Engineers do it First
(open source engineering)

By Scott Foerster,
Assistant Professor Engineering,
Howard Community College, Columbia Maryland
Masters, [Harvey Mudd College](#)

Introduction

My Goals for this presentation
Join Me

Google key words: wikibooks general engineering
                     wikiversity general engineering

Disruptive Change:
Do It Yourself University

1. Colleges are too expensive

2. Job Finds You
Portfolio's

3. Free Education
Stanford Classes
www.ai-course.com

Consequence:

Face to Face has to be about projects, not content.

Edupunks, Edupreneurs, and the Coming Transformation of Higher Education

DIY U

ANYA KAMENETZ
Author of GENERATION DEBT

What is the Engineering Narrative?

Science Narrative
Discover, publish, apply for grants

Technology Narrative
Experience creates Expertise

Current Engineering Narratives are not working
[Applied Science](), Solve Problems, Make Things, Design, Engineers help shape the future.

This makes teaching introduction to Engineering Difficult … Why?

Engineers Do it First Narrative
Play → Do it First → Design → Solve Problems

Evolution of "Do it First"

A E4 Harvey Mudd College
F [NSF Coalitions](#)
F [FE Crash Course](#)
D [CDIO](#)
D [Engineering Projects in Community Service](#)
D [Project Lead the Way](#)
C [Johns Hopkins What is Engineering](#)
C [Transferable Integrated Design Engineering Education](#)
B [Portfolios](#)
B Wikia

Primary Goal: Project Joy
Choose among old and new,
Projects are never finished,
Perhaps [may be impossible](#).
Grade form and celebrate success
Content driven by project
No Scaffolding.

Open Ended Projects
create new instructions, polish old instructions

Freshman problems

[I know nothing](#).

My problem or the world's

It can't be done

It is broken

Feeling Success

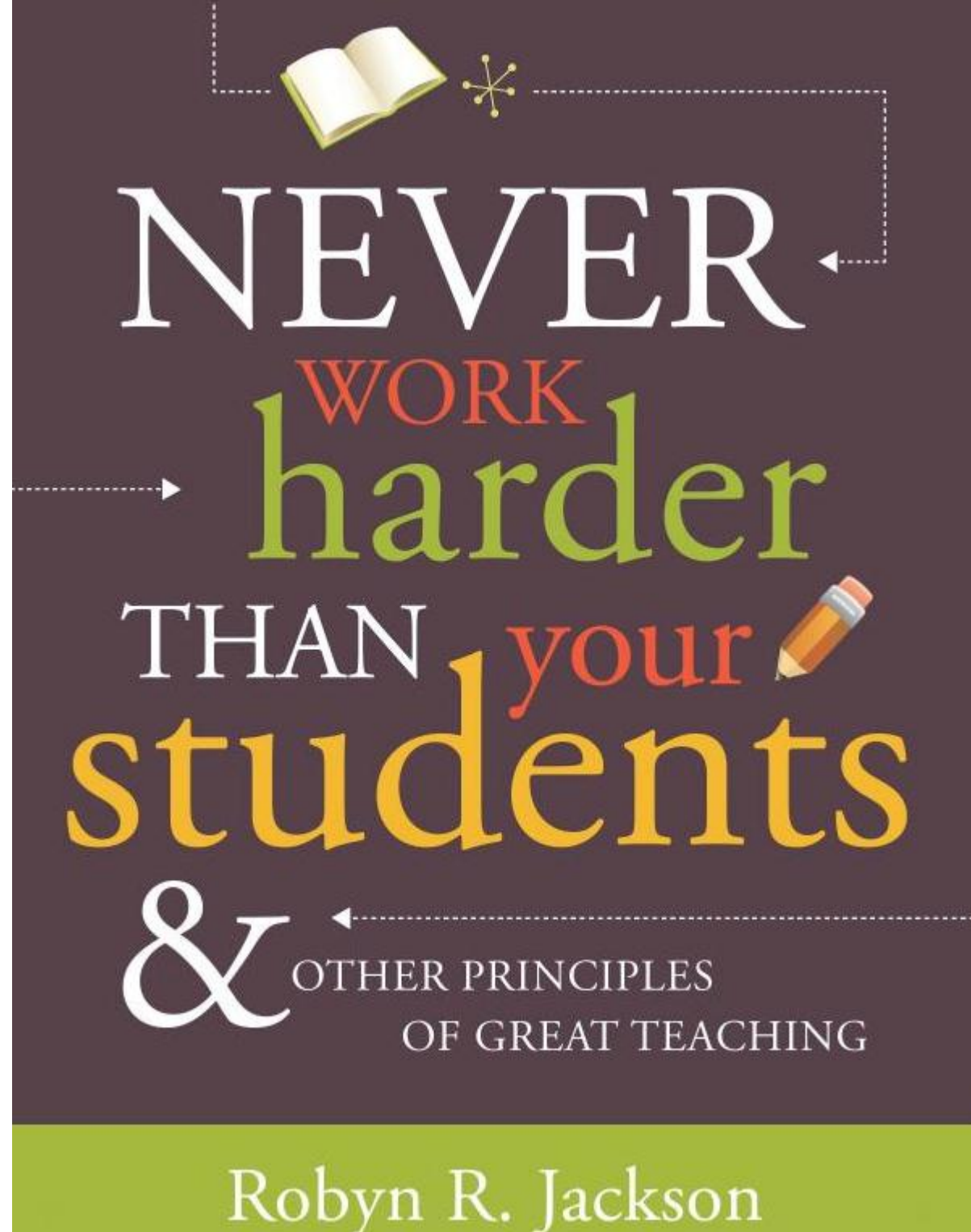## Slackers
Find cave dwellers
Make them "easy to work with"
Repeat what they do
Polish documentation
Shrink to Sound byte
Present

Benefits .. Maturity Diversity

NEVER WORK harder THAN your students & OTHER PRINCIPLES OF GREAT TEACHING

Robyn R. Jackson

Grading

Engineers do it First …
> documentation (repeatability)
> push success

Point system
> 2000 A, 1600 B, 1200 C, 800 D

Weekly .. 140 points for A
> Notebook 50
> Electronic 50
> Presentation 40
> Club 5

Four project cycles

The Classroom

.

Class Activities
Presentations
Notebook Grading

Team Activities
Reviewing work done
Negotiating new individual tasks

Individual Activities
Materials and tools
Finding starting points

Week End .. on Line in Wikiversity
Electronic

External Assessment Problem

Current

    PLTW advisory panels
    JHU verbal interviews
    SRI engineering coalition failure ..

EDPPSR Portfolios

Assess students
Assume a statistical portfolio consensus

Engineers assess projects.

Proposed external assessment rubric:

    Repeatability
    Clarity
    Integrity

Contents [hide]

What is Next?

Build External Assessment Community
Google key words: wikibooks general engineering
wikiversity general engineering

Possible Internal Grading expansion:
Design (notebook), Team Decision Documentation (electronic)

Wiki Engineering Badges of Respect
boy scouts, masons, military have ranks, so does [Kahn Academy](#) and wikia. Need engineering badges that build up to FE and PE.

A Motie from "A Mote in God's Eye"
By Larry Niven and Jerry Pournelle