



# A Curricular Vision from 2025



Chris Riesbeck

Northwestern University

A presentation found in a time capsule,  
from October 20, 2025!



[http://www.futurepkg.com/shop/images/capsules/new\\_sally2.jpg](http://www.futurepkg.com/shop/images/capsules/new_sally2.jpg)

Good evening,  
everyone! Welcome  
to tonight's lecture.

# The Curricular Revolution: The View from 2025



Here in 2025, it may be hard to appreciate just how different education was even as late as a decade ago.



(cc) BY Tulane Public Relations



Let me describe some of its more bizarre aspects, from curriculum to classroom.

Universities used to offer a long list of majors, like this!

- ▶ Aerospace Science & Engineering
- ▶ African American & African Studies
- ▶ Agricultural & Environmental Education
- ▶ American Studies
- ▶ Animal Biology
- ▶ Animal Science
- ▶ Animal Science & Management
- ▶ Anthropology
- ▶ Applied Mathematics
- ▶ Applied Physics
- ▶ Art History
- ▶ Art Studio
- ▶ Asian American Studies
- ▶ Atmospheric Science
- ▶ Biochemical Engineering
- ▶ Biochemistry & Molecular Biology
- ▶ French
- ▶ Genetics
- ▶ Geology
- ▶ German
- ▶ History
- ▶ Human Development
- ▶ Hydrology
- ▶ International Agricultural Development
- ▶ International Relations
- ▶ Italian
- ▶ Japanese
- ▶ Landscape Architecture
- ▶ Linguistics
- ▶ Managerial Economics
- ▶ Materials Science and Engineering
- ▶ Mathematical & Scientific Computation

<http://admissions.ucdavis.edu/majors/>



Majors in turn  
were made up of  
courses like this.



### SOPHOMORE LEVEL COURSES

#### Third Semester (17 cr)

**ENGR 29700** - Computer Tools for E  
**MATH 26100** - Multivariate Calculus  
**PHYS 25100** - Heat, Electricity, and  
**EEN 22000** - Fundamentals of Elect  
**ME 20000** - Thermodynamics I (3 cr)

#### Fourth Semester (17 cr)

**ECE 20400** - Introduction to Electric  
**MATH 26600** - Differential Equations  
**EEN 24000** - Basic Mechanics (4 cr)  
**EEN 26000** - Sustainable Energy (3  
**ME 32700** - Engineering Economics

### JUNIOR LEVEL COURSES

#### Fifth Semester (16 cr)

**ECE 49500** - Fundamentals of Elect  
**EEN 33000** - Dynamic Systems Mo  
**ME 27200** - Strength of Materials (4  
**EEN 31000** - Fluid Mechanics and H

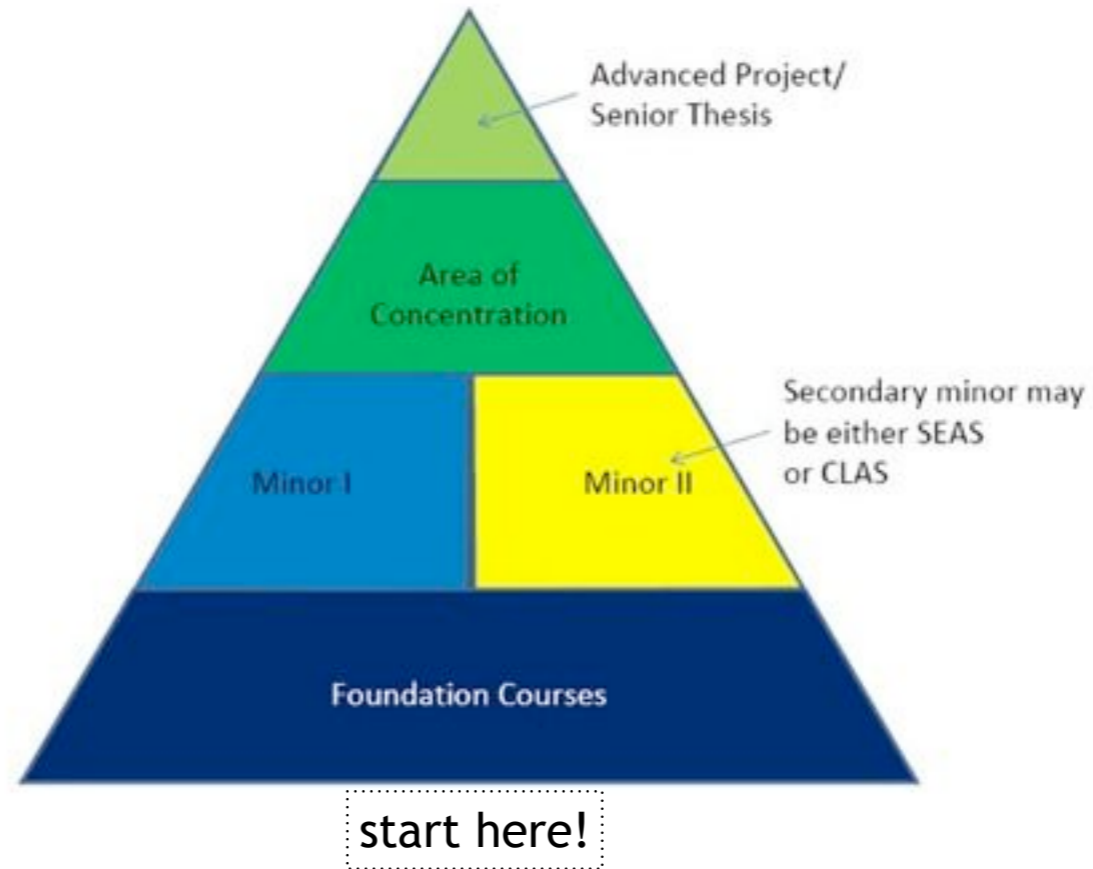
<http://enr.iupui.edu/energy/plan.shtml>

### Recommended courses

<b>ANAT 101</b>	Anatomy and Physiology I
<b>ANAT 102</b>	Anatomy and Physiology II
<b>BMES 680</b>	Special Topics: CAD/CAM in Biomedical and Tissue Engineering
<b>MATE 661</b>	Biomedical Materials I
<b>MATE 662</b>	Biomedical Materials II
<b>MEM 444</b>	Biofluid Mechanics
<b>MEM 478</b>	Computer-Aided Tissue Engineering
<b>MEM 684</b>	Mechanics of Biological Tissues
<b>MEM 685</b>	Mechanics of Human Joints
<b>MEM 686</b>	Mechanics of Human Motion

<http://www.drexel.edu/catalog/plan/mech-biomechanical.htm>

Most courses taught basic theory, applied to synthetic examples.



<http://www.seas.virginia.edu/acad/programs/engrsci/>

Real world practice came only after years of study.

A typical class schedule: lectures, quizzes, and a final exam.



**Course**

- **Lesson**
  - **Introduction**
  - **Chapter Readings from *The Prize***
    - **Questions to Consider**
  - **Review Online Notes**
  - **Video Review**
  - **Lesson Activity**
  - **Summary & Feedback**
  - **Lesson Quiz**
- **Mid-Term Exam**
- **Project**
- **Final Exam**

<https://www.e-education.psu.edu/egee120/node/47>



Assessments at the end of a course determined grades. Grades defined success.

### Course

#### Lesson

Introduction

Chapter Readings from *The Prize*

└ Questions to Consider

Review Online Notes

Video Review

Lesson Activity

Summary & Feedback

Lesson Quiz

Mid-Term Exam

Project

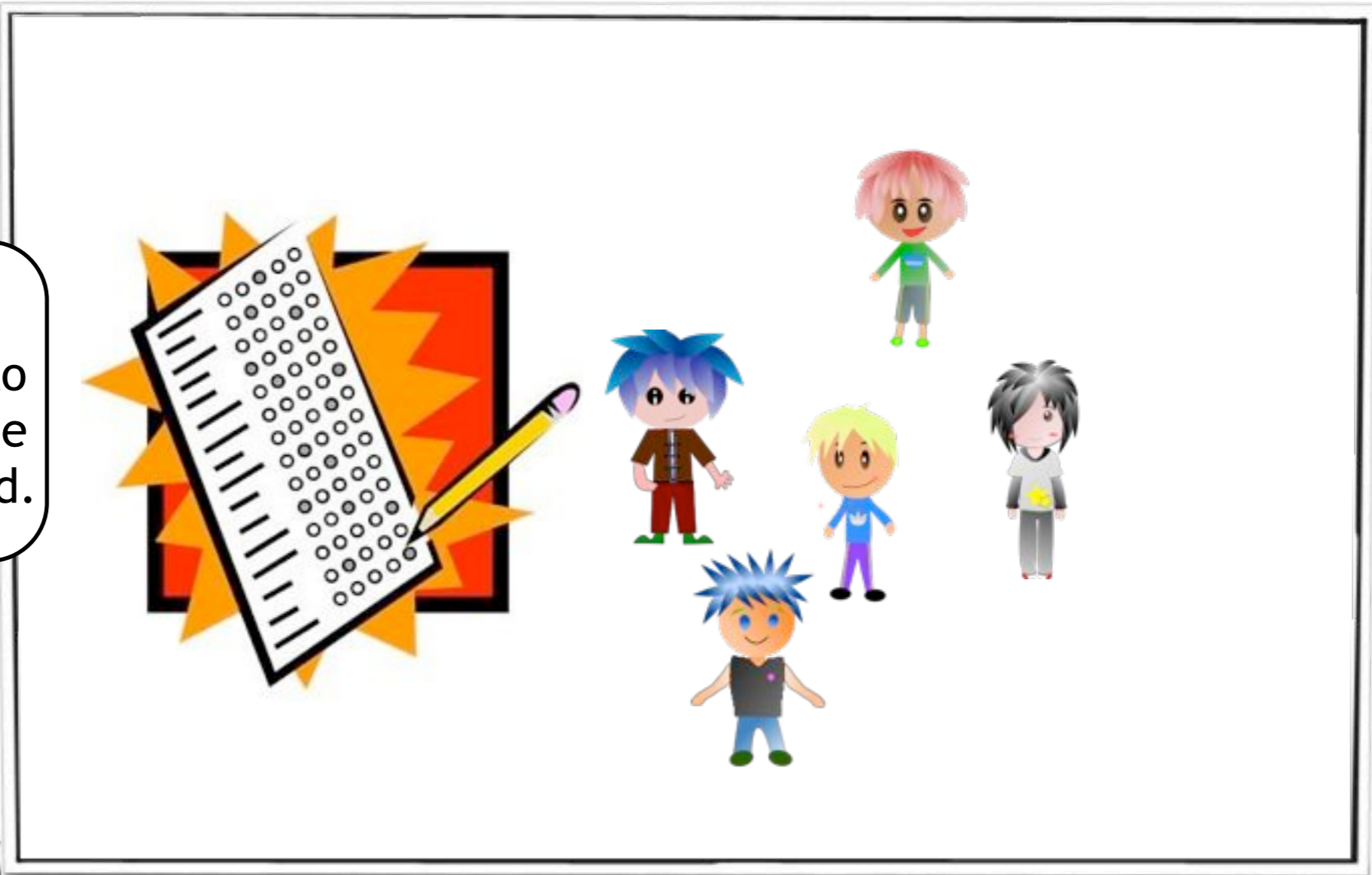
Final Exam

<https://www.e-education.psu.edu/egee120/node/47>



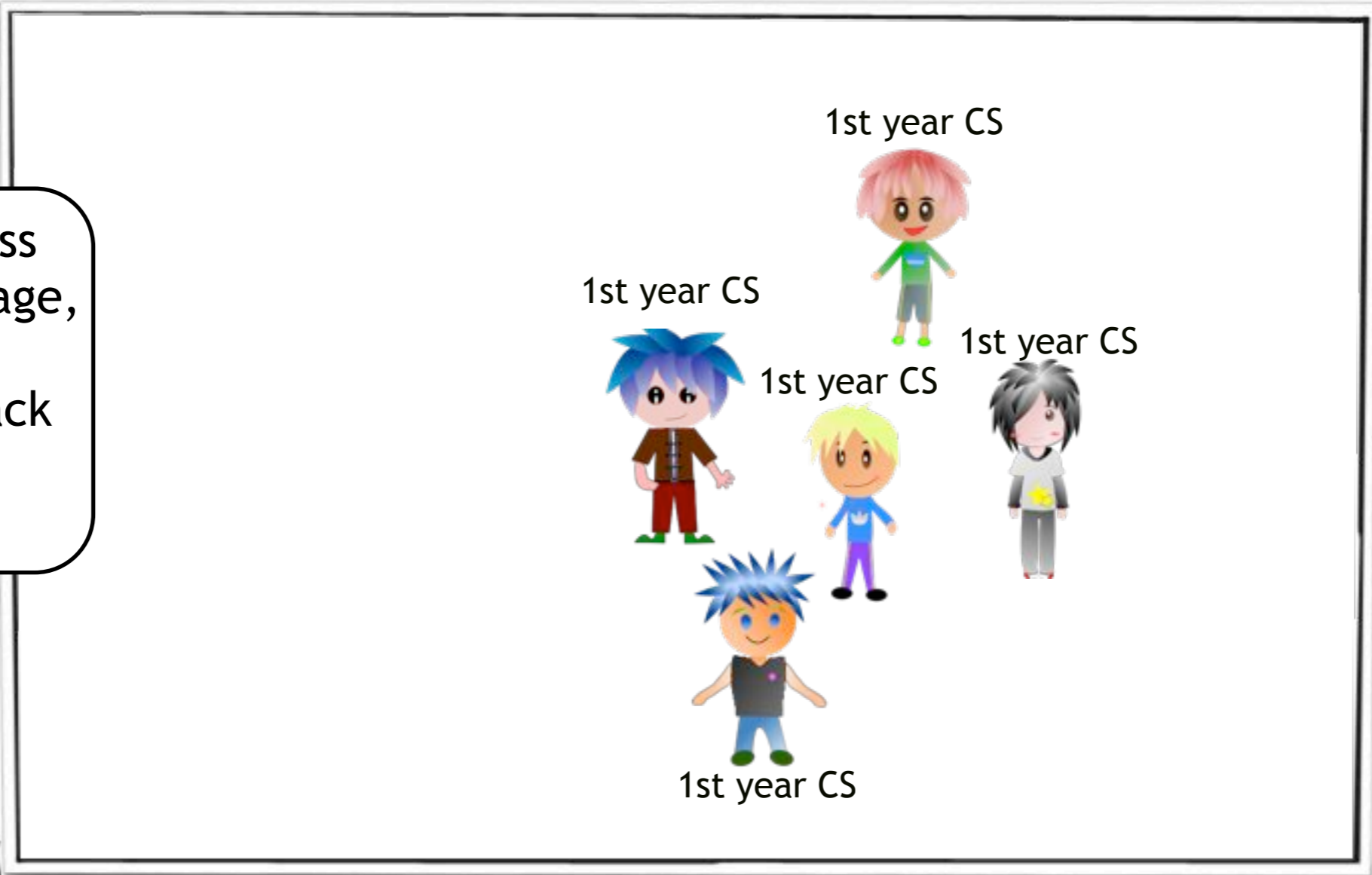
Students were thus discouraged from in-depth independent exploration. Faculty were pressured to "teach to the test."

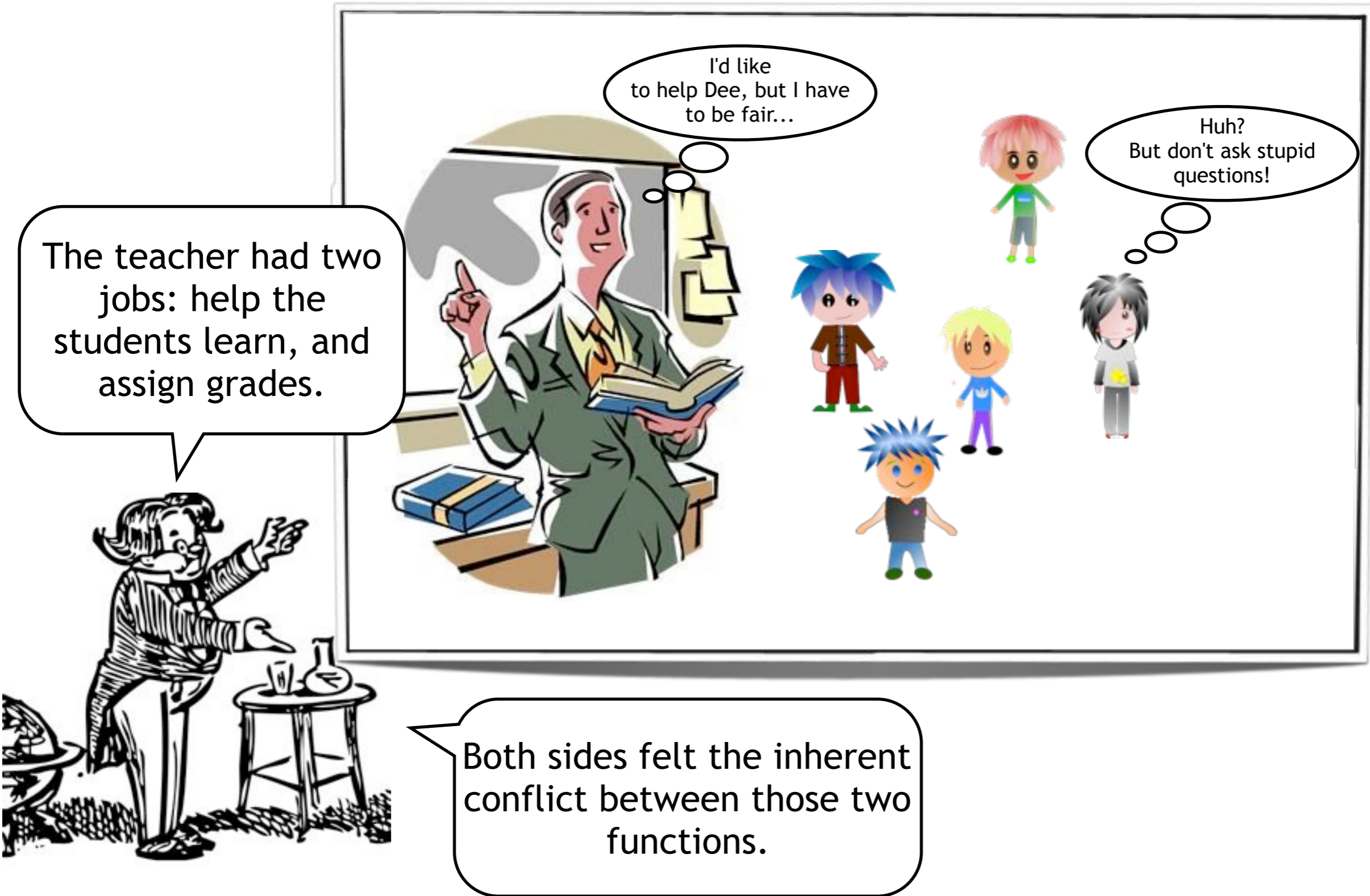
Assessments  
measured ability to  
do the work for the  
course just finished.



Nothing measured ability  
to do future work.  
Nothing aligned courses  
to future needs.

Students in a class were of the same age, with the same background, or lack thereof, in the material.





I'd like to help Dee, but I have to be fair...

Huh? But don't ask stupid questions!

The teacher had two jobs: help the students learn, and assign grades.

Both sides felt the inherent conflict between those two functions.

# Technology and Learning in 2015

At this time in history, computers and the Internet had dramatically changed business and social interactions.



So, how had technology changed education?

For the worse, mostly.  
Instead of removing  
compromises made to  
teach 30 or 100 students  
in a classroom...



MOOCs  
flipped classrooms

multiple choice  
quiz makers

automated essay  
graders

gamification

...technology was used to  
compromise the education  
for thousands of students at  
a time.

# Ideas in Learning in 2015

It's not that there weren't interesting ideas in how to improve learning.



Many excellent ideas were explored on how to foster true collaborative team-based learning by doing...

collaborative learning

portfolios

project-based learning

goal-based scenarios

simulations

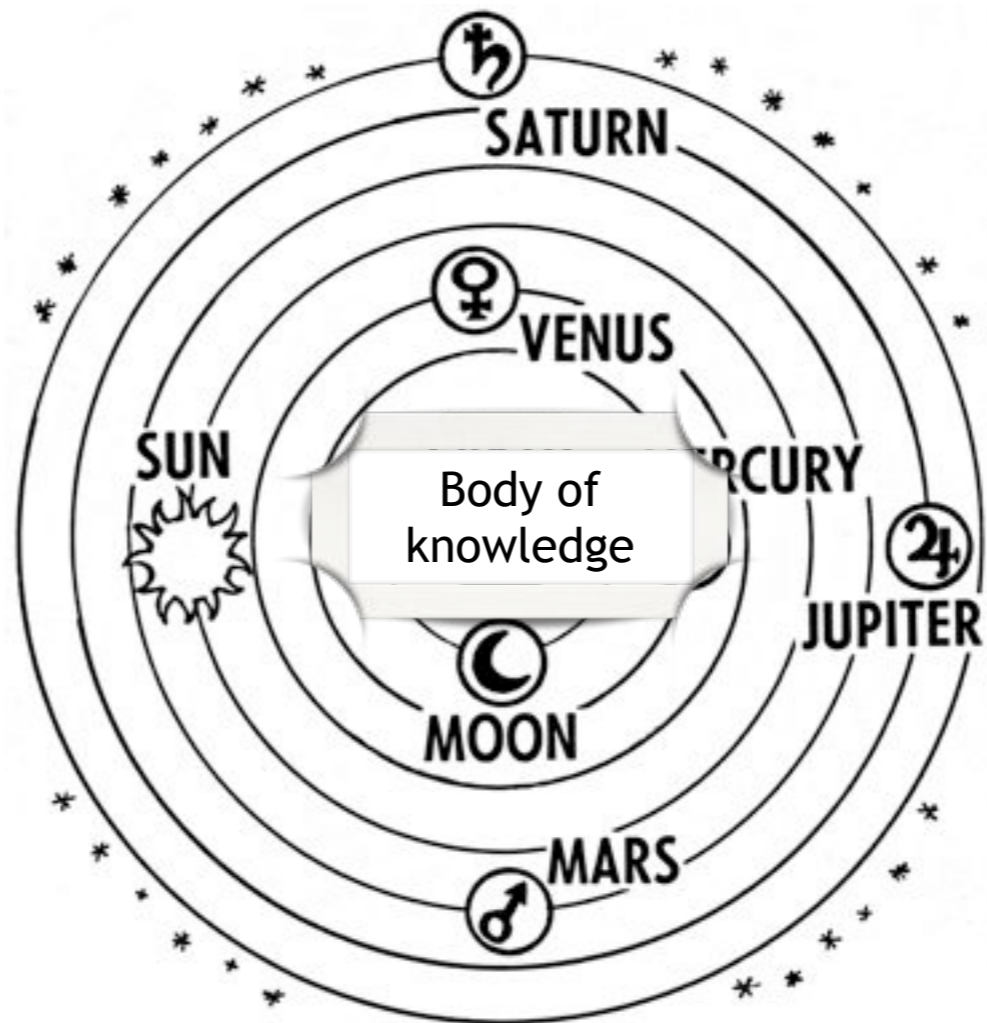
serious games



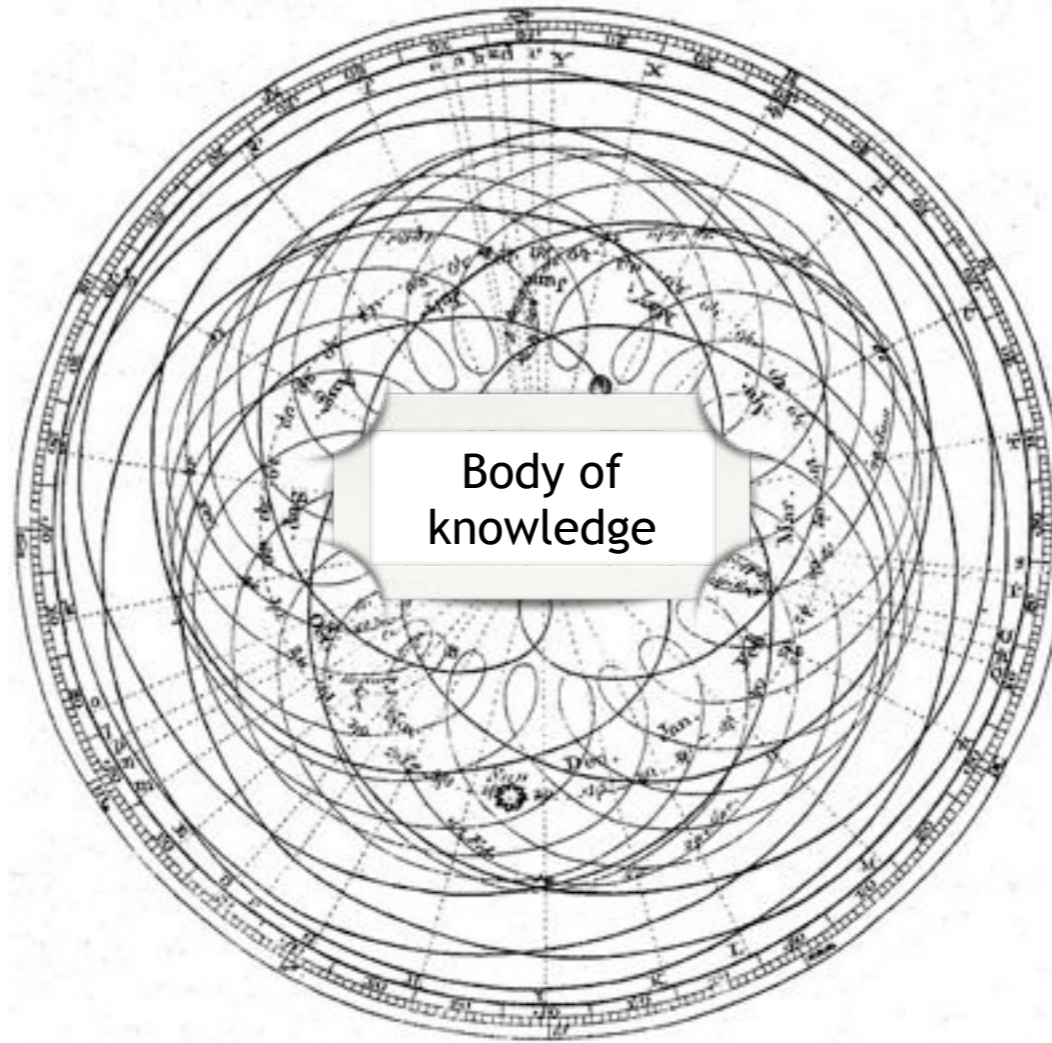
...but they all missed the biggest problem.



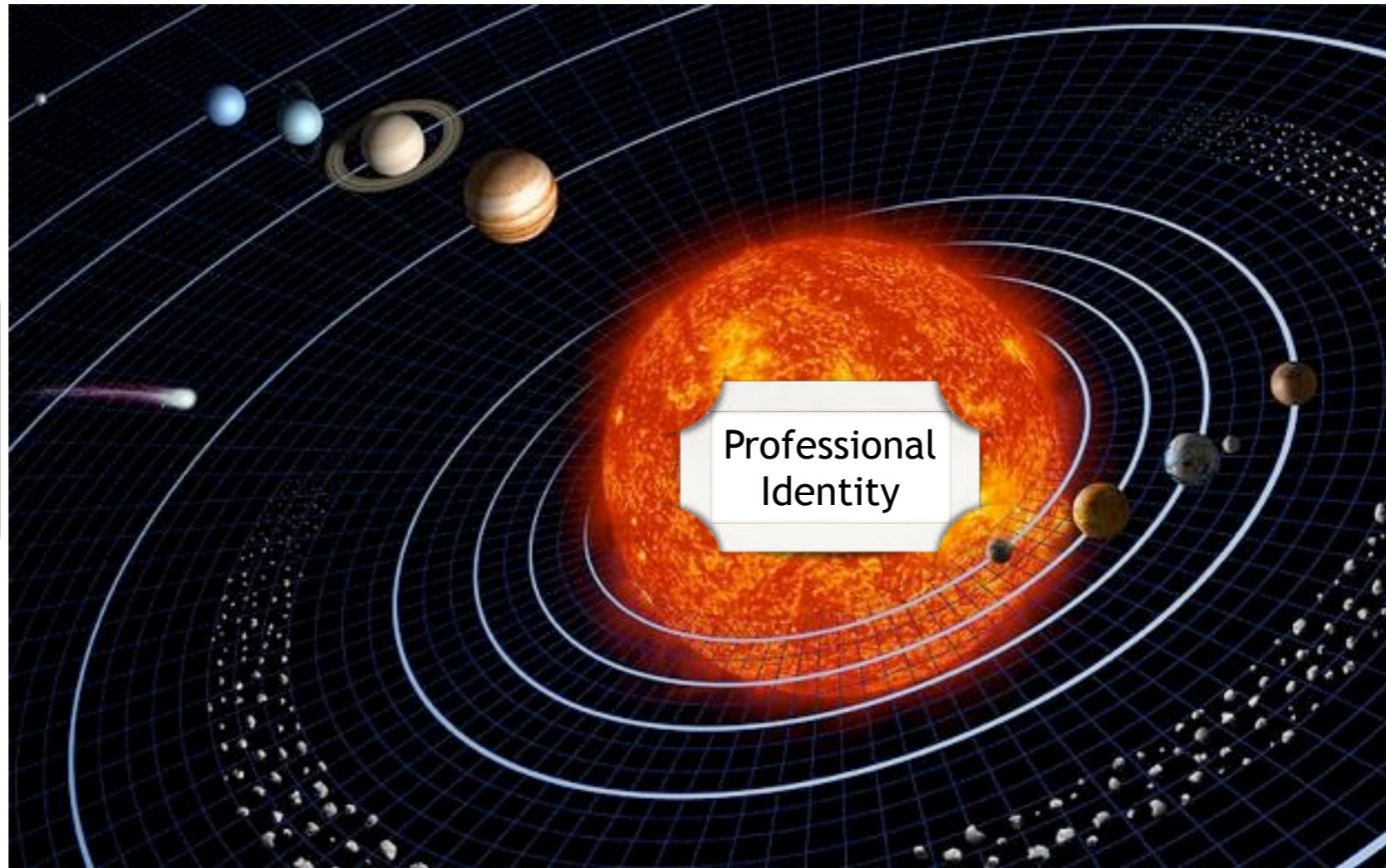
If you put the wrong thing in the center of your theory...



... no amount of patching is going to save you.



The goal of learning is not "to know something" or even "to do something."



The goal is "to be something."

# Education in 2025

So where are we now?



Today, in 2025, a university is not a collection of departments...

- ▶ Aerospace Science & Engineering
- ▶ African American & African Studies
- ▶ Agricultural & Environmental Education
- ▶ American Studies
- ▶ Animal Biology
- ▶ Animal Science
- ▶ Animal Science & Management
- ▶ Anthropology
- ▶ Applied Mathematics
- ▶ Applied Physics
- ▶ Art History
- ▶ Art Studio
- ▶ Asian American Studies
- ▶ Atmospheric Science
- ▶ Biochemical Engineering
- ▶ Biochemistry & Molecular Biology

- ▶ French
- ▶ Genetics
- ▶ Genomics
- ▶ History
- ▶ Humanities
- ▶ Hydrology
- ▶ In...
- ▶ In...
- ▶ Italian
- ▶ Japan
- ▶ Mathematical & Scientific Computation

Medical device company

Tech startup

University research lab

Corporate IT group

Publishing house

Manufacturing firm

<http://admissions.ucdavis.edu/majors/>

... but a set of **venues**, modeled on real life, within which learning and the application of learning naturally takes place.



Today, in 2025, a major is not a collection of bodies of knowledge...

Fall	Win
ICS 21 Intro CS 1 ICS 60 CG and Society Math 2A Calculus 1	ICS 22 Intro ICS 61 Game Design Math 2B Calculus Writing 39B
ICS 65 C++ Math 6G Linear Algebra ICS 51 Computer Org. Physics 3A	ICS 6D Discrete ICS 160 Graph Game Platform CS 112 Comp GE III/VII
ICS 162, ICS 163, ICS 166 ICS 171 Artificial Intellig. F&M 85A Visual Media CGS Elective	ICS 167 Multi-Systems One of: CS 122A, Inf 111 Inf 131 Upper Div. Writing GE IV

[http://www.ics.uci.edu/ugrad/degrees/degree\\_reqs.php](http://www.ics.uci.edu/ugrad/degrees/degree_reqs.php)

### Rotations

- Internal Medicine
- Nutrition Advisor
- Superworm
- Sports Medic
- Designer Genes
- Plant Plague
- Medical Detective

### Rotations

- Web Page Author
- Robot Developer
- Web Application Developer
- Database Developer
- Software Team Developer
- Startup Entrepreneur

<http://vista.engines4ed.org/home/index.htm>



... but a progression of roles from novice to skilled practitioner.

A course is not a set of topic modules...

Unit 1	Principles of Athletic Training
Unit 2	Basics of Human Anatomy and Physiology
Unit 3	Lower Extremity Injuries
Unit 4	Upper Extremity Injuries
Unit 5	Head Injuries
Unit 6	Injury Prevention
Unit 7	Other Athletic Conditions and Concerns

### Your Cases

- Case 1: Tennis Twist  
Outreach 1
- Case 2: Skateboarding Slip-up
- Case 3: Ankle Angst  
Outreach 2
- Case 4: Track Star Troubles  
Conclusion/Reflection

<http://vista.engines4ed.org/sportsMedic/index.htm>

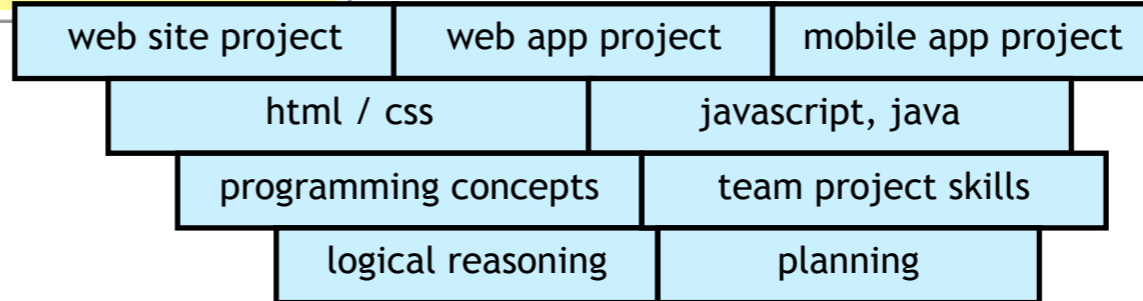
<https://sites.google.com/a/bmhs.org/sports-medicine/syllabus>

... but a sequence of increasingly challenging scenarios.

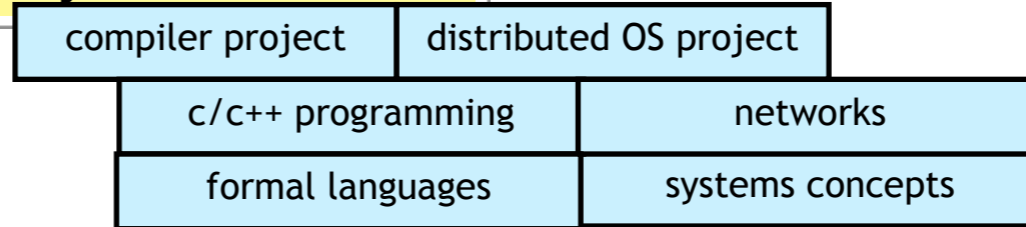


These scenarios occur within the venues, providing a familiar context that students return to over time.

### Corporate IT group



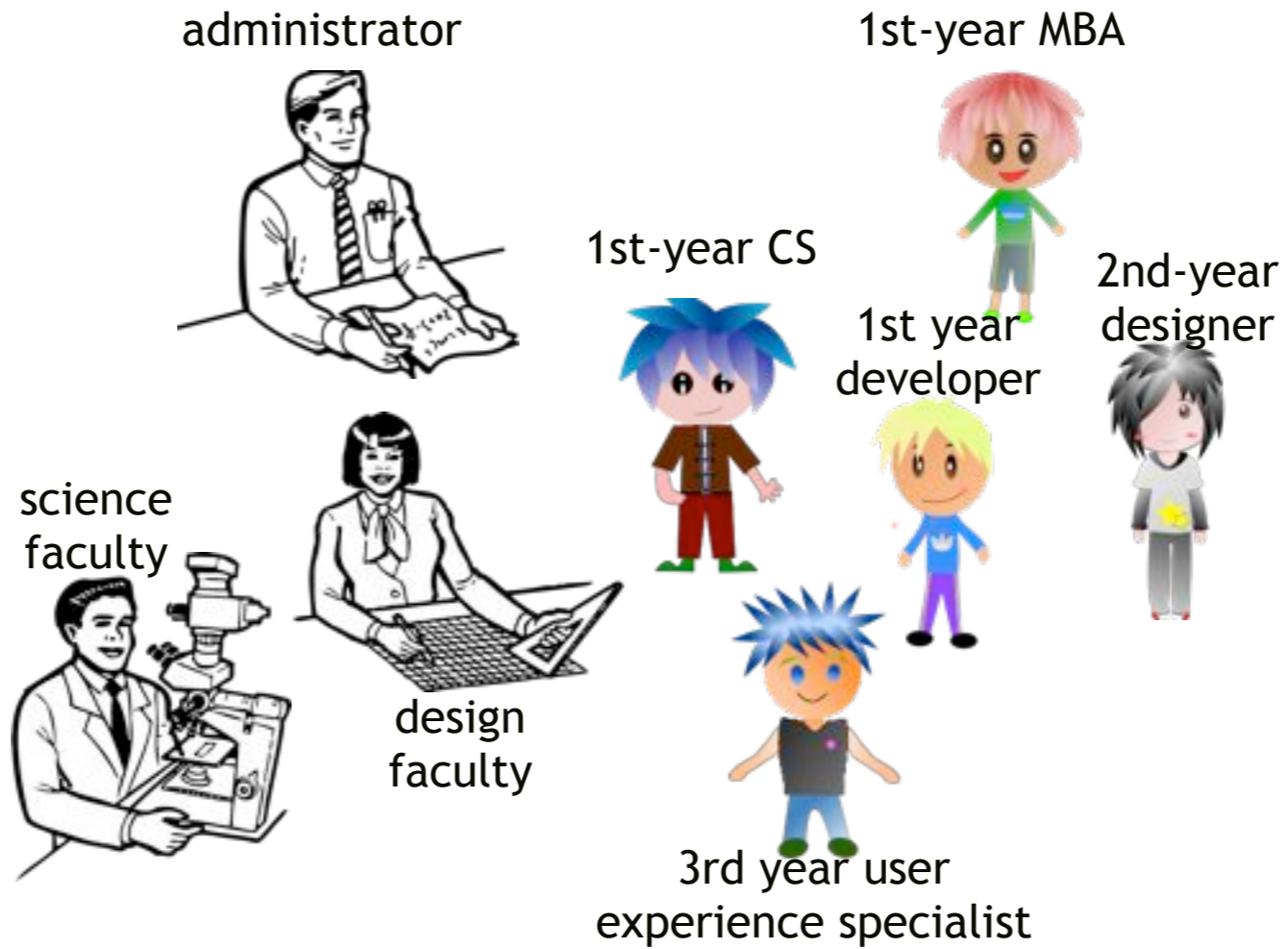
### University research lab



Through these repeated experiences, students learn both practical and general reasoning skills, and find areas where they wish to become experts.

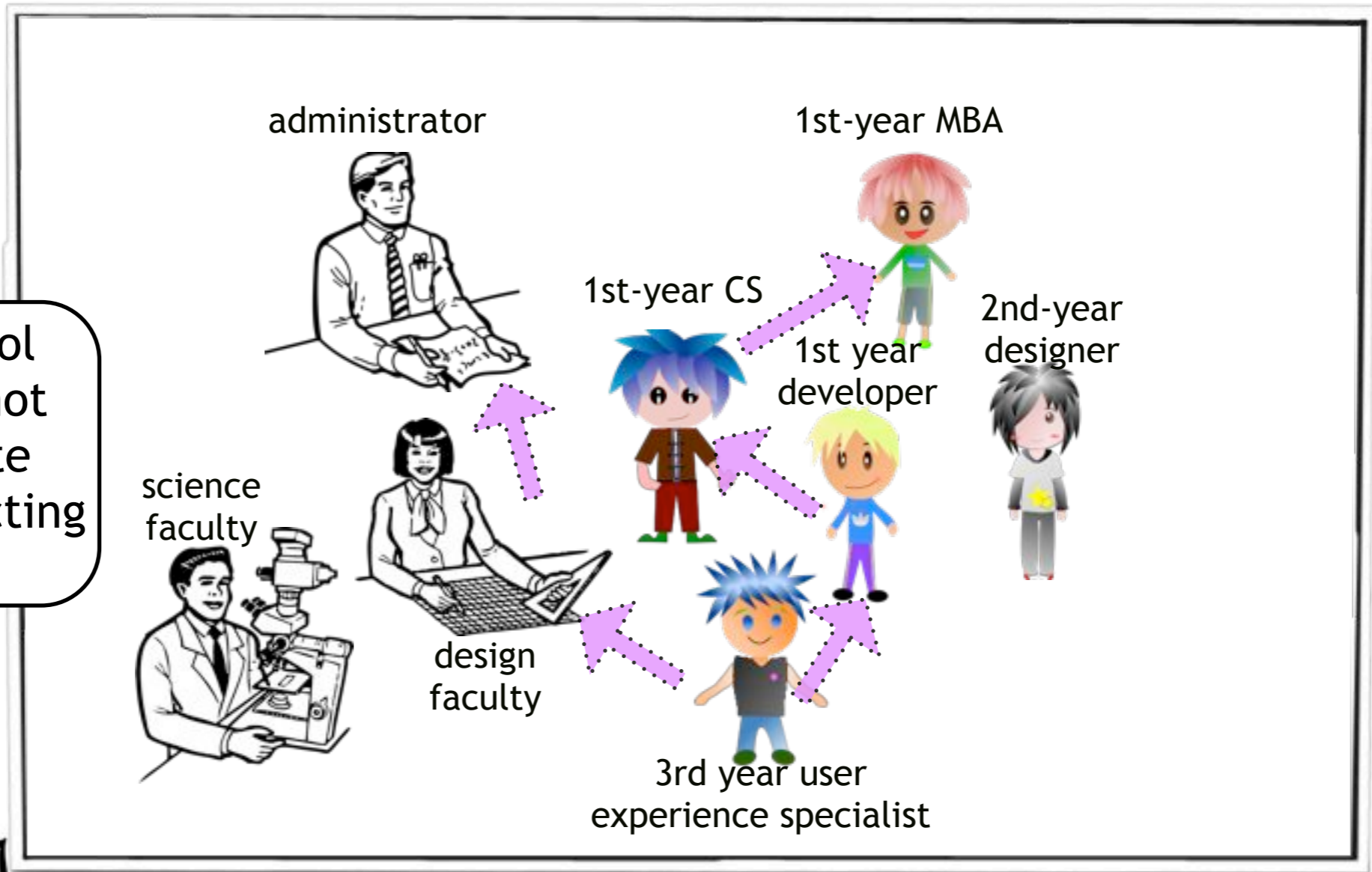


Members in team-based scenarios are often not at the same "grade level," in the same "major," or even still a student.



As in real life, learners in different roles may be at very different points in very different careers.

The total school experience is not one of separate silos, but interacting paths.



Collaboration and mentoring across ages and careers occurs constantly. Life-long learning is inherent in the process.

Instead of *final* exams...



- Course
- Lesson
  - Introduction
  - Chapter Readings from *The Prize*
    - Questions to Consider
  - Review Online Notes
  - Video Review
  - Lesson Activity
  - Summary & Feedback
  - Lesson Quiz
- Mid-Term Exam
- Project
- Final Exam**

basic computer skills exam

Web page author

logical reasoning exam

Robot coder

HTML/Java exam

Web app developer

General coding exam

Database developer

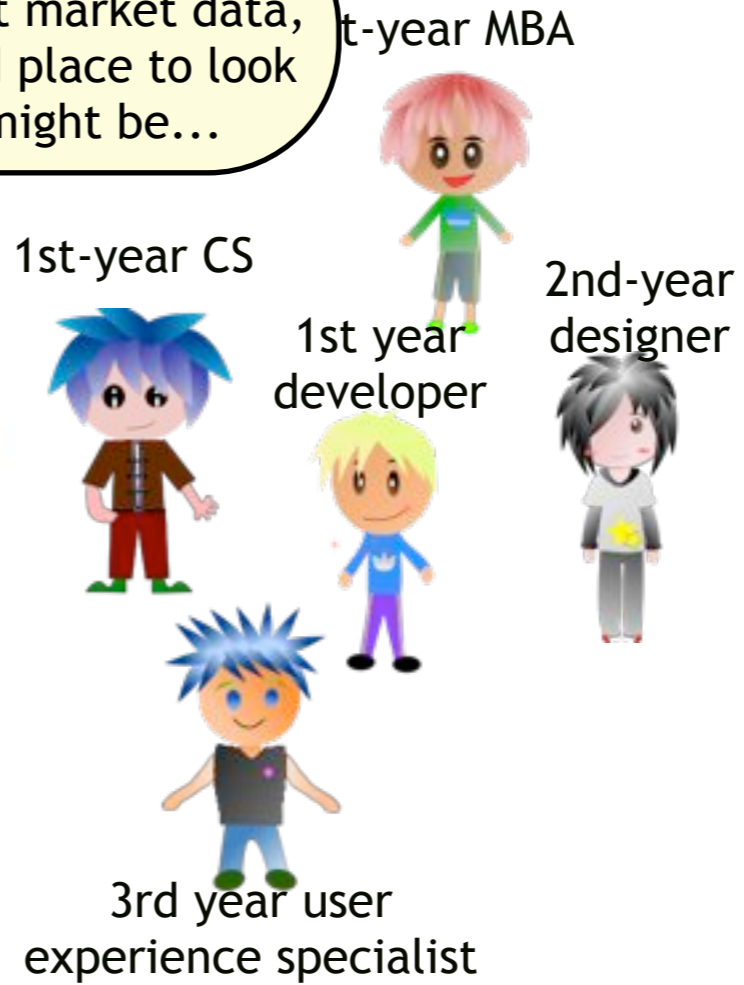
<https://www.e-education.psu.edu/egee120/node/47>

... we have *entrance* exams, to assess readiness to pursue advanced roles.

With progress measured by the roles and scenarios done, teachers are no longer graders.



If you need current market data, a good place to look for might be...



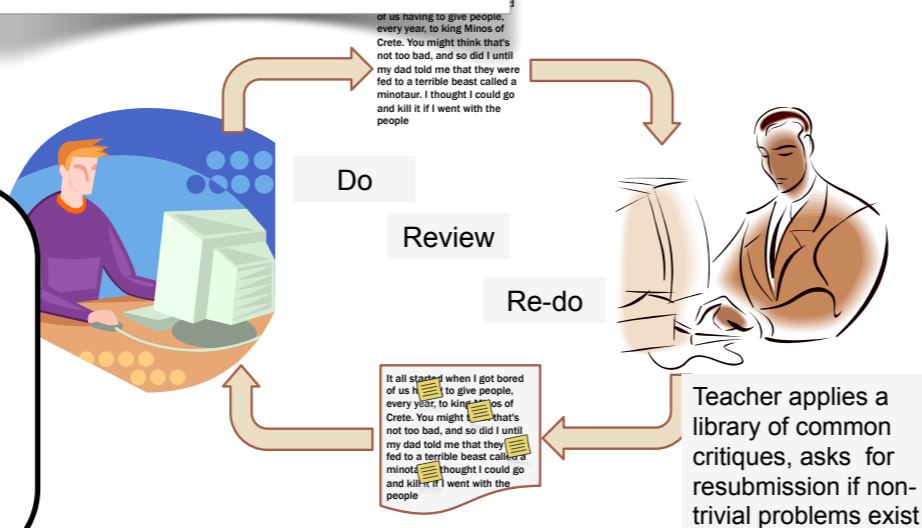
Their role is to coach, critique, mentor and inspire.

# Technology and Learning in 2025

These changes were enabled by the intelligent use of technology.



## Critiquing tools



## Goal-based Scenario Simulations

Corrosion Investigator

Project Cost: \$108000 Day 49 Advance Date

Notebook

Report

Location: recirculating pipes

Diagnosis: Sulfate Reducing Bacteria the pain

Water Chemistry check point 10]DO: 6.242 mg/L  
Water Chemistry check point 10]H2S: 32.098 mg/L  
Water Chemistry check point 3]temperature: 28.541 C  
Water Chemistry check point 2]pH: 6.432  
Water Chemistry check point 2]DO: 4.468 mg/L  
Water Chemistry check point 2]H2S: 42.572 mg/L  
Water Chemistry check point 2]SO4: 77.717 mg/L  
Water Chemistry check point 3]temperature: 29.655 C  
Water Chemistry check point 3]pH: 6.378  
Water Chemistry check point 3]DO: 4.221 mg/L  
Water Chemistry check point 3]H2S: 42.204 mg/L  
Water Chemistry check point 3]SO4: 79.017 mg/L  
Water Chemistry check point 4]temperature: 29.796 C

Water Chemistry check point 3]pH: 6.378 (Reason: Neutral pH, indicating process is probably not a chemical site)  
Water Chemistry check point 3]SO4: 79.017 mg/L (Reason: High sulfate concentration indicative of sulfate reducing bacteria. SRB are known to cause corrosion in steel piping.)  
Water Chemistry check point 3]H2S: 42.204 mg/L (Reason: Rotten egg like odor indicative of sulfate reduction. High H2S concentration is indicative of SRB populations.)

Use Evidence Extract Evidence

Email Address: Submit Report

Technology within courses enables rich learning experiences...

## Collaborative documents



Technology enables just in time delivery of goal-based scenarios to ad hoc groups of students with diverse skills and careers...

Scenario Cohort Marketplace

Run a Startup simulator

Looking for a web developer (HTML5 and CSS skills a must!) and a project manager to work on eBay for artists scenario <link>! Contact...

Newbie BME looking for a graduate level medical device designer and biz school entrepreneur to work on "the portable dialyzer scenario" <link>! Contact...

Peer review sites

Mentoring communities



... via a global marketplace of learners.

To summarize some of the key transformations in the education.



## 2015

departments

knowledge-centered  
foundations-first curricula

topic-driven lecture  
courses

homogenous student  
cohorts

backward-looking final  
exams

technologies for virtual  
classrooms

## 2025

venues

role-centered practice-  
first curricula

challenge-based scenarios

multi-skilled multi-career  
student cohorts

forward-looking  
placement exams

technologies for team-  
based immersive scenarios



Albert Willoughby

Apprentice Historian of Education  
*Public Presentation Challenge #2*

November 2nd, 2025

Many thanks to the members of my cohort:

Yin Xhang: Presentation designer (apprentice)

Max Anoudi: Reference researcher (novice)

Sandy Williams: Senior historian (mentor)

Thank you! I'd appreciate your feedback on how I did in this challenge.

