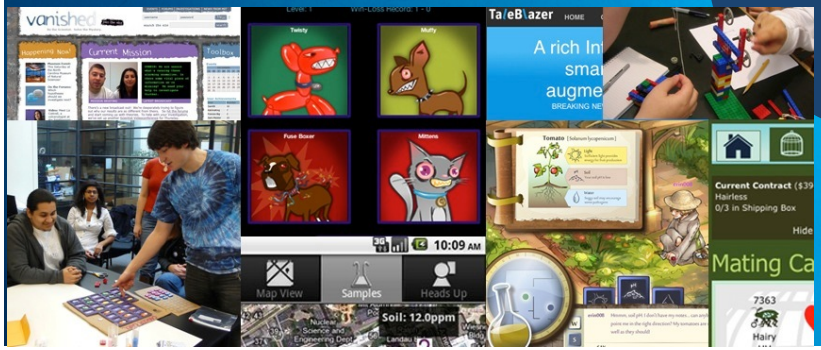
Data, Design, Games and Teachers

The Radix Endeavor



ERIC KLOPFER

PROFESSOR/DIRECTOR

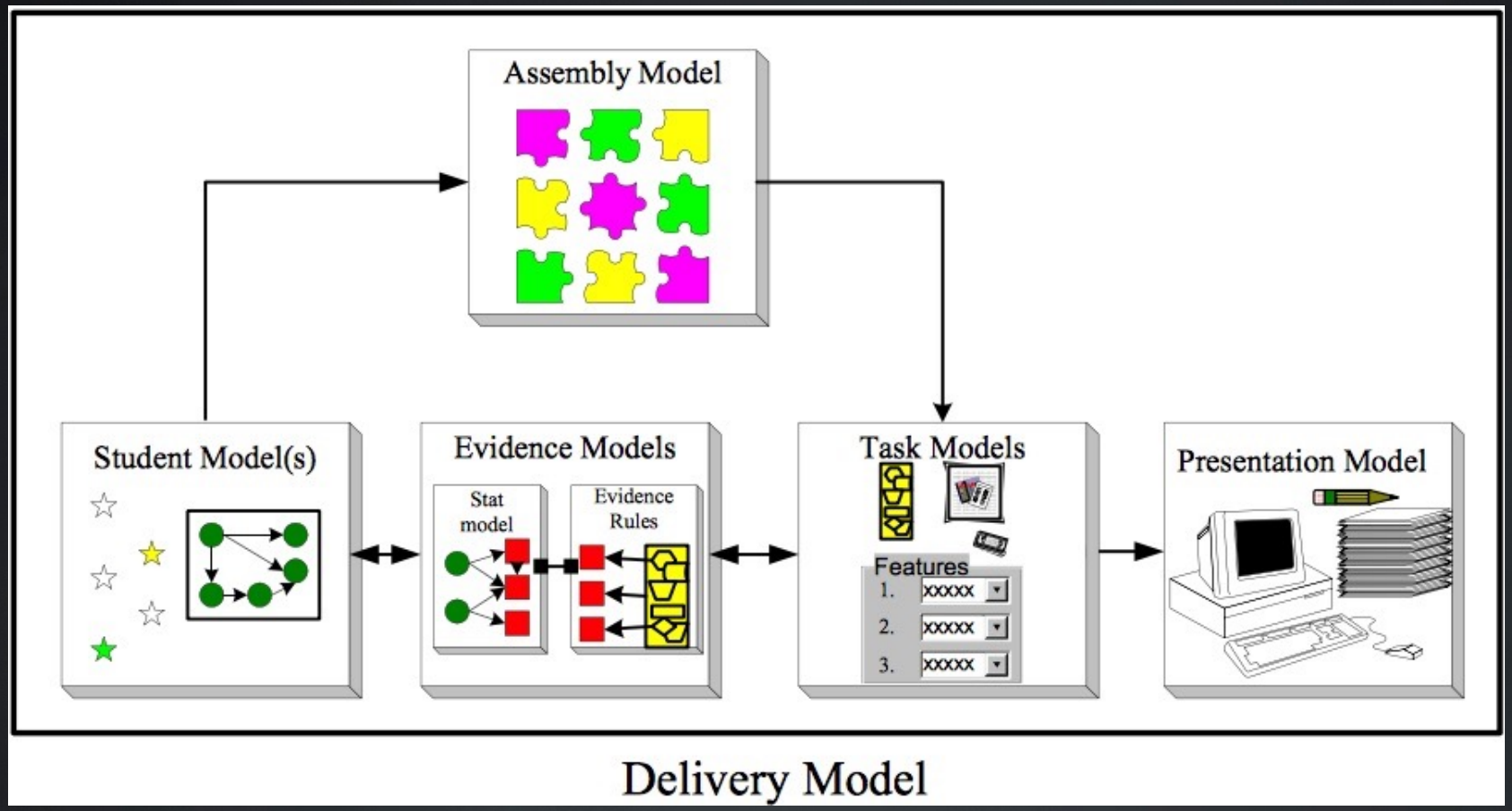
MIT SCHELLER TEACHER EDUCATION PROGRAM

THE EDUCATION ARCADE

the education arcade

MIT OFFICE OF DIGITAL LEARNING

ECD

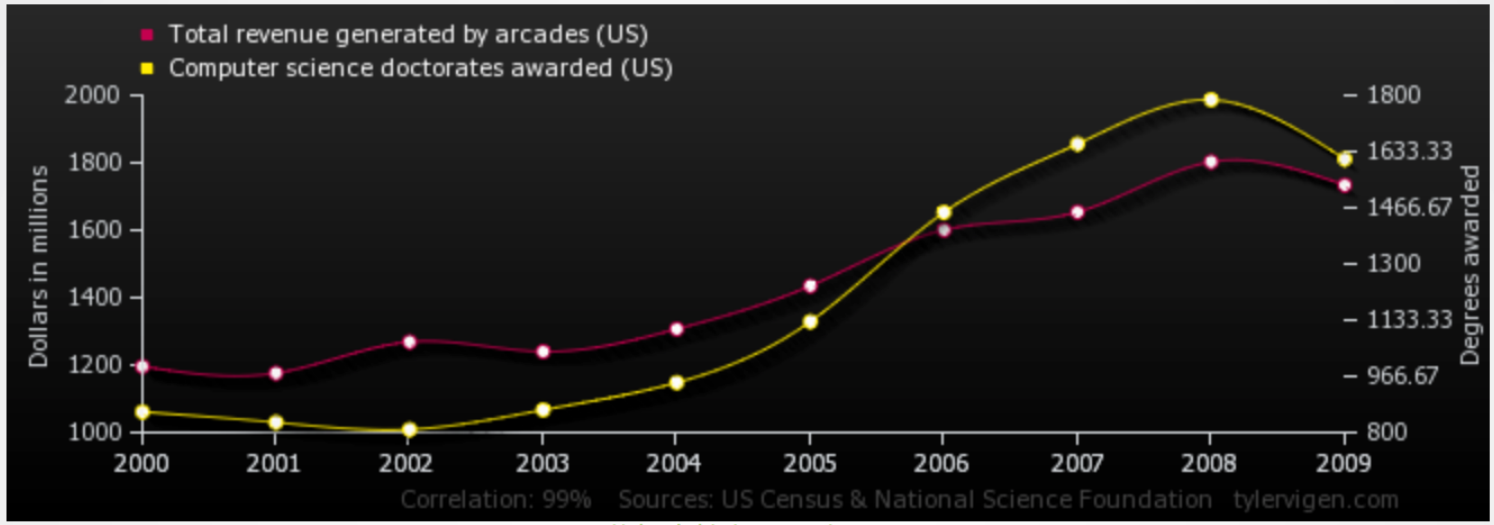


Mislevy et al. 2003

Total revenue generated by arcades (US)

correlates with

Computer science doctorates awarded (US)



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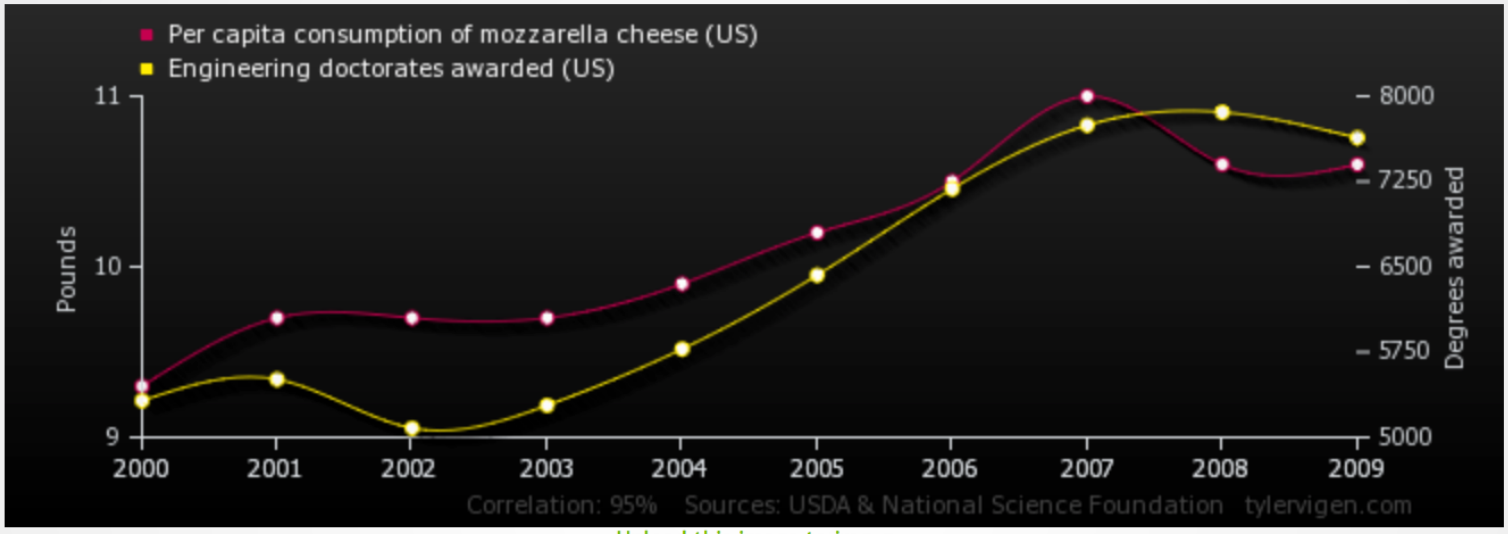
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total revenue generated by arcades (US) *Dollars in millions (US Census)*	1,196	1,176	1,269	1,240	1,307	1,435	1,601	1,654	1,803	1,734
Computer science doctorates awarded (US) *Degrees awarded (National Science Foundation)*	861	830	809	867	948	1,129	1,453	1,656	1,787	1,611

Correlation: 0.985065

Per capita consumption of mozzarella cheese (US)

correlates with

Engineering doctorates awarded (US)



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	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Per capita consumption of mozzarella cheese (US) *Pounds (USDA)*	9.3	9.7	9.7	9.7	9.9	10.2	10.5	11	10.6	10.6
Engineering doctorates awarded (US) *Degrees awarded (National Science Foundation)*	5,323	5,510	5,081	5,281	5,777	6,427	7,185	7,745	7,859	7,634

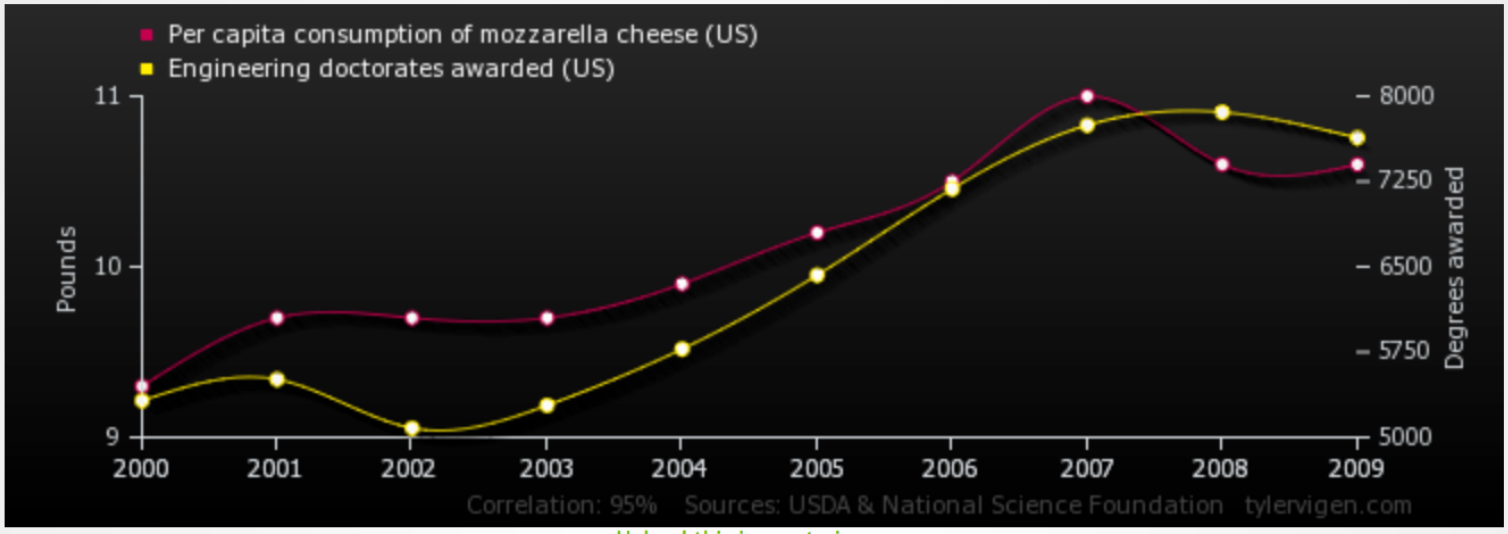
Correlation: 0.947352

spurious correlations

Per capita consumption of mozzarella cheese (US)

correlates with

Engineering doctorates awarded (US)



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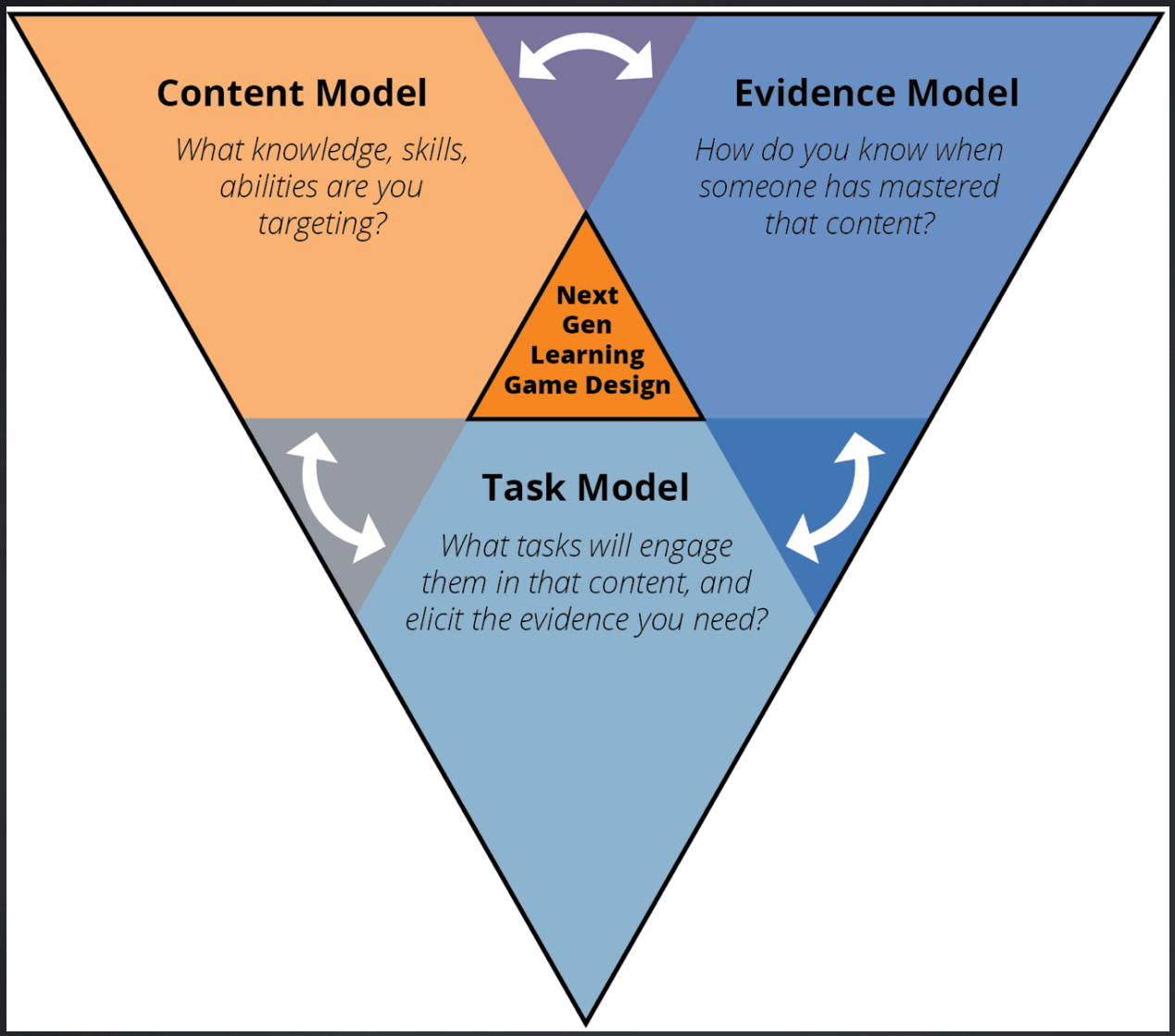
XCD



Groff et al. 2015

The Radix Endeavor

BILL & MELINDA GATES foundation

Massachusetts Institute of Technology

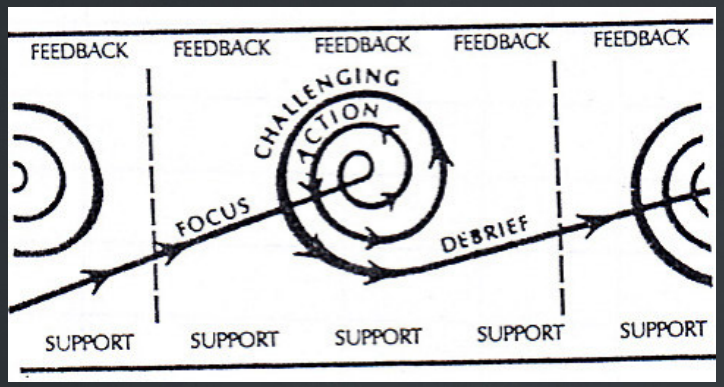
the education arcade

FILAMENTGAMES

Learning

Action Reflection Cycle

Experience



Resources ⟷ **Reflection**

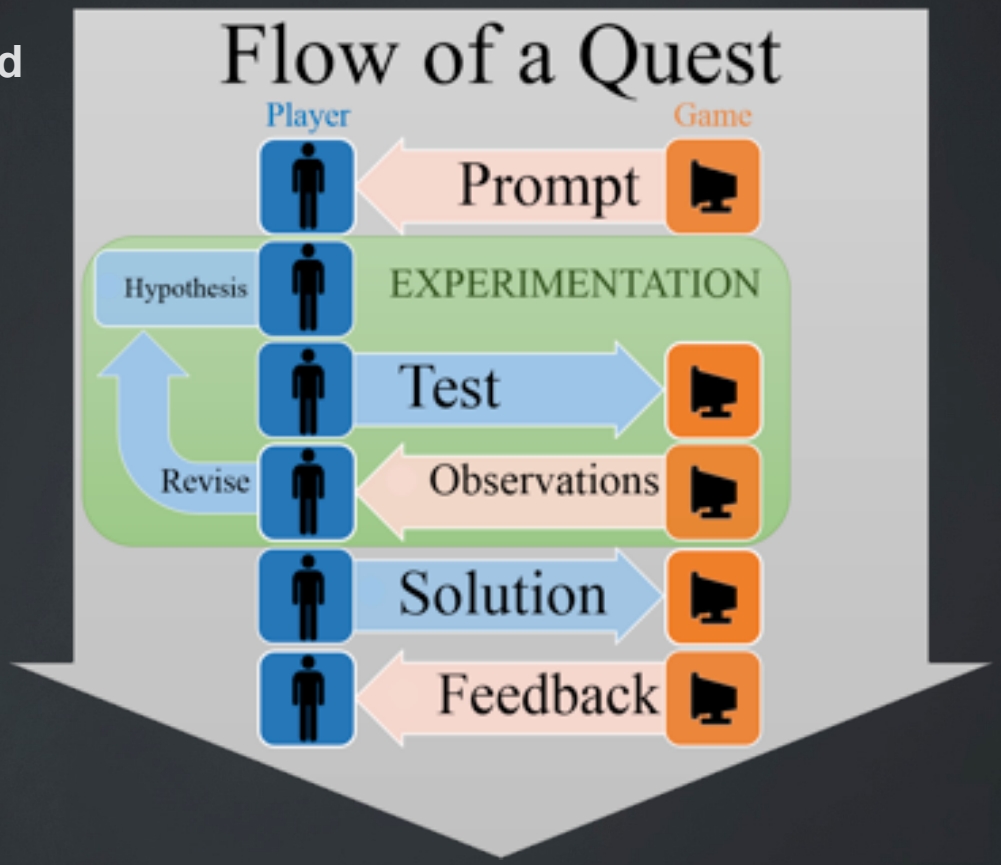
Quests and Tools

Physical and Biological Models

Experiment Centered Design

Student model
Evidence model
Task mode

Conrad, Clarke-Midura and Klopfer



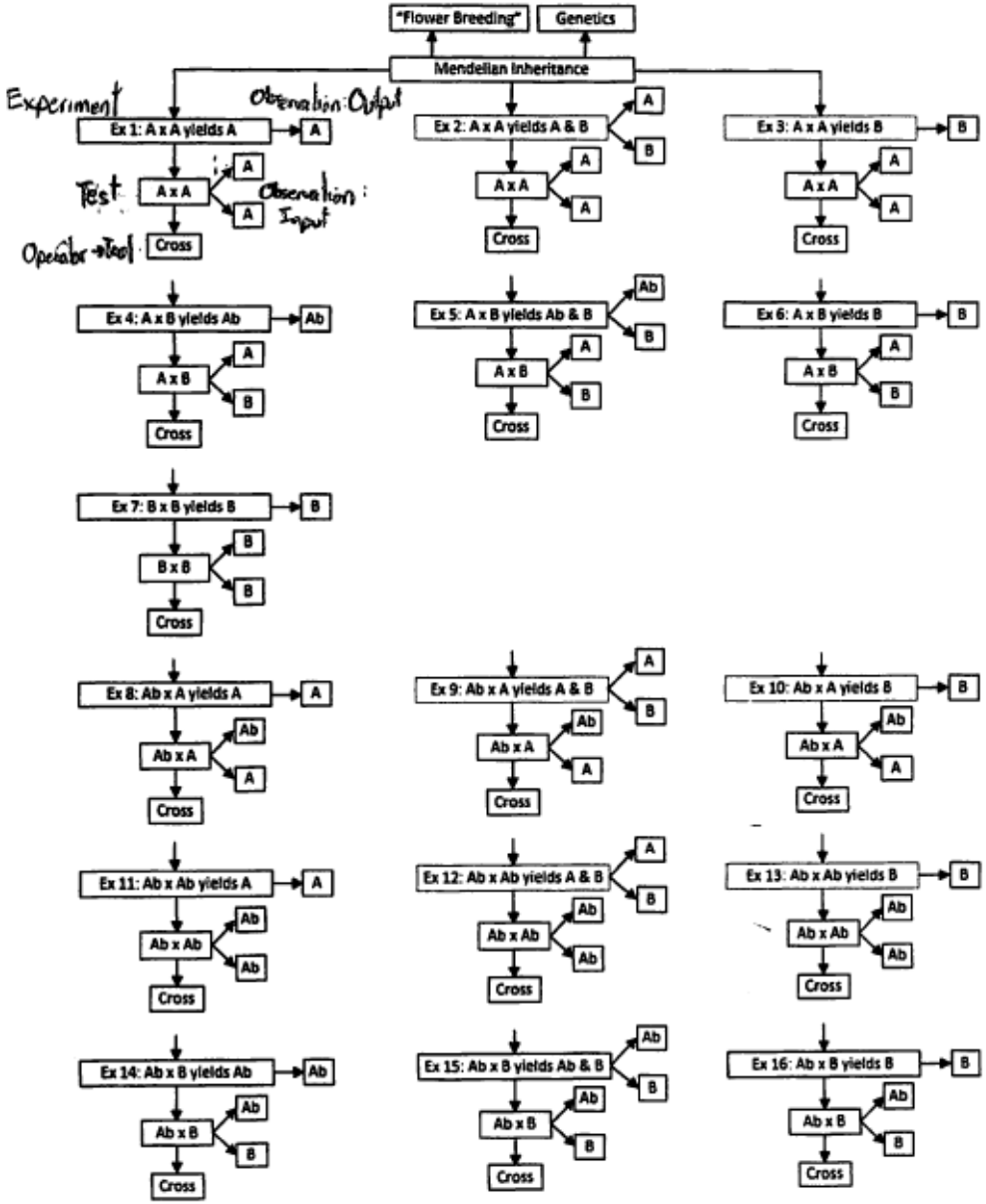
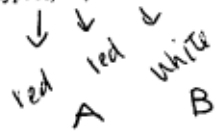


Figure 16: 16 Experiments of type A, Ab, and B flower breeding.



Feedback to Students

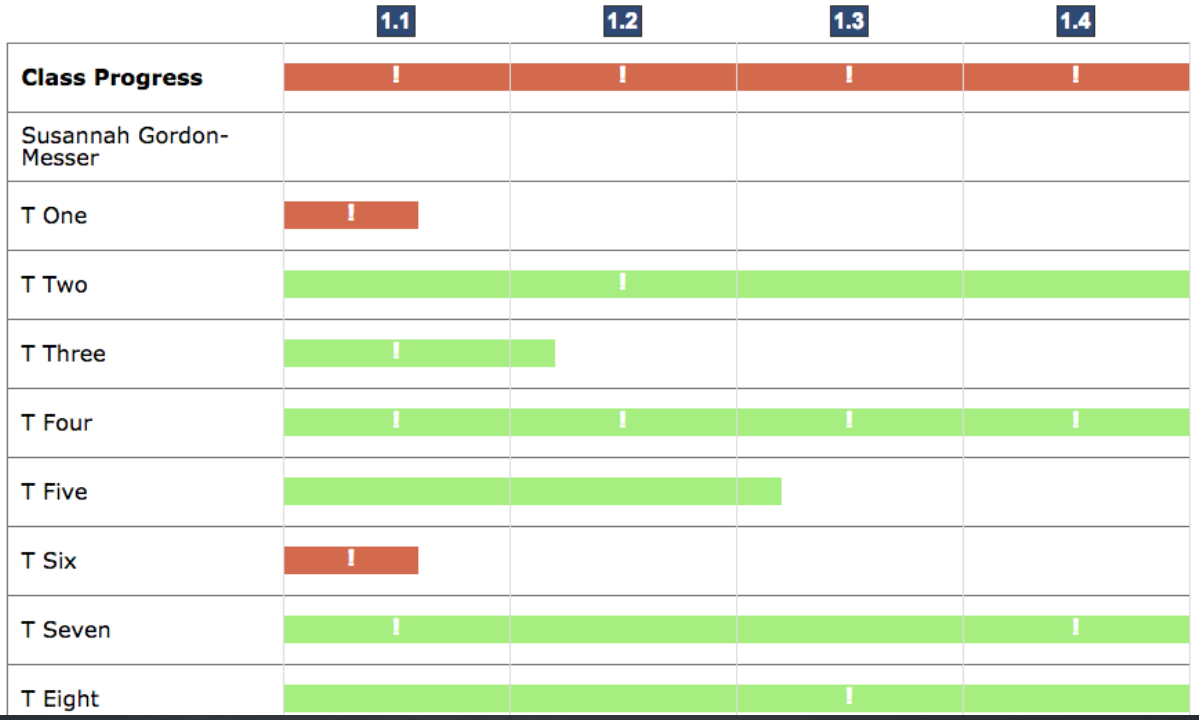
Side Quests

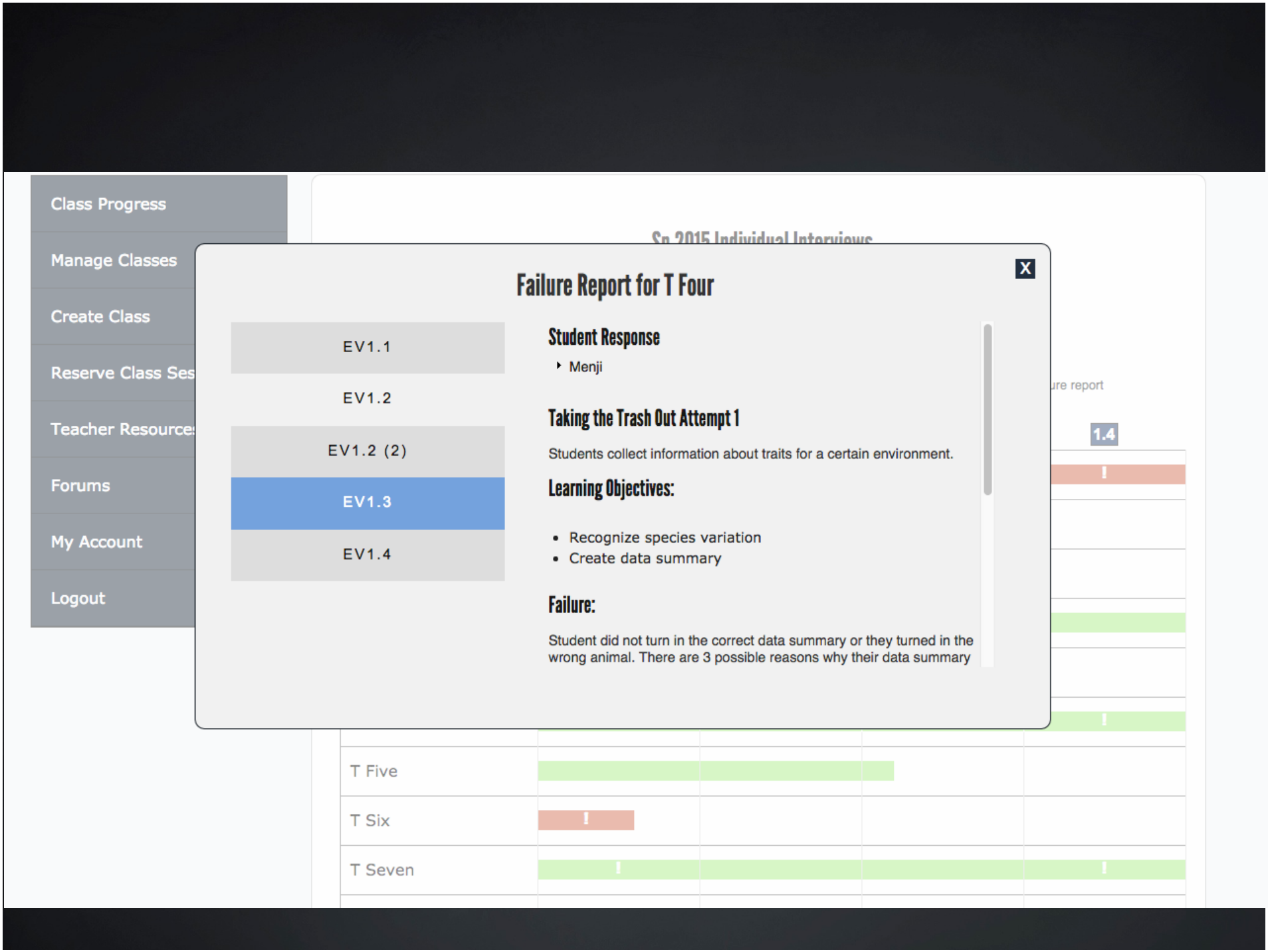
- Class Progress
- Manage Classes
- Create Class
- Reserve Class Session
- Teacher Resources
- Forums
- My Account
- Logout

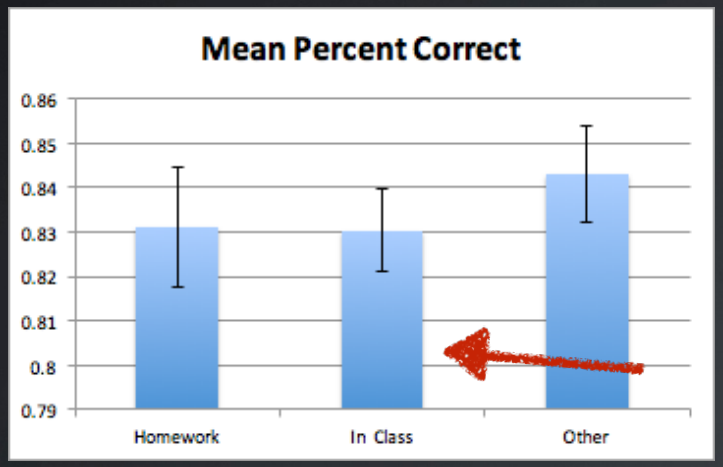
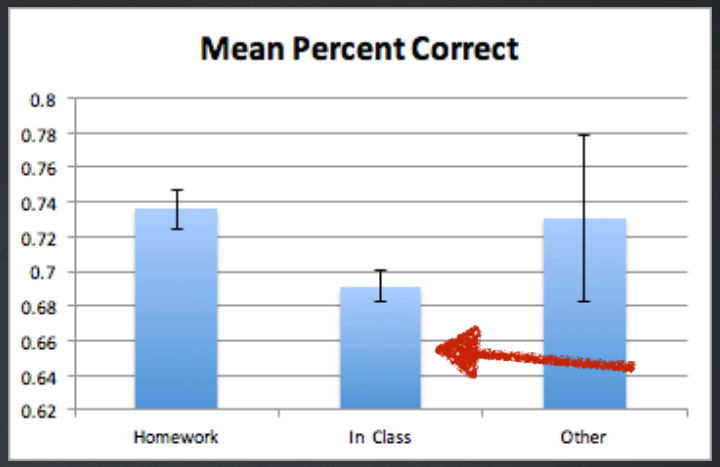
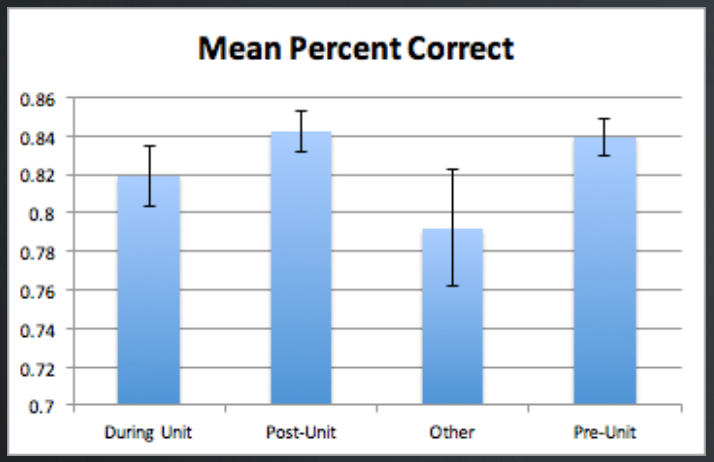
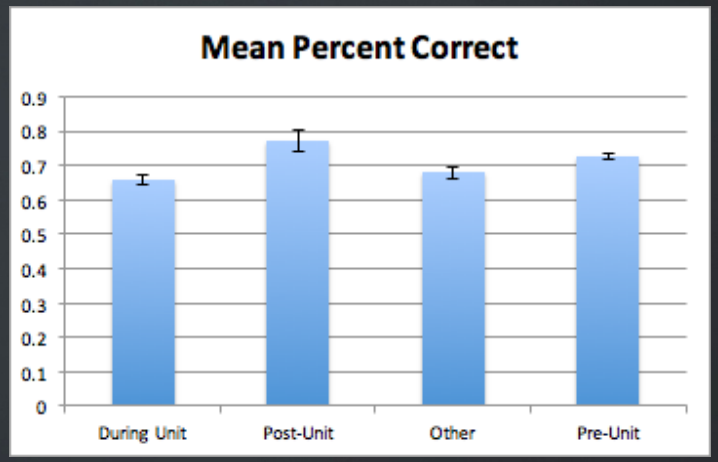
Sp 2015 Individual Interviews

Evolution 1: Geographic Trait Differences

= 75% of students passed = failure = in progress 1.7 = roll over to view quest info ! = click to open failure report




Class Progress
Manage Classes
Create Class
Reserve Class Ses
Teacher Resource
Forums
My Account
Logout
Sp 2015 Individual Interviews
Failure Report for T Four
EV1.1
EV1.2
EV1.2 (2)
EV1.3
EV1.4
Student Response
Menji
Taking the Trash Out Attempt 1
Students collect information about traits for a certain environment.
Learning Objectives:
Recognize species variation
Create data summary
Failure:
Student did not turn in the correct data summary or they turned in the wrong animal. There are 3 possible reasons why their data summary
1.4
T Five
T Six
T Seven

Where and When Are Successes

Evolution and Statistics