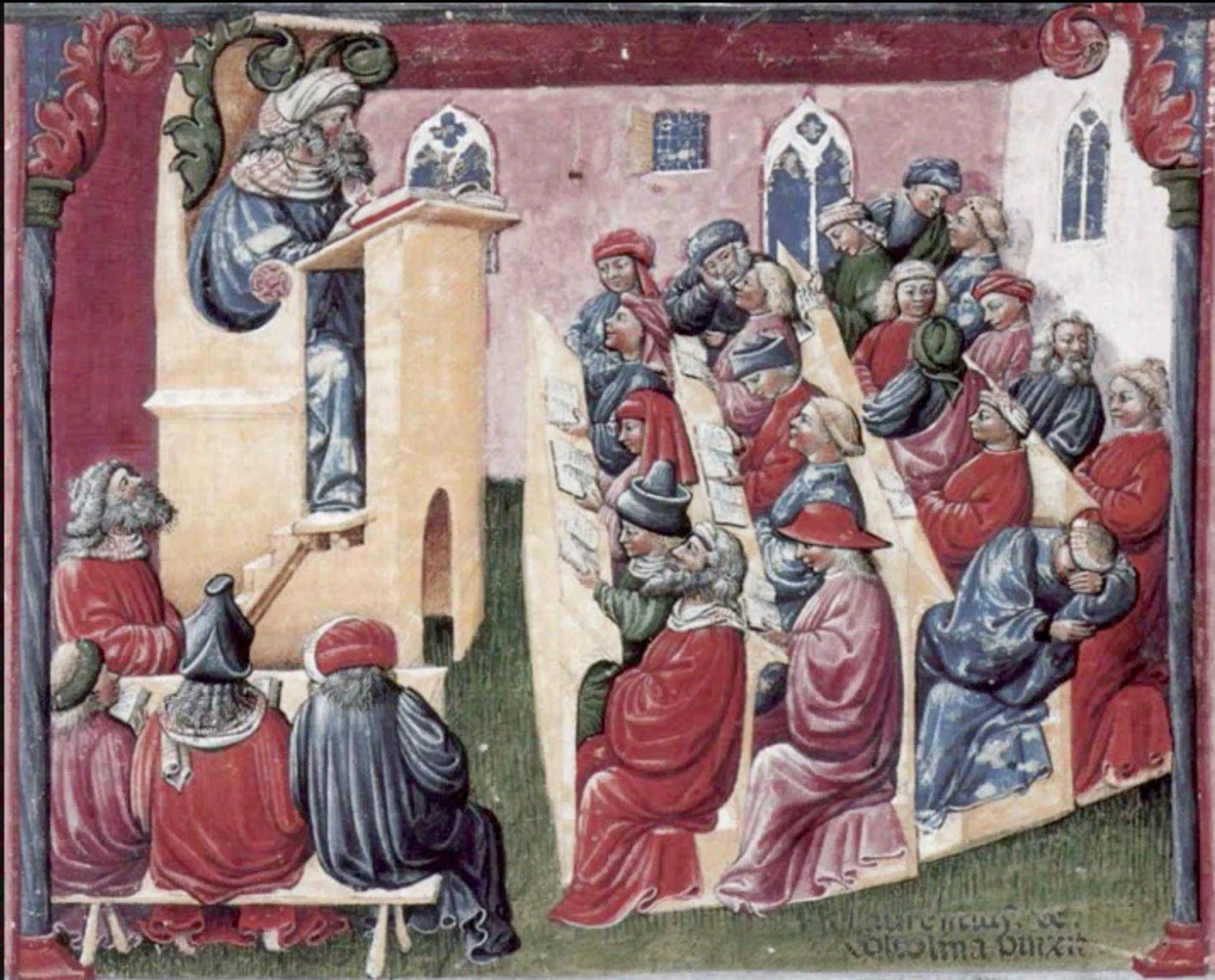
## Lehren ist schwierig

- Breites Spektrum an studentischen Vorkenntnissen
- Studierende fallen hoffnungslos hinterher.
- „Hat jemand Fragen?“



Dies sind zeitlose Probleme.

Bietet Technik Lösungsmöglichkeiten?





## Studierende benötigen „Schrittmacher“





## Studierende benötigen

schnelles Feedback  
über aktuellen  
Leistungsstand

Möglich durch  
automatisch bewertete  
Übungsaufgaben

... ich habe  
verstanden

LON-CAPA Traxelierung der Montille - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://polya.informatik.fh-wolffenbuettel.de/res/fhwfdev/riegler/Traxelierung/montille\_problem

Most Visited Getting Started Latest Headlines Personal Toolbar Folder

Disable Cookies CSS Forms Images Information Miscellaneous Outline Resize Tools View Source Options

LON-CAPA Traxelierung der Mont...

Hauptmenü Inhaltsverzeichnis Kursinhalt einrichten Gruppen Kursrolle wechseln... Weitere Rollen Hilfe Beenden

Kadilationstheorie: Traxelierung der Montille

Geben Sie eine Traxelierung an, die die in der Abbildung gezeigte Montille beschreibt:  
 $y=2*x+1$

**Korrekt!** Die als richtig hinterlegte Antwort wird oben angezeigt.  
 Ihr Nachweis ist 153-1216

Bisherige Antworten

Diskussionsbeitrag abschicken Nachricht senden

Done



Lehrende benötigen  
schnelles Feedback  
über aktuellen  
Leistungsstand

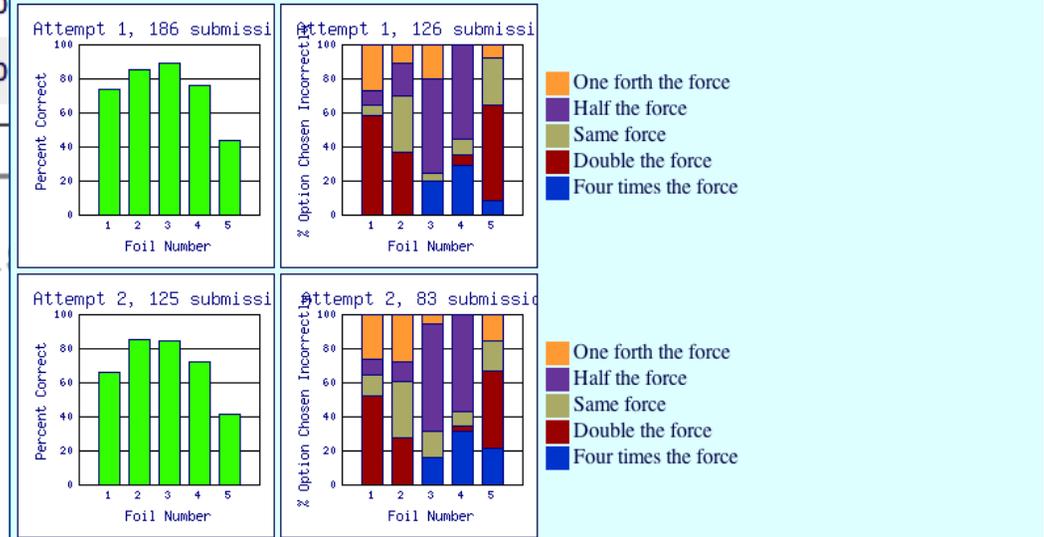
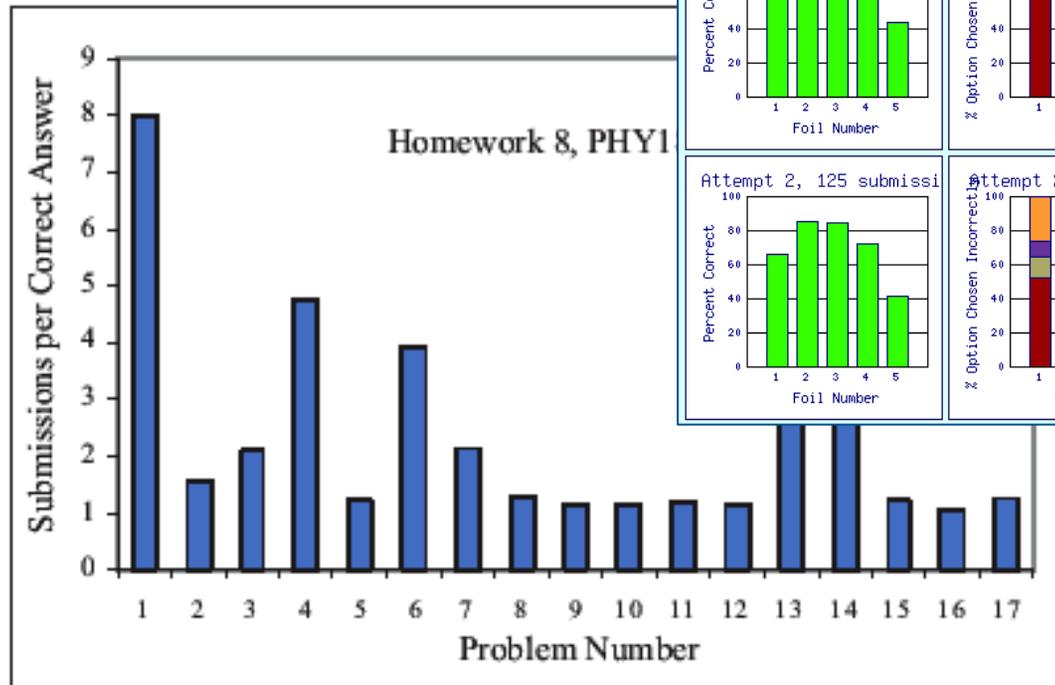




(Problems with av. attempts  $\geq 2$  or deg. difficulty  $\geq 0.5$ ) and total number of students with submissions  $\geq 2$  Hide

Resource	Part	Num. students	Av. Attempts
Area increase	single part	171	2.32
Capacitor Properties	single part	170	2.24
Capacitors in Parallel and Series	single part	155	2.37

Foil Number	Foil Name	Foil Text	Correct Value
1	1_6_1_1_2	The distance between the two charges is cut in half.	Four times the force
2	1_6_1_2_2	The magnitude of both charges is doubled.	Four times the force
3	1_6_1_3_2	The magnitude of one of the two charges is doubled.	Double the force
4	1_6_1_4_2	The distance between the charges is doubled.	One forth the force
5	1_6_1_5_2	The charges are placed in a medium with a factor two higher permittivity.	Half the force





Studierende erhalten  
professionelle Hilfe  
*„just in time“*

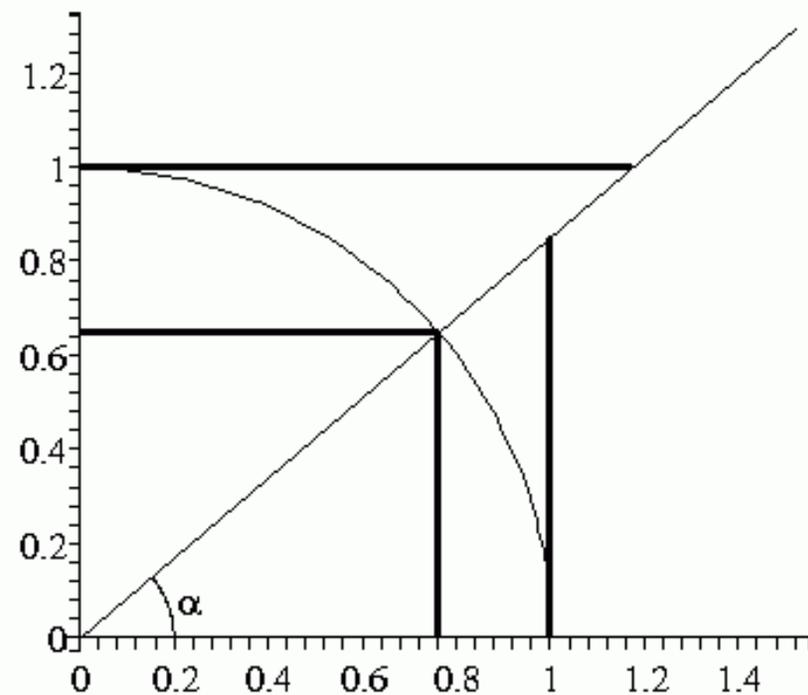




## Just in Time – an Beispielen

- Studierende sollen Material vorab durcharbeiten
- Einbau einfacher Verständnisfragen

Klicken Sie auf die Strecke, die die Länge  $\cos\alpha$  hat.





## *Just in Time* – an Beispielen

Studierende reichen vorab  
Verständnisfragen ein.

[Hide all](#) [Show all](#)

Problems requiring handgrading		<a href="#">Hide</a>
Problem Name		Number ungraded
<a href="#">Chapter 15</a>		3
<a href="#">Chapter 18</a>		1

1. Einstein's Unified Field theory hoped to unify General Relativity with Quantum Mechanics, but Einstein did not agree with the uncertainty in quantum mechanics. Do you think this could have inhibited his ability to find the theory he sought for so long?
2. With the unified field theory Einstein stuck with the math that helped him so much with general relativity. Do you think the lack of thought experiments, or even if thought experiments were possible, hindered his ability to produce this theory?
3. Einstein makes the statement "Belief in an external world independent of the perceiving subject is the basis of all natural science." While Bohr says that physics is merely "what we can say about nature." Which view do you associate with?
4. Do you think that the cosmological constant will turn out to be like Planck's constant?



## Just in Time – an Beispielen

„Clicker“

[Main Menu](#)
[Return to Last Location](#)
[Navigate Contents](#)

**Grading** (msu\_8p96131ebae7b47b8msul1 ss08lbs272)

**Current Resource: Mon, Mar 10th**

Part: 0 score Type: numerical

Correctness determined by the following IDs  
5CD488 - Gerd Kortemeyer

**Scanning clicker file**

Found 7 question(s)  
Awarding 100 percent for correct and 60 percent for incorrect responses

Unregistered Clicker 10D97BB2  
Username:  Domain:  [Select User](#)

Found 128 registered and 1 unregistered clickers.

[Finalize Grading](#)



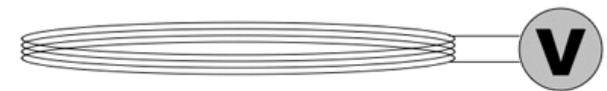


# Just in Time – an Beispielen

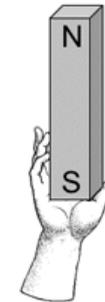
## Studierende diskutieren Aufgaben

Modify parameter settings for this resource

voltmeter. As you



it.



Incorrect: Moving the magnet closer towards the coil would also produce a negative voltage reading.  
 Incorrect: If you had turned the magnet around so that "South" would be on top, then moving it farther away from the coil would still produce a negative voltage readout.  
 Incorrect: The farther away from the coil the magnet is held in place, the lower the magnitude of the voltage.  
 Incorrect: Twisting the magnet clockwise about its long axis would produce a positive voltage readout.

Computer's answer now shown above. Tries 0/3

The coil has a radius of 8 cm and 10 turns. While moving the magnet farther away from the coil, at a certain point in time, the voltage meter shows -230 mV. What is the magnitude of the rate of change of the flux through the coil? **23.00 mV**

Computer's answer now shown above. Tries 0/99

Threaded View Chronological View Sorting/Filtering options Export?

**NEW** Help/Hint "meg" ( ) Hide Delete Reply Submissions (Sat Feb 20 03:43:21 pm 2010 (EST))

For the second part, just look at one of the upper equations on Faraday's law page. There is a very easy relation between change in flux over time and number of coils. For units, just look at what you've multiplied and divided by.

**NEW** Re: Help/Hint ( ) [Anonymous 2] Hide Delete Reply Submissions (Mon Feb 22 08:33:43 pm 2010 (EST))

For the second part, I tried using  $V = -N \cdot X$  where  $V$  is voltage,  $N$  is the number of turns, and  $X$  is change in flux over change in time. I must have the wrong relationship or something... what am I doing wrong?

**NEW** Re: Help/Hint ( ) [Anonymous 2] Hide Delete Reply Submissions (Tue Feb 23 12:33:51 pm 2010 (EST))

my sign was off again, even though I used the equation given in the reading. Why is the answer positive?

**NEW** units ( ) [Anonymous 3] Hide Delete Reply Submissions (Tue Feb 23 04:44:30 pm 2010 (EST))

I know we are dividing Volts by Number of turns. But  $V/N$  and  $V/\text{turn}$  and all those aren't working. Is the number of coils noted by something else?



## *Just in Time* – an Beispielen

Studierende bearbeiten Lehrveranstaltung nach.

Berechnen Sie die Ableitung der folgenden Funktion:

$$f(x) = e^x \sin(x)$$

$$f'(x) =$$

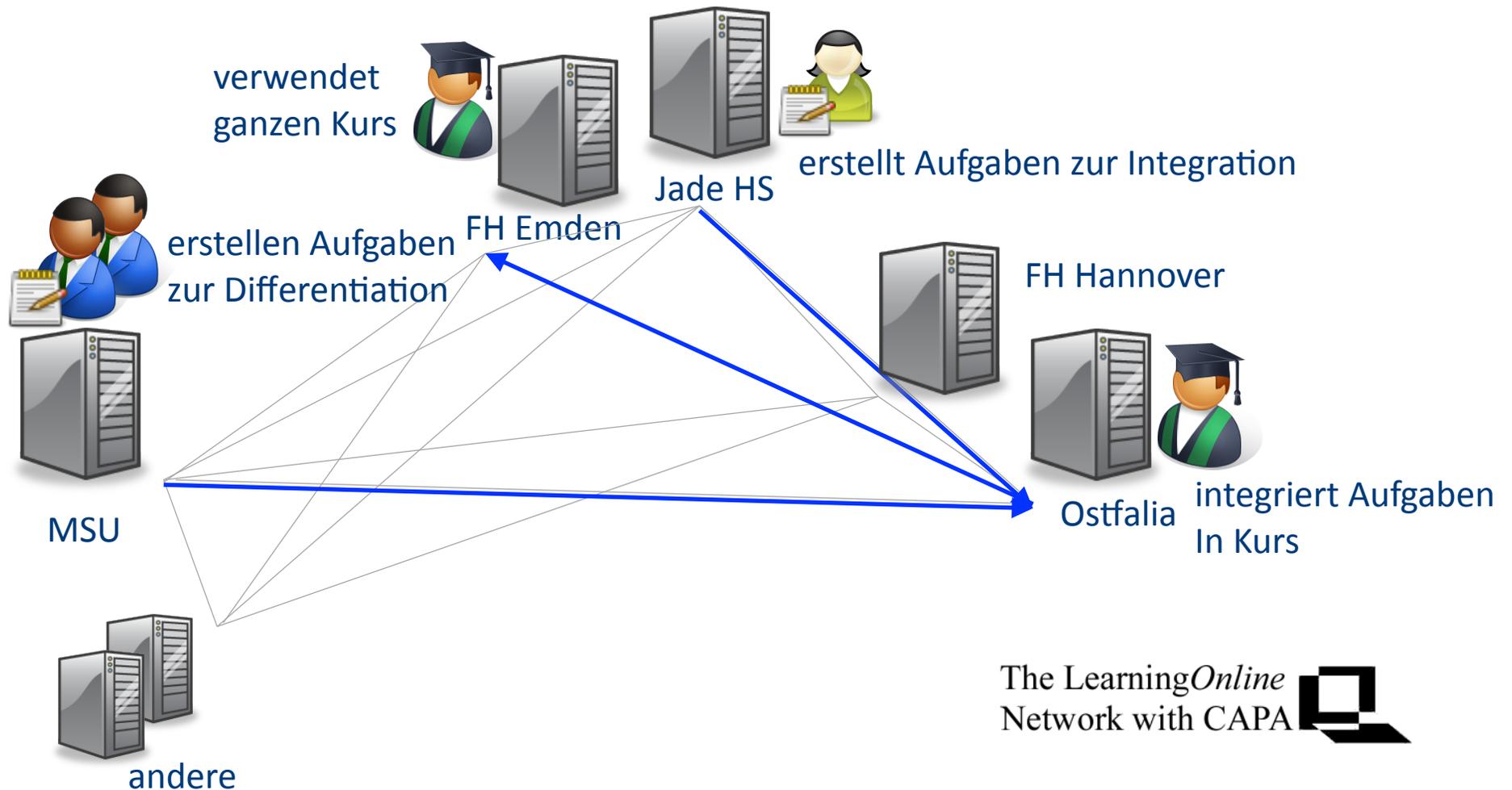


## Wirtschaftliche Realisierung?





## Technische Realisierung





## LON-CAPA

- internationale Zusammenarbeit
- > 300 000 Ressourcen
- mehrsprachig
- Chemie, Physik, Mathematik ...



## Mehr

- [www.loncapa.org](http://www.loncapa.org)
- [www.jitt.org](http://www.jitt.org)
- Stand B22 in dieser Halle

