Inspiring Actions for Successful Engineering Education

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Who am I?

• Engineer by training, teacher by choice
• 33 years of teaching experience
  – Multiple countries, languages, and levels
    • Brazil, Spain, USA, India, Austria
    • English, Portuguese, Spanish
    • From high-school to PhD + outreach (Lifelong Learning)
• Broad portfolio of courses under CS, IT and ECE
• Enthusiastic adopter of new tools and technologies
• Involved in online learning since late 1990s
My goal (for this talk)

Present a series of time-tested best practices and recommendations for Engineering educators

(12) Actions that can inspire, engage, and promote personal and professional growth in future engineers.
1. Adopt...
Adopt...

... the best technologies, languages, tools, and apps currently available

There is **no excuse** for using bad / old-fashioned / obsolete tools!

**Examples:**

- MATLAB and its toolboxes
- Web development languages, editors, IDEs, etc.
2. Curate...
Curate…

... contents (out of millions of useful books, sites, blogs, papers, etc.) in a creative way

The 4 S’s of content curation:

- **Search**: define topics and organize sources
- **Select**: only high quality content!
- **Sense making**: annotate, mash up, apply, put in chronological order, add value!
- **Share**: distribute using best channels

*Curator*
cu·ra·tor/ˈkyōərətər/
Noun: A keeper or custodian of a museum or other collection
3. Guide...
Guide…

… students through the learning process

“Guided tours”:

• JavaScript
• PHP
• MEAN stack
• Machine Learning
• Deep Learning
4. Reach...
Reach…

… as many students as possible

- 1980s: pre-recorded lectures (Brazil)
- 1990s: video lectures + FedEx + library (FEEDS) (USA)
- 1990s: “virtual classrooms” and homemade web-based solutions
- 2000s: LMS-based solutions (Blackboard, Moodle)
- 2010s: MOOCs (as student), Canvas, mobile-first
5. Communicate...
Communicate…

...clearly and frequently, using every possible tool

- Skype, FaceTime, Google Hangout, WhatsApp
- Discussion Board forums (LMS)
- Email? No!
  SLACK, instead!
6. Engage...
Engage...

... students in meaningful discussions

• small classes/groups
• discussion board forums
• open-ended questions (**Socratic** method)
• side topics
  (e.g., *what is your favorite AI-themed movie?*)
7. Respect...
Respect…

… and accommodate individual traits, background, innate skills, learning styles, etc.

Learning styles:

• Bottom-up vs. Top down
• Structured (book) vs. Unstructured (video)
• Contemporary issues
  – Short attention span, ADHD, etc.
8. Narrow the gap...
Narrow the gap…

... between academia and “real world”

- Meaningful assignments
- Guest speakers
- Technical visits
- Expo / Project showcase
9. Challenge...
... **Assumptions**: you will be (positively) surprised!

... **The system**: ask for forgiveness, not permission

... **Students** to do more than they thought they could (*Flow*)
10. Lead by example...
Lead by example

People I look up to

Me

Students
11. Be flexible...
Be flexible…

… with just about everything!

Things…

• can go wrong
• may take longer than expected to work
• don’t always work as planned
12. Let go...
Let go…

... and let them grow…

Hugo Vieira Neto
Professor of Computer Vision,
Federal University of Technology - Paraná
Computer Vision, Machine Learning,
Mobile Robotics, Biomedical Engineering

- PhD in Computer Science (Mobile Robotics), University of Essex, 2006
- MSc in Computer Science (Computer Vision), Federal Center for Technological Education - Paraná, 1998
- BSc in Electrical Engineering, Federal Center for Technological Education - Paraná, 1995
Let go...

... and let them grow...

BIOGRAPHY

Vladimir Nedović was born in Kotor, Montenegro. He obtained his BSc degree in Computer Science from Florida Atlantic University (United States), and MSc and PhD in Artificial Intelligence from University of Amsterdam (The Netherlands). He is a founder of Flavourspace, a food+tech startup in which the team combines passion for food with their passion for digital technologies.

VLADIMIR NEDOVIĆ, PH.D.
CEO, Flavourspace

http://flavourspace.com/
One more thing...
Breathe!
Breathe!

(In spirare): mindfulness and meditation help!

**Inspirare**

-verb

to inspire, breathe into, influence or animate with an idea or purpose, to lift up to greater heights.

Origin:
Latin. From the adverb “in” + spirare (to breathe)
Thank you!

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