

Neue Technologien in der Studien- eingangsphase

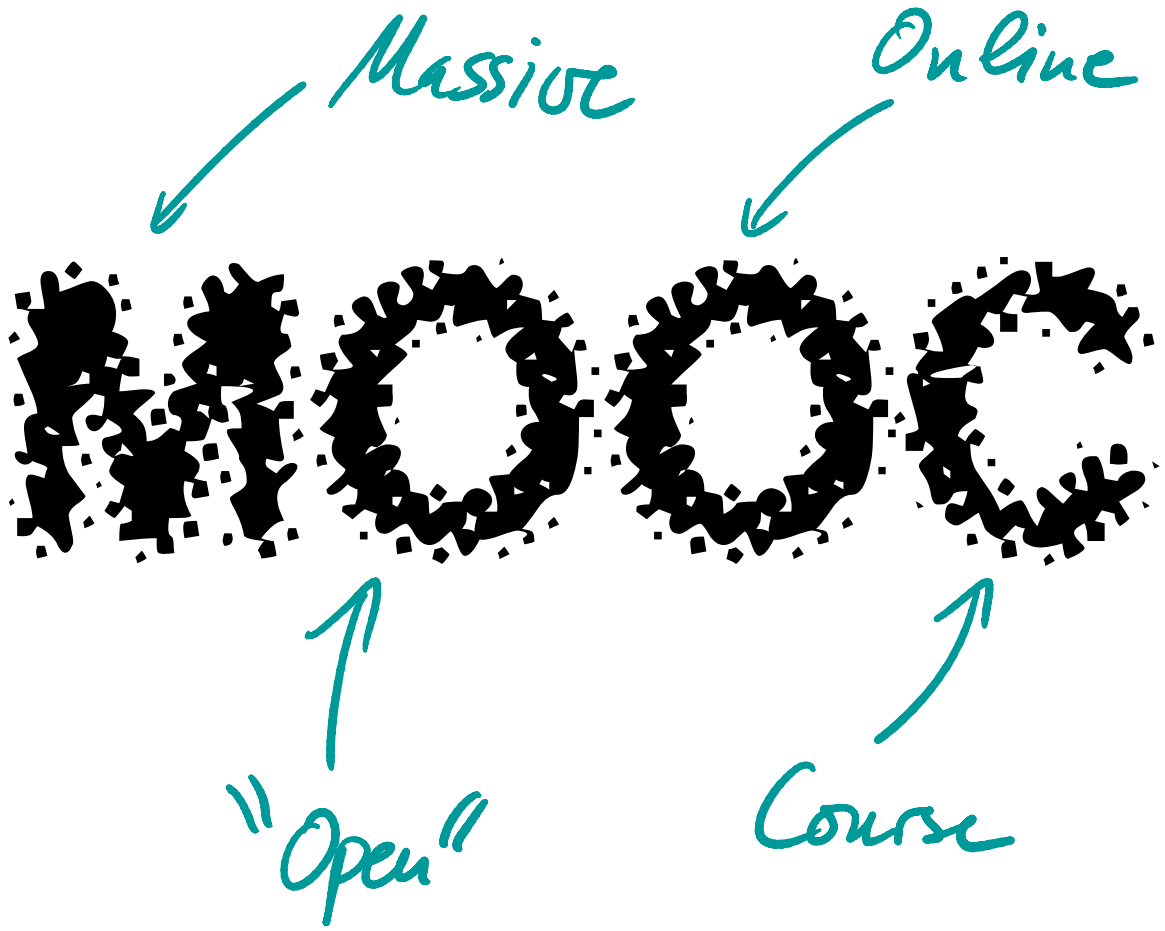
Jörn Loviscach

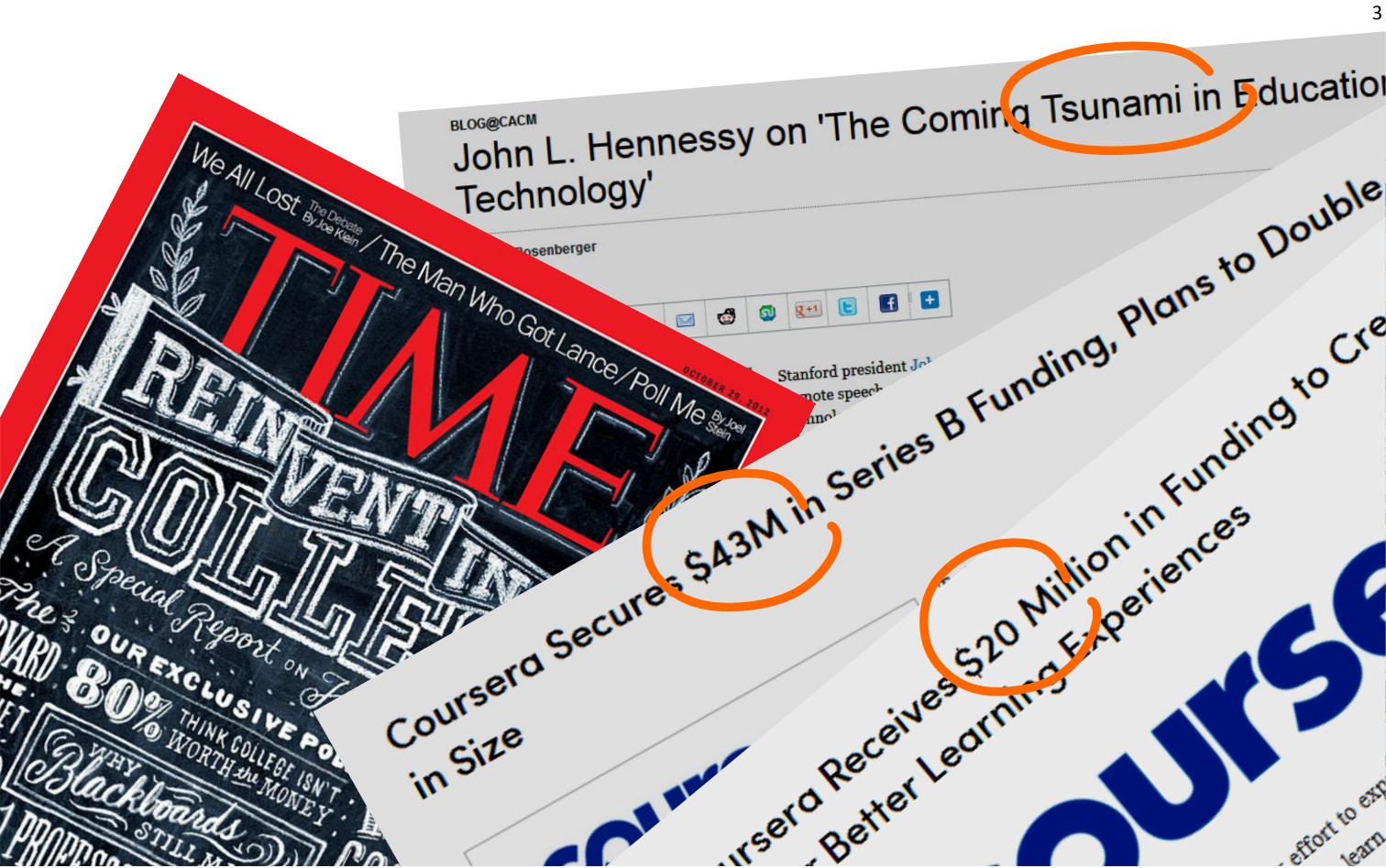


FH Bielefeld
University of
Applied Sciences

Sinn der Studieneingangsphase

- Kenntnisse und Fertigkeiten angleichen
- ...





<http://cacm.acm.org/blogs/blog-cacm/153706-john-l-hennessy-on-the-coming>

<http://blog.coursera.org/post/55080731561/coursera-secures-43m>

<http://blog.coursera.org/post/67777181974/coursera-receives-20>

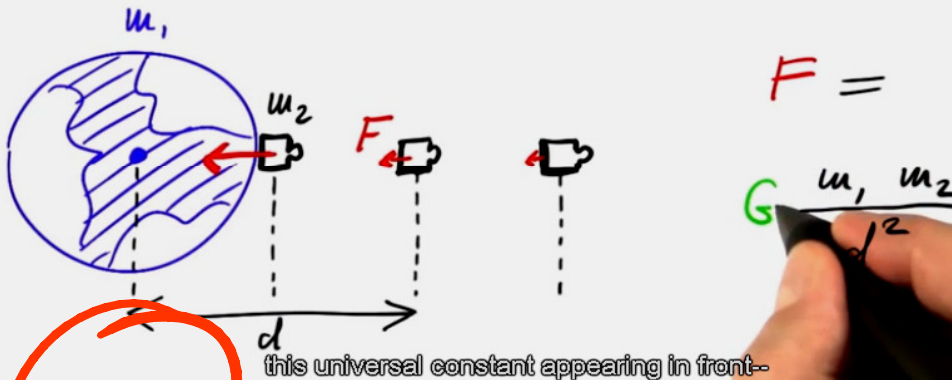
Differential Equations in Action

CLASSROOM



Unit 1 - Houston We Have a Problem

Newton's Law of Gravitation



1:09 / 1:49

Previous

Next

Discussions

See All

Instructor Notes

No discussions for this unit. [See all discussions](#) for this course.

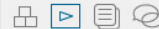
No additional notes for this section

Ask a Question

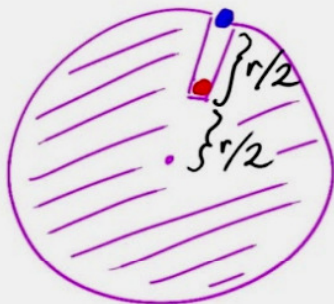
xMOOC

Differential Equations in Action

CLASSROOM



Unit 1 - Houston We Have a Problem ▾



Ratio of
gravitational forces

●	:	●	
1	:	1	<input type="radio"/>
2	:	1	<input type="radio"/>
1	:	2	<input type="radio"/>
4	:	1	<input type="radio"/>
1	:	4	<input type="radio"/>

Force Ratio

Rewatch Instructions

Submit Quiz

Discussions

[See All](#)

Unit1-21: Force Ratio, Force from the shell and Force from the core?

Nov 10

Shell Theorem and water flow analogy

Nov 10

[Ask a Question](#)

Instructor Notes

No additional notes for this section

xMOOC

Differential Equations in Action

PS5-2 Hydraulic Braking - why change bit desired bounds?

```

When implementing the brake controller, we want to ensure slip is between majority of the time. This is the relevant part of the official solution:

if s < low_slip:
    brake_change = 1
elif s > high_slip:
    brake_change = -1

```

However, this implies:

```

else (i.e. if low_slip <= s <= high_slip):
    brake_change remains as it was, i.e. -1 or 1

```

I find this last part somewhat counter-intuitive if s was, let's say, too low and has in this step only just surpassed low_slip . It already has some "inertia" (its derivative is positive). Then increasing the pressure further will make s overshoot $high_slip$ with an even higher derivative. A symmetric argument can be made for s decreasing past $high_slip$. Therefore, I would argue for the solution

```

if s < low_slip:
    brake_change = 1
elif s > high_slip:
    brake_change = -1
else:
    brake_change = 0

```

Indeed, the car stops in 3573 steps instead of 3723 with this solution. One might however also argue against this solution: it should only work better if s , when "left alone" ($brake_change=0$) will shoot for $high_slip$ very fast in a different setting (or on an analogous control problem), systemic forces might be pushing s (or its analogue) towards 0 (for its analogue) towards the goal of clarity in instructions, making it linger around low_slip all the time, never achieving the ideal slip. However, I tried to get this effect by greatly increasing the admissible slip band to $[low_slip, high_slip] = [0.07, 0.33]$ - surprisingly, the advantage of my "approach" increased (3710 vs 4070 steps for the car to stop).

Any thoughts, comments? I must be missing or misunderstanding something about control systems.

03222 ps5-2 STAFF
 edit | close | delete | more ▼

add a comment

4 Answers:



3 Yes, great thinking

My idea was that the two threshold values are so close together that it does not really pay off to have that third rule. Your final experiment indeed shows that this third rule gets more helpful as the distance between the two threshold values increases.

But one can even get away with using one single threshold value for s : Increase the pressure if s is above that value, decrease the pressure if s is below. It is down to finding the most simple method that is stable under all realistic circumstances. "Obviously" leads to a stable limit cycle. We want to prevent chaotic, fast oscillations. The purpose "obviously" leads to a stable limit cycle. A nice problem for control theory may not be so easy to see for your method. A nice problem for control theory.

answered 10 Sep 12, 09:35
 Jörn Loviscach ♦♦
 +1 16

reaged 18 Sep 12, 22:07
 Sergio ♦♦♦
 #5 #65

asked 10 Sep 12, 08:14
 Mirja Trampus
 #2 #5
 accept rate: 16%

most voted

XMOOC



- [MEDIATHEK](#)
- [PROGRAMM](#)
- [ÜBER DEN VHSMOOC](#)
- [TEILNEHMEN](#)

[Einträge im Forum](#)

[Anfang](#)

[en vhsMOOC-](#)

[ation](#)

[on LMS?](#)

Der vhsMOOC ist aus...

Posted [Nov 10 2013](#) by [Mark Stockmeyer](#) in [Allgemein](#) w

Zumindest die Arbeitsphasen sind abgeschlossen. Vielen Dankeschön an alle Kiebitze, Teilnehmerinnen und Teilnehmer und ein großes Extradanke an unsere Sponsoren. Wir arbeiten an der Evaluation. Ihr könnt alle noch das Forum benutzen. Im News und Evaluation. Ihr könnt alle noch das Forum benutzen. Im News News auch in der kommenden Zeit erfahren. Der vhsMOOC ist zu Ende.

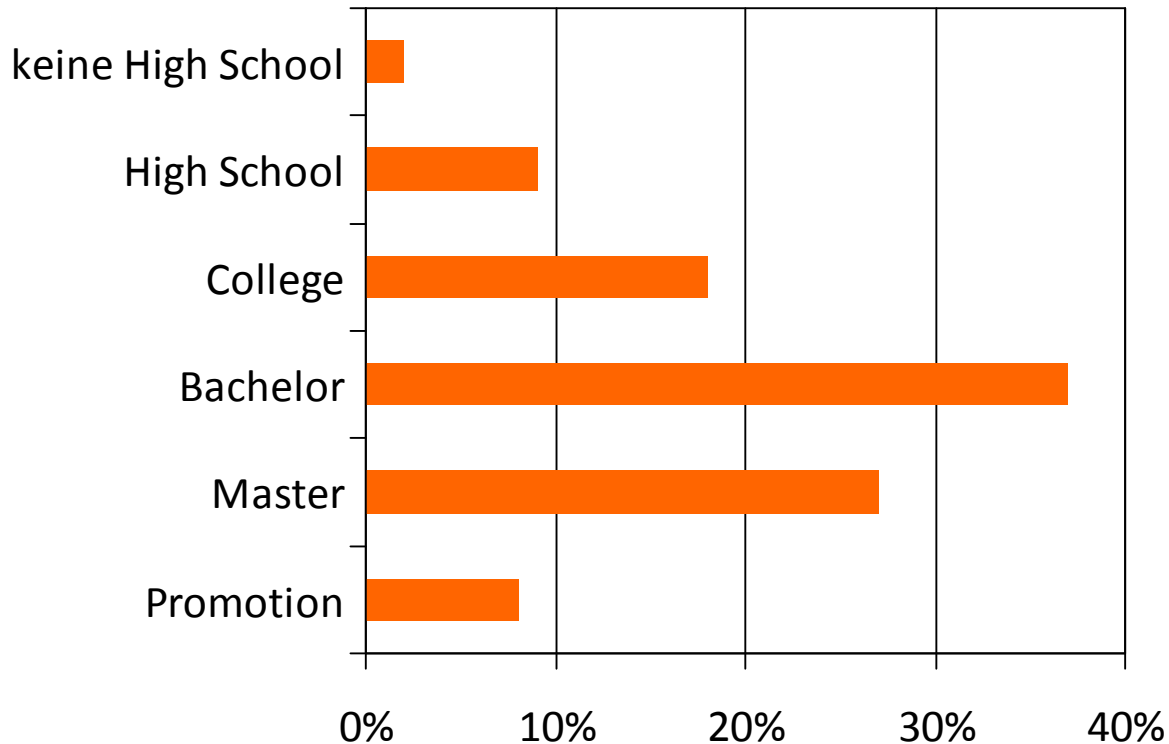
[Read More](#)

[vhsMOOC: Ein](#)

A screenshot of a 'Public Pad' interface. The title bar says 'Public Pad'. Below the title bar is a toolbar with icons for bold (B), italic (I), underline (U), strikethrough (ABC), list (bulleted), link (chain), unlink (chain with slash), undo (curved arrow left), redo (curved arrow right), and a refresh icon. The main area contains a grid of text blocks, each with a small number in the top right corner (e.g., 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111). The text blocks are color-coded in a repeating pattern of pink, light blue, yellow, and light green. On the right side of the interface, there are buttons for 'Pad Options', 'Import/Export', and 'Invite others'.

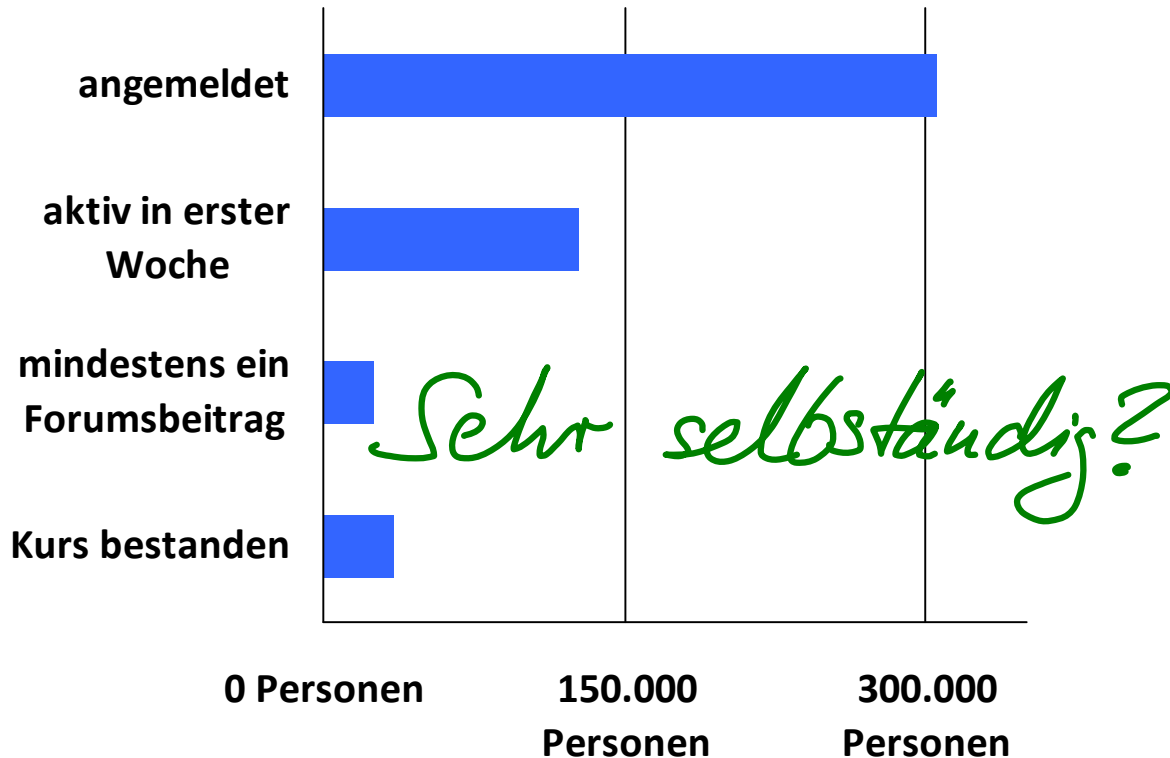
MOOC

Duke University: Bioelectricity



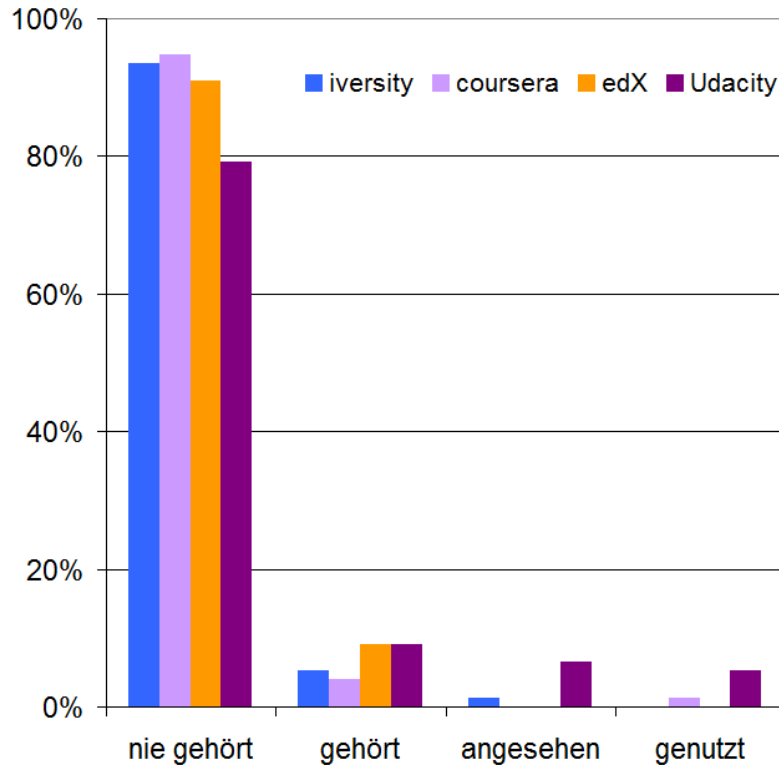
Daten: http://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/6216/Duke_Bioelectricity_MOOC_Fall2012.pdf

MOOCs der Uni Edinburgh 2013



<https://www.era.lib.ed.ac.uk/handle/1842/6683>

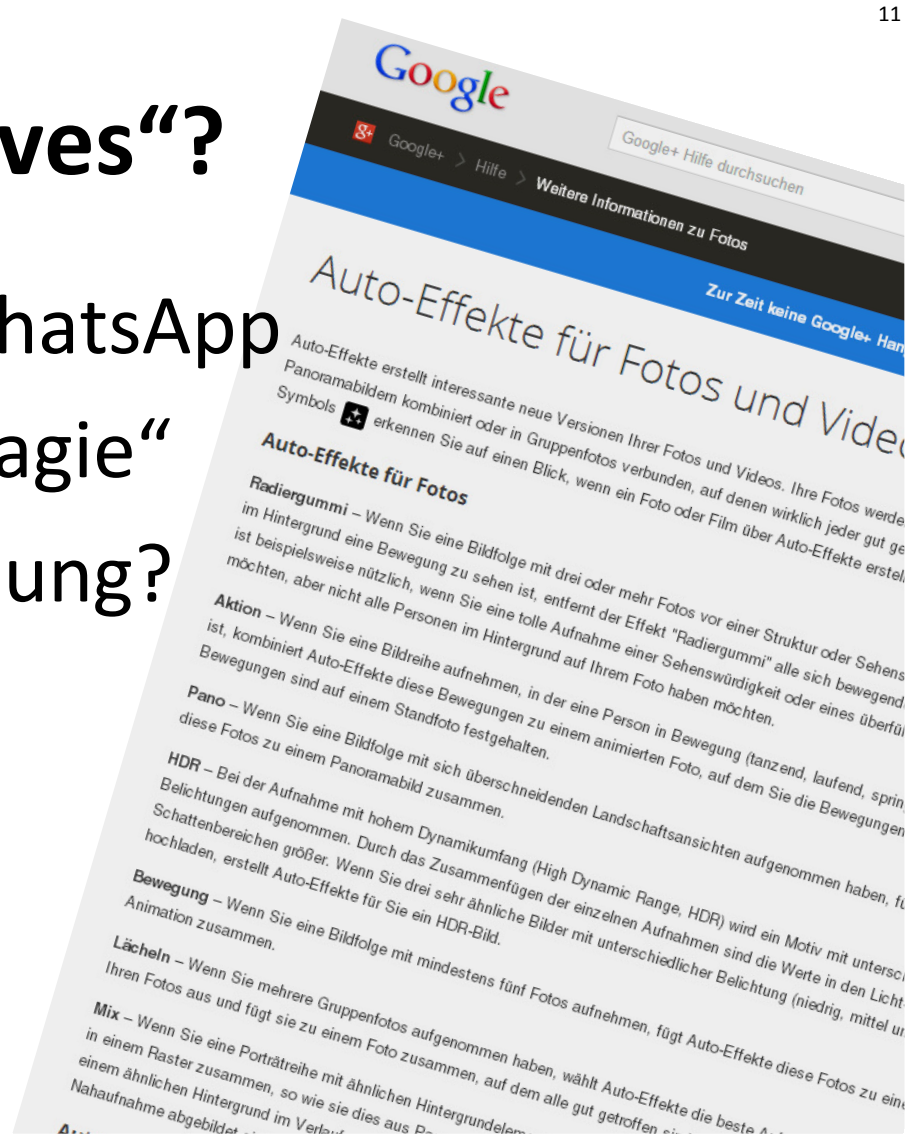
Wer kennt MOOCs?



Umfrage Ende 2013 unter lokalen Bachelor- und Master-Studierenden, N = 77

„Digital Natives“?

- Facebook, WhatsApp
- Software-„Magie“
- Verschriftlichung?
- Illusion des Multitasking



Sinn der Studieneingangsphase

- Kenntnisse und Fertigkeiten angleichen
- ...

Sinn der Studieneingangsphase

- Kenntnisse und Fertigkeiten angleichen
- **vom angeleiteten zum selbständigen Lernen**
- **Arbeit mittels Internet und mit Ressourcen im Internet**

Blended Learning

- sinnvolle Arbeitsteilung:
 - Präsenz:
Dozent(in) und/oder Gruppe
 - Online: Materialien, netzbasierte
Zusammenarbeit/Kommunikation
- Begleiten/Üben des Arbeitens
mit digitalen Medien

Sinnvolle Arbeitsteilung zwischen Präsenz und Online:

Was sind aus Ihrer Sicht
die drei wichtigsten Aspekte?

- Erstsemester nicht vereinsamen lassen
- Online auch in Gruppen
- Aufwand in Didaktik + Präsenz,
nicht in Produktion

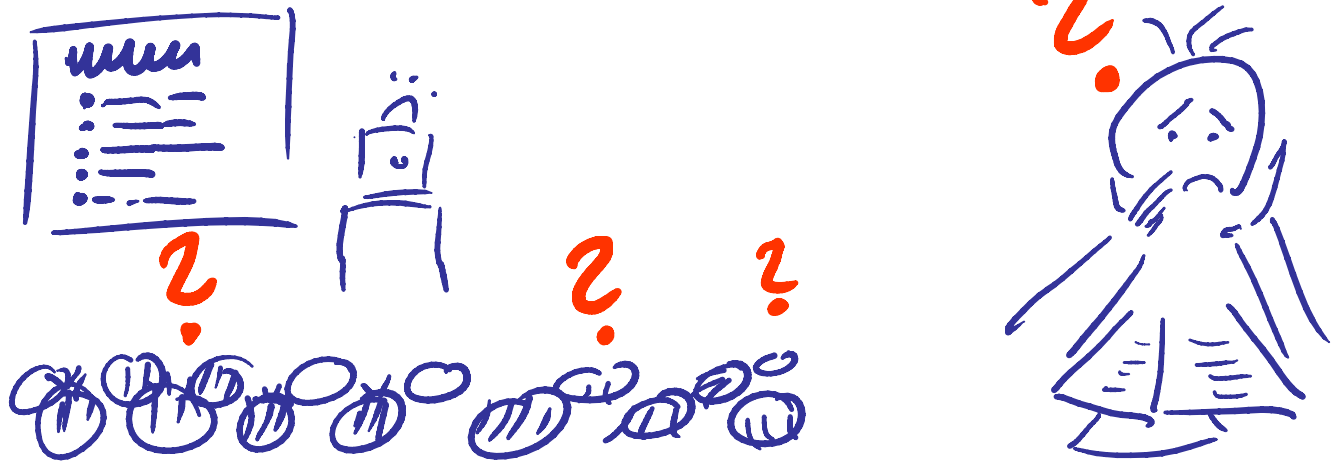
Beispiel: Flipping

an der Hochschule

zu Hause

„Stoff“

üben



an der Hochschule zu Hause
üben, denken, diskutieren „Stoff“

Inverted Classroom Model = Flipped Classroom

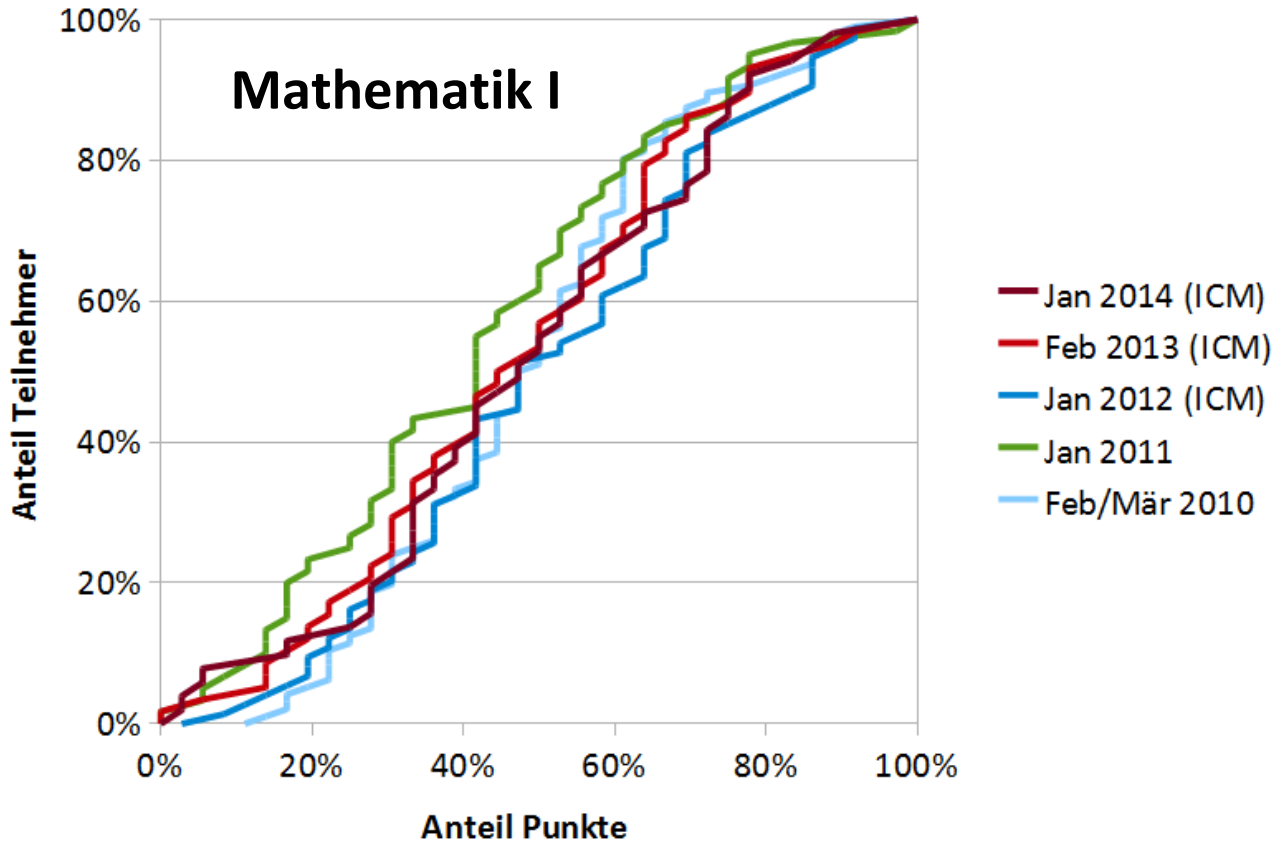
Baker. The Classroom Flip (2000).

Lage/Platt/Treglia. Inverting the Classroom (2000).

Was bei mir klappt

- mehr unmittelbare Rückmeldungen an Studierende / an Dozent(in)
- weniger Facebook und WhatsApp
- mehr Fachdiskussionen zwischen Studierenden
- (etwas) korrektere „Workload“

Klausurnoten?



Warum kein größerer Effekt?

- keine eingebauten Quizze – bisher
- Klausur verleitet zu oberflächlichem Lernen
- auf andere Fächer konzentrieren, in vorlesungsfreier Zeit „nachlernen“

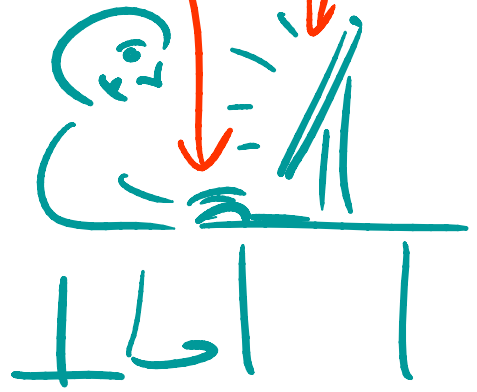


Flipping mit Videos
zum traditionellen Curriculum
als **Ausrede**,
um vom Durchpauken
von „Stoff“ wegzukommen?

Hand out Mann
Ken Facebook
usw.



Lean Back



Lean Forward

In den xMOOCs:

The image shows a screenshot of a UDACITY course interface. At the top, the navigation bar includes 'UDACITY', 'Course Catalog', 'My Courses', and 'Jörn Loviscach'. Below this, the course title 'Differential Equations in Action' is visible, along with a unit selector 'Unit 1 - Houston, We Have a Problem'. A 'CLASSROOM' button is present in the top right. The main content area features a video player with a 'Force Ratio' title. Handwritten in blue ink on the video player are the following elements:

- A diagram of a circle with a radius labeled $r/2$ and a central point labeled $\cdot \{r/2$.
- The text 'Ratio of gravitational forces'.
- A ratio of blue and red dots: $1 : 1$, $2 : 1$, $1 : 2$, $4 : 1$, $1 : 4$.
- A vertical column of five circles to the right of the ratios.

Green arrows are drawn over the interface, pointing to the navigation bar, the course title, the unit selector, the classroom button, and the video player area. At the bottom of the interface, there are buttons for 'See All', 'Instructor Notes', 'Rewatch Instructions', and 'Submit Quiz'. A note at the bottom right states 'No additional notes for this section'.

Formen und Niveaus

Which component is responsible ?

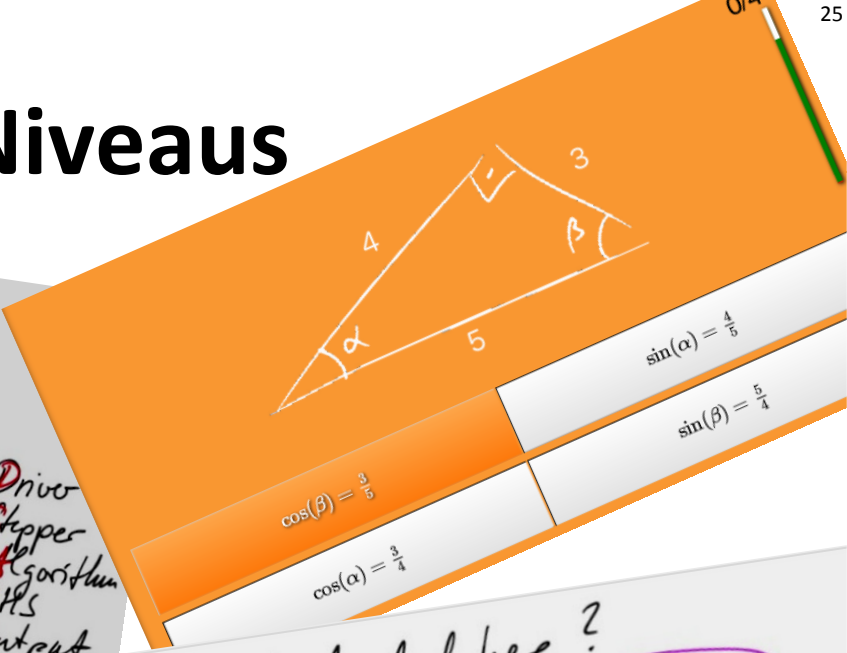
Use an implicit method

Stop at time 42

Determine the value at time 13.000

at a different value for the mass

- Driver
- Stopper
- Algorithm
- RHS
- Output



Which Effect is included here ?

$$\dot{S}(t) = -\frac{5 \times 10^{-9}}{\text{day} \cdot \text{person}} I(t) S(t) + 1000 \frac{\text{persons}}{\text{day}}$$

$$\dot{I}(t) = \frac{5 \times 10^{-9}}{\text{day} \cdot \text{person}} I(t) S(t) - \frac{1}{5 \text{ days}} I(t)$$

$$\dot{R}(t) = \frac{1}{5 \text{ days}} I(t)$$

- Vaccination
- Birth
- Immigration
- Death

Integrierte Quizze

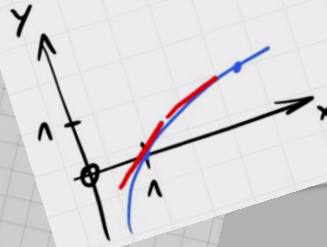
$3^0 = ?$
Rechenregel.
 $(3^0) \cdot 3^4 = 3^{0+4} = 3^4$

Für welche Zahl x gilt: $x \cdot 3^4 = 3^4$?

Ableitung des natürlichen Logarithmus
 $\ln(x)$

$x > 0$

Was ist die Steigung der Tangente des natürlichen Logarithmus an der Stelle $\frac{1}{2}$?



$$1 = \frac{e^{\ln(x)}}{x} \cdot \frac{d \ln(x)}{dx}$$

$$\Rightarrow \frac{d \ln(x)}{dx} = \frac{1}{x}$$

$\frac{x^{42}}{x^{15} \cdot x^{26}} = ?$



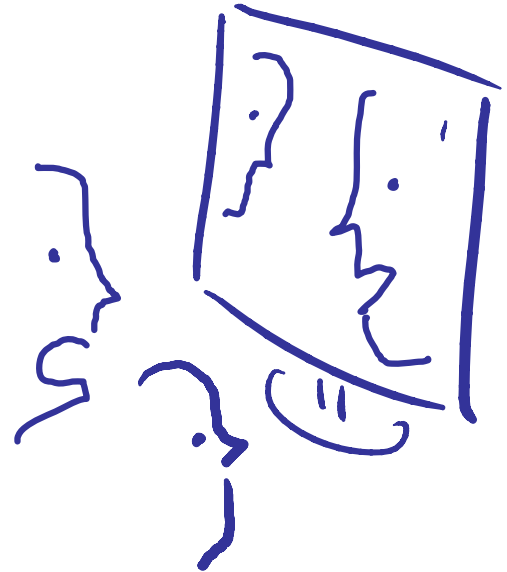
<http://www.capira.de/>

0/6

0	1
x^2	x

Videos im Team

- Social Viewing
- Lerngruppen um Videos und Quizze
- Videos von Einzelunterricht in Lerngruppe diskutieren



www.j3L7h.de

