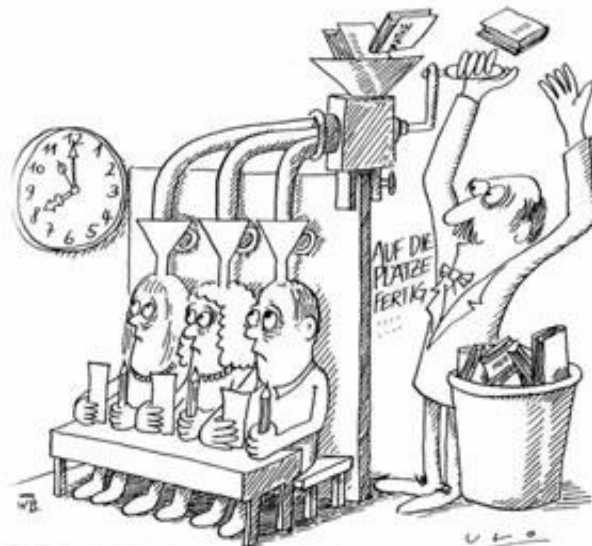


Suggestions for “Good Teaching” for PhD Students / Ext. Lecturers

Johann W. Kolar
Power Electronic Systems Laboratory
ETH Zurich

Jan. 31, 2019





- Lecturer
- Lecture
- Exercises
- Future

■ Lecturer (1)

- Students “Feel” if You are Motivated !
- Be Authentic !
- Watch Your **Body Language** – Be “Open” !

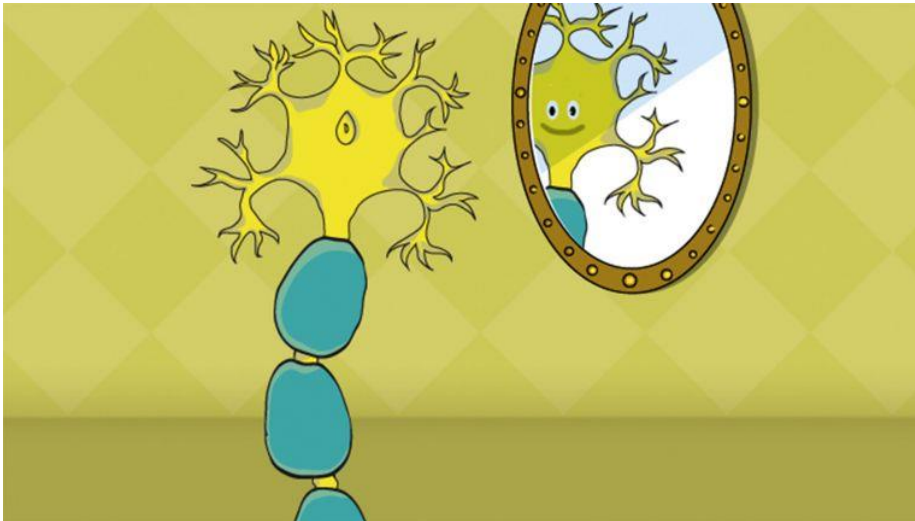


Source: www.collegetimes.com/life

→ TED: M. Bowden - https://www.youtube.com/watch?v=1zpf8H_Dd40

■ Lecturer (2)

- Carry an Inner **“Smile”** – Your Voice will Sound Different !
- Smile Generates **Smile = Happiness** (Mirror Neurons)
- One Smile = Same Brain Stimulation than 2000 Bars of Chocolate



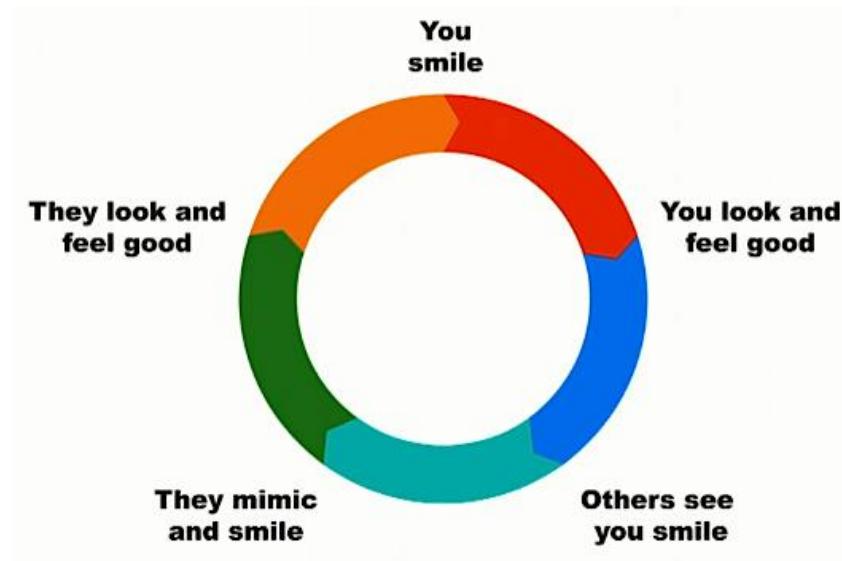
Source: www.dasgehirn.info

→ TED: R. Gutman -

https://www.ted.com/talks/ron_gutman_the_hidden_power_of_smiling?language=de

■ Lecturer (3)

- Carry an Inner **“Smile”** – Your Voice will Sound Different !
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Source: www.wired.com/2012/02

→ TED: R. Gutman -

https://www.ted.com/talks/ron_gutman_the_hidden_power_of_smiling?language=de

■ Lecturer (4)

- Carry an Inner **“Smile”** – Your Voice will Sound Different !
- Smile Generates **Smile = Happiness** (Mirror Neurons)
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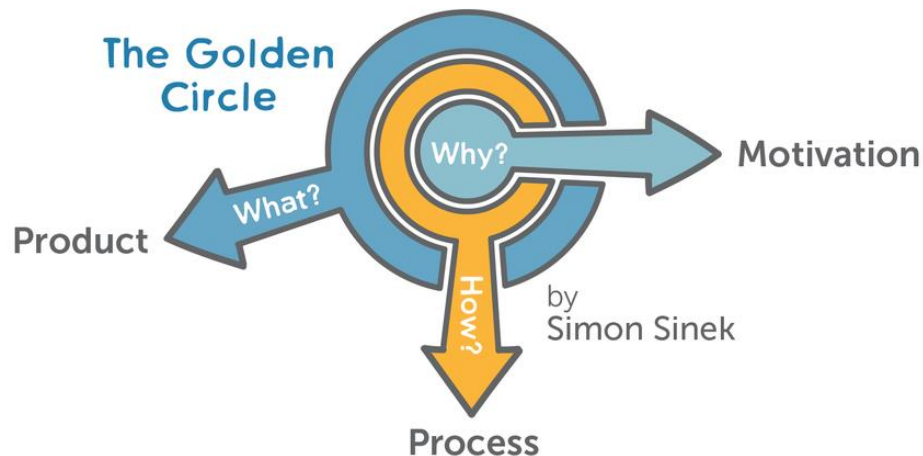
Source: www.climatedesk.org/politics/2016/12

→ TED: R. Gutman -

https://www.ted.com/talks/ron_gutman_the_hidden_power_of_smiling?language=de

■ Lecture Organization (1)

- Tell “**Stories**” → “**Why – How – What**”
- Clear “**Line of Thoughts**” / “**Storyboard**” – Connect the “**Pieces**”!
- Imagine Question of Students & Provide an Intuitive Answer



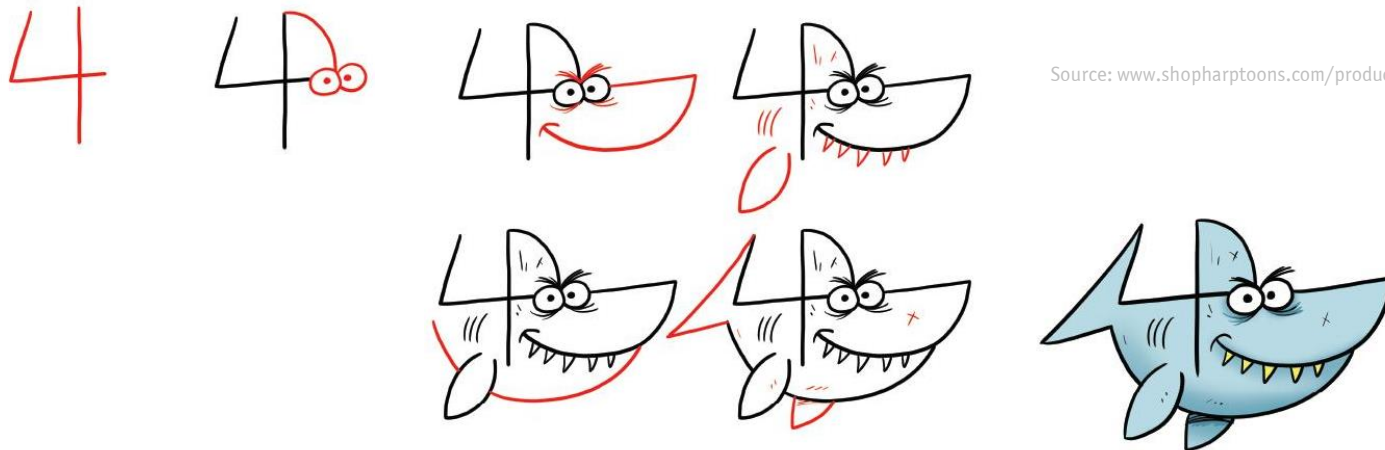
Source: medium.com/blocktechconsulting/

- TED: The “**Golden Circle**” - S. Sinek –

<https://svenruoss.ch/2012/12/30/the-golden-circle-why-how-what>

■ Lecture Organization (2)

- Tell “Stories” → “Why – How – What”
- Clear “Line of Thoughts” / “Storyboard” – Connect the “Pieces”!
- Imagine Question of Students & Provide an Intuitive Answer



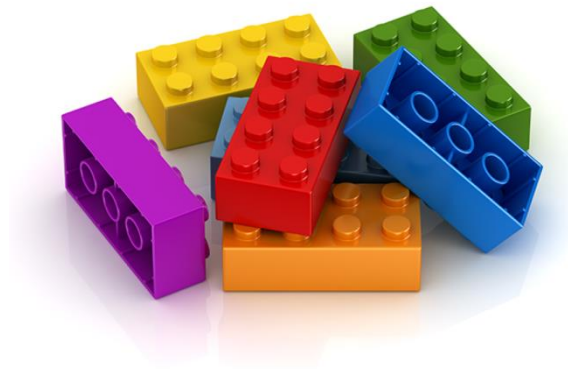
- TED: The “Golden Circle” - S. Sinek –

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■ Lecture Organization (3)

- Tell “Stories” → “Why – How – What”
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Source: <http://mentalfloss.com/article/92127/>



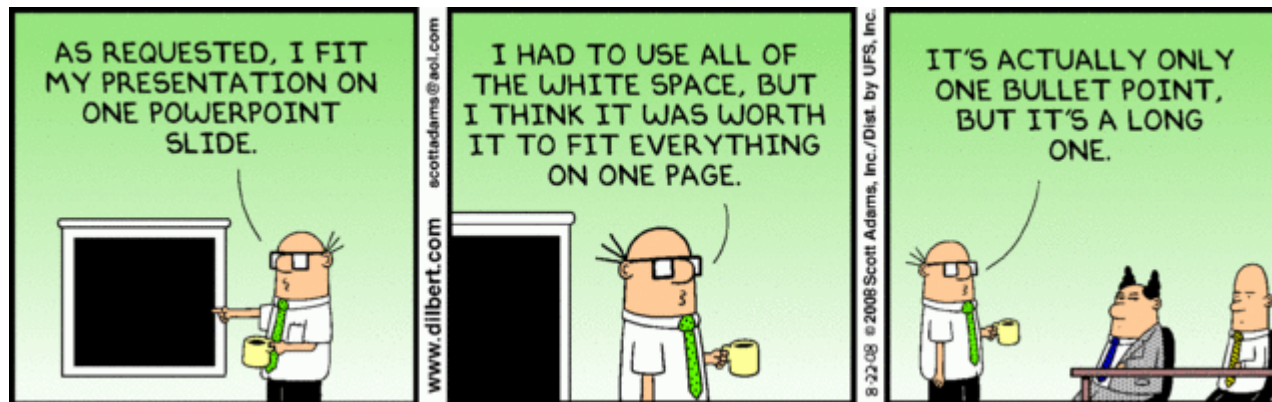
Source: <http://yellowducks.nl/wp-content/uploads/2017/>

→ Preparation Time = Lecture Time (for Each Lecture)

■ Lecture Organization (4)

- Split the Whole Semester into 3-5 Topical “Clusters”
- Restrict & Simplify to the Core Themes
- Use Diagrams! = Engineering “Language”
- Write Formulas in “Low Entropy” Form
- PPT Slides (if any) of Good Quality

Source: www.slidegenius.com/blog/



→ Dilbert: Power Point Presentation –

https://www.youtube.com/watch?v=4y_jlqQUr20

■ Lecture Organization (5)

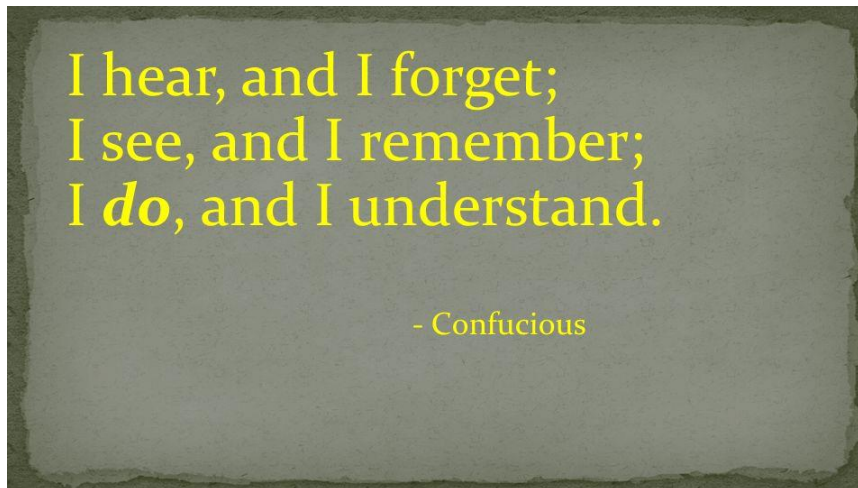
- Split the Whole Semester into 3-5 Topical “Clusters”
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- Use Diagrams! = Engineering “Language”
- Write **Formulas** in “**Low Entropy**” Form
- PPT Slides (if any) of Good Quality

$$R_e = \frac{u_p}{i_p} = \frac{\ddot{u}^2 u_s}{\dot{i}_s} = \ddot{u}^2 R_2 \quad R_e = \frac{u_p}{i_p} = \frac{\ddot{u} u_s}{\frac{\dot{i}_s}{\ddot{u}}} = \ddot{u}^2 R_2$$

- It's (also) the “How” You Teach NOT (only) “What” You Teach about, which **Attracts / Inspires Students !**

■ Exercises

- Motivate the Students with **Practical Examples!**
- Provide an **E-mail Contact** to Students for Asking Questions
- Schedule Extra **Question Time** Before Exams

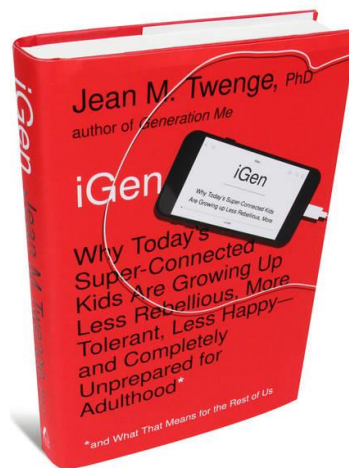


Source: slideplayer.com/slide/6981604/

- Provide a Short **Summary of Related Lectures** to the Students

■ Future Challenges (1)

- Generation i-Phone
- 2-3 mins of Attention Span
- Reading 10 Lines Causes Headaches
- Future: Only Videos / No Books ? – I am VERY Concerned



Source: www.hackscience.net/blog/

- TED: iGen: The Smartphone Generation – J. Twenge
https://www.youtube.com/watch?v=UA8kZZS_bzc

■ Future Challenges (2)

- Get in Direct Personal Contact
- Be a Teacher / Tutor / Mentor / Trustworthy “Friend”
- Create a “Different” Environment (No i-Phones)
- Split into Small Groups / Project Based Teaching



Source: www.pinterest.ch/pin/413134965812502102/

- S. Sinek – Millennials in the Workplace
<https://www.youtube.com/watch?v=hER0Qp6QJNU>

■ Future Challenges (3)

- Interdisciplinarity
- VDMA Study – “Ingenieur*innen 4.0”
- Joint Lectures in EE / ME / INF (first 2 Semesters)

ISFMÜNCHEN



Dr. Eckhard Heidling, ISF München

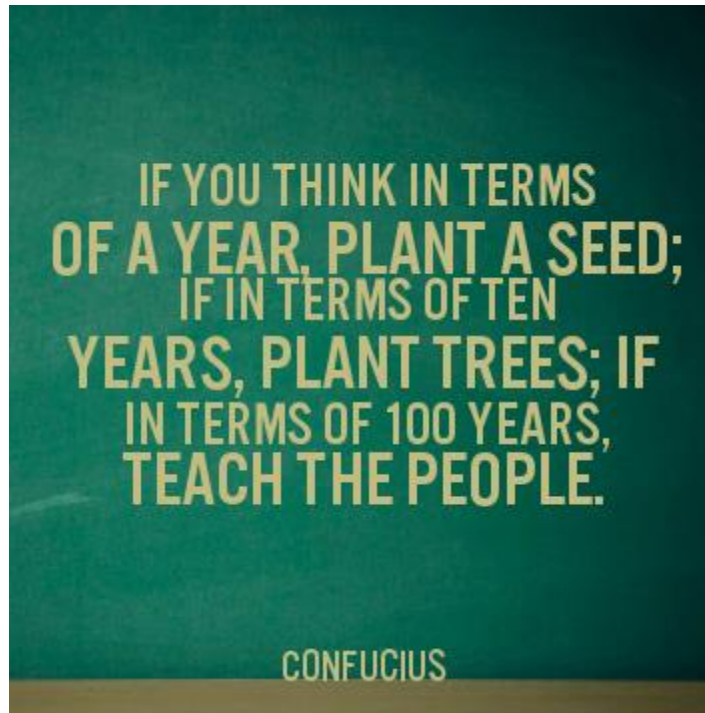
Dr. Klaus Schmierl, ISF München

Ingenieurinnen und Ingenieure für Industrie 4.0

Ausgewählte Ergebnisse der qualitativen empirischen
Erhebungen der IMPULS-Studie

Erfahrungsaustausch Maschinenhaus, 25.06.2018, VDMA, Frankfurt

https://bildung.vdma.org/documents/14969637/26503651/2018%2006%2025_Pr%C3%A4sentation%20ISF_Studie%20IngenieurInnen%20f%C3%BCr%20I4.0_1530861315036.pdf/b19c7143-b97a-7061-80ce-300d4154d1e6



Source: quotepixel.com/picture/inspirational/confucius/

