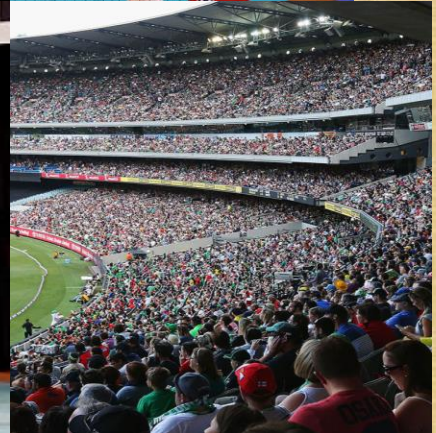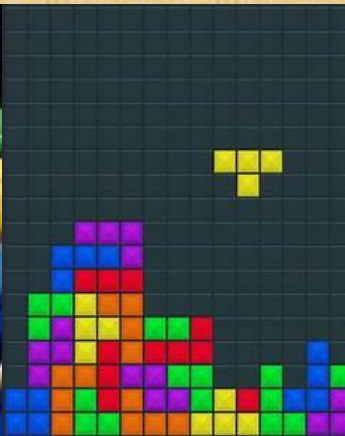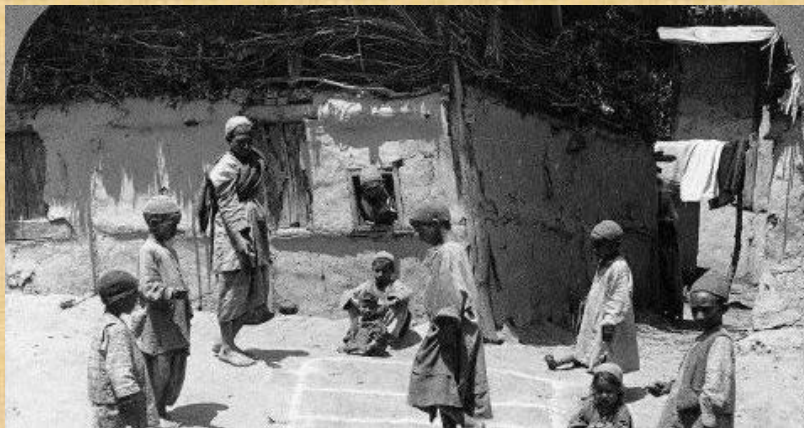# Game Design and Student Retention

Thomas E. Heinzen, Professor Emeritus

William Paterson University

NJ Edge 2020

Low rates of student retention lead to robber bees.

Games are universal over time and across cultures.

NJ Edge 2020

Games are embedded in cultural beliefs and practices.

In the biblical story of Jonah and the whale, a game (of chance) was the voice of god.

The stoic Epictetus: Either play the game of life or stop moaning!

"Make the best use of what is in your power, and take the rest as it happens."
                                        ~Epictetus

Four Principles of Game Design

A well-designed game/course/curriculum…

1. delivers an <u>experience</u>

2. <u>onboards</u> (engages) players/students/staff at critical moments

3. uses <u>game mechanics</u>, such as

    a. leveling up

    b. creating a flow zone of difficulty

4. designs obstacles for <u>failing forward</u>

1. Experience

Game designers don't design games;

they design experiences.

(see *The Art of Game Design* by Jesse Schell)

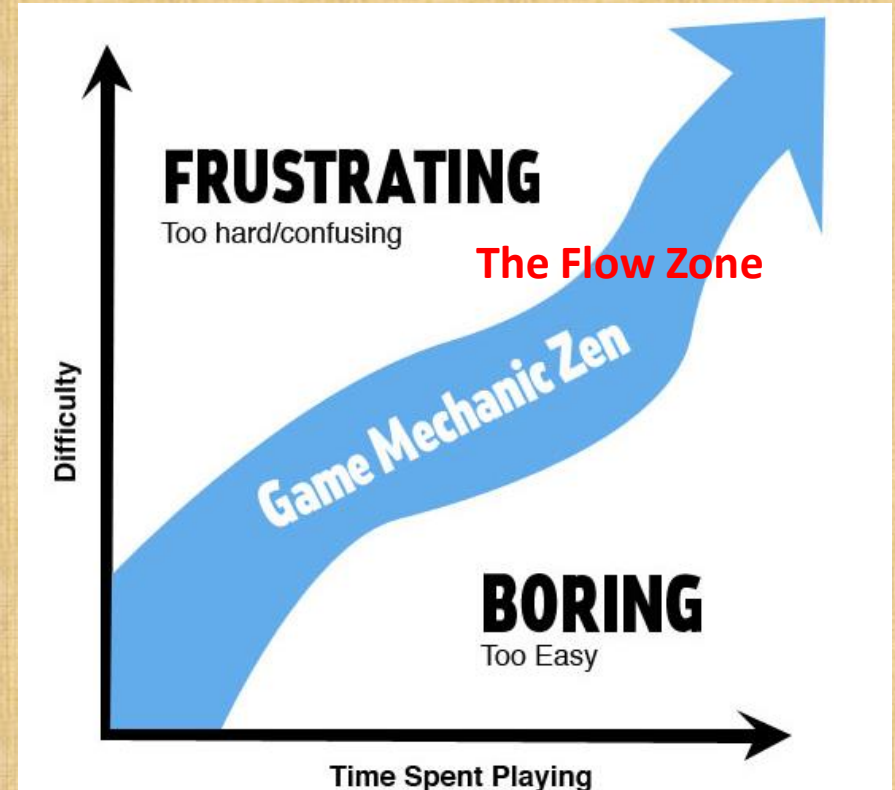# First impressions are sticky..

2. Onboarding

Implicit first impressions are resistant to change.
(see *APS Psych Observer*, Irmak Olcaysoy Okten)

Students form lasting impressions within the first 2 weeks.
(see Buchert et al., 2008.)

FRUSTRATING
Too hard/confusing

The Flow Zone

Game Mechanic Zen

Difficulty

BORING
Too Easy

Time Spent Playing

3. Game Mechanics

The best (flow zone) *moments usually occur when a person's body or mind is stretched to its limits.*

(see *Flow*, Csikszentimihaly)

4. Failing Forward

Failure has unlimited potential to help us grow.

(see *The Benefits of Failure,* Lesley Lyle)

Common game characteristics match many features of higher education, including...

points (g.p.a.)

badges (diplomas)

leaderboards (Dean's list)

powering up (cramming)

check points

pointless activities

leveling up

onboarding

failing forward

epic wins and failures

noobies needing guidance

boss (difficult majors)

guilds (academic clubs)

competition

playful, voluntary activities

arbitrary obstacles

flow zones of achievement

gradually increasing difficulty

Higher education is…

- already a game
- perceived by many students as *only* a game
- often failing, but not failing forward

Higher education is
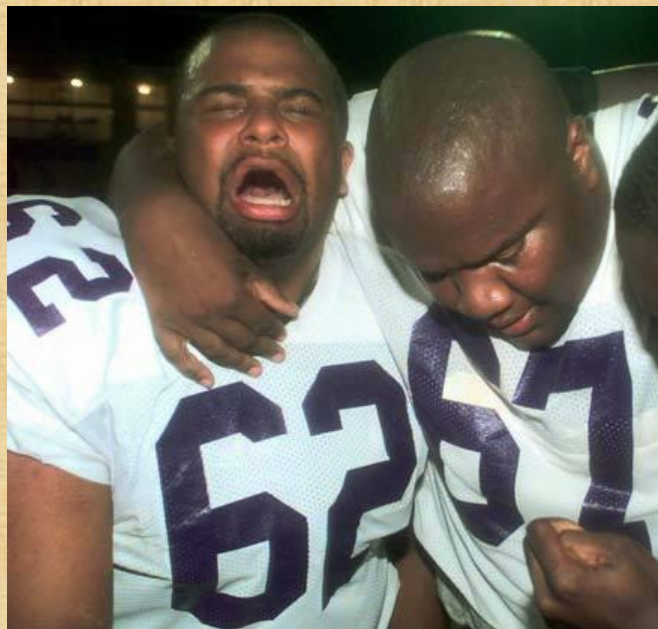# a poorly designed game.

Games motivate.

What are these students learning about jumping rope?

How important was failure to their high level of learning?

NJ Edge 2020

Will they ever play these games again?

Yes. Games motivate.

Why do children <u>choose</u> to go up the slide?

Students enjoy conquering difficult tasks. When we think, "My students aren't motivated," we are admitting that we have not learned how to motivate them.

Game-based thinking changes administrators and faculty *before* it changes students.

Paying attention to first impression experiences changes retention tactics.

Road signs and signage

Tutoring hours and study times

The number of points in a syllabus
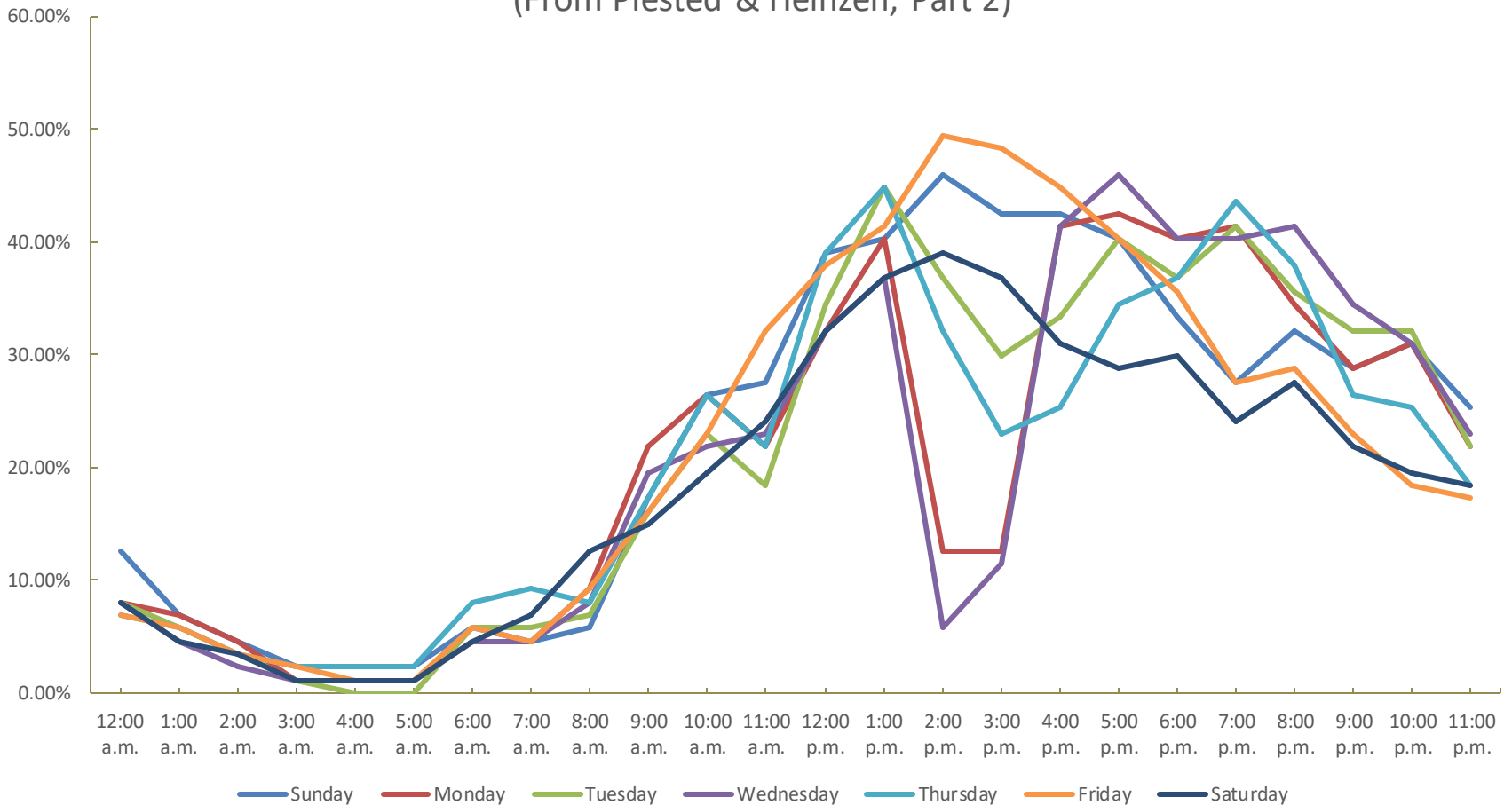
Designing obstacles vs. removing obstacles

Graduation joy: The untapped motivator

Many institutional first impression experiences begin with road signs.
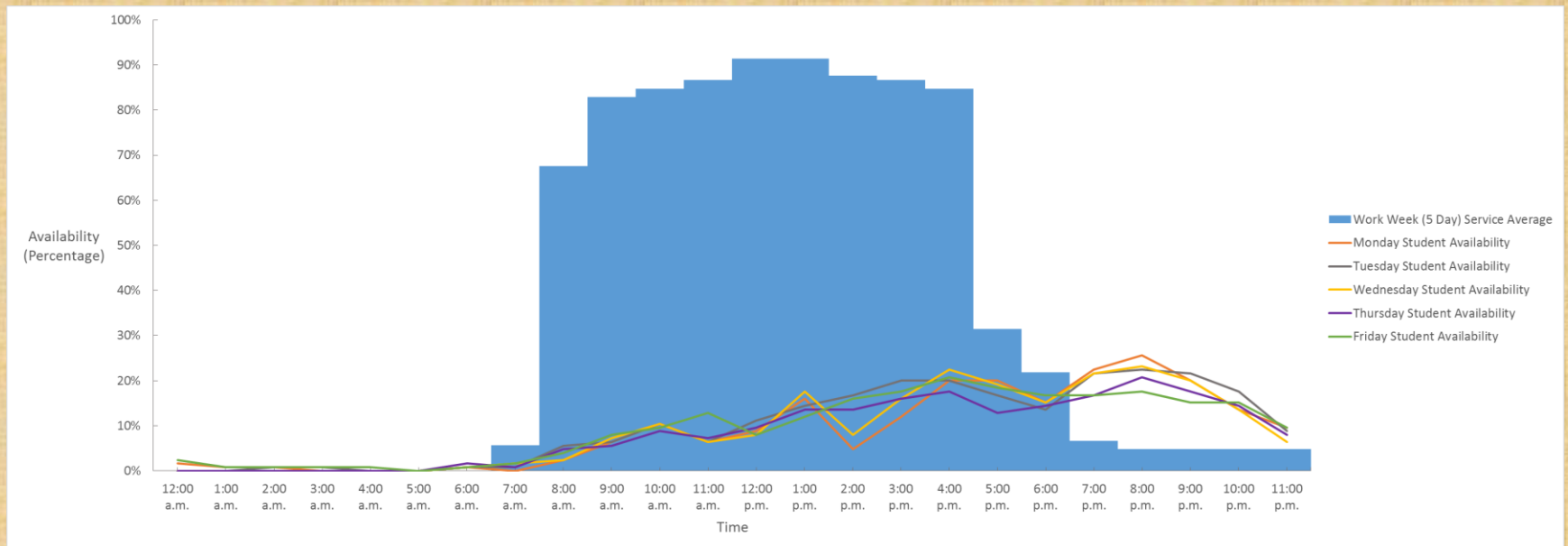
Experiencing the non-alignment problem:
When can students use
academic support services?
(From Plested & Heinzen, Part 2)

NJ Edge 2020

The hourly mismatch demonstrates what Vincent Tinto calls the "non-alignment" problem:
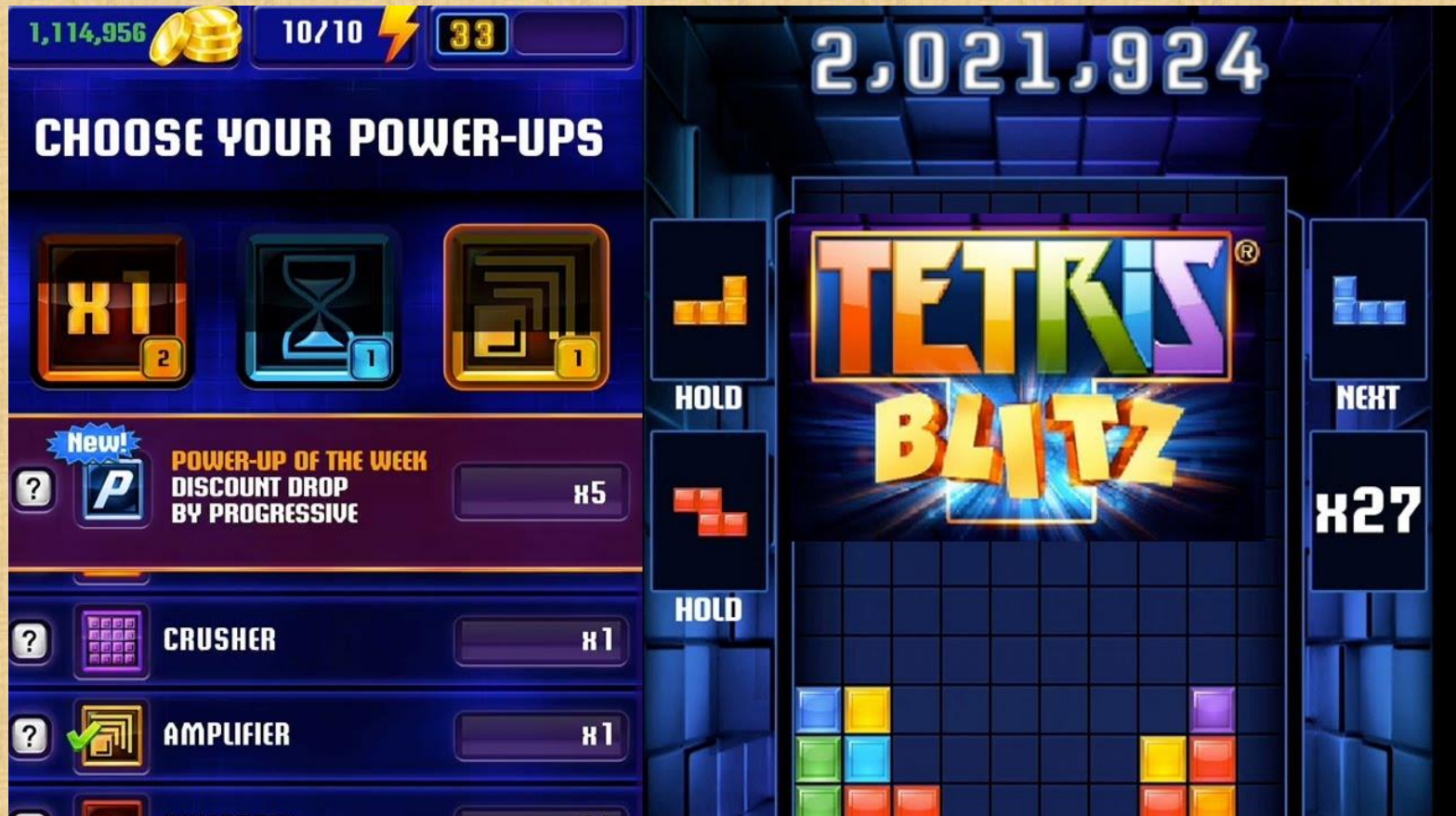

The supply of academic services is highest when student demand is lowest.

There are 22 separate but recurring point opportunities in this game.

Tetris, with millions of possible points, is a popular game *that no one can win*.

What is the optimal number of possible points when designing a course?

TOTAL POSSIBLE POINTS FOR COURSE = 1

| Assessment Method	Point Opportunity		Final Grades	Grade Distribution	Percentage of TOTAL Points
Quiz 1	.5		A	.9 – 1.0	90 -100%
Paper	.15		B	.8 – .89	80 – 89.9%
Quiz 2	.10		C	.7 – .79	70 – 79.9%
Quiz 3	.20		D	.6 – .69	60 – 69.9%
Midterm	.25		F		
Final	.25				
TOTAL	**1.00**				

TOTAL POSSIBLE POINTS FOR COURSE = 10,000

Assessment Method	Point Opportunity		Final Grades	Grade Distribution	Percentage of TOTAL Points
Quiz 1	500		A	9,000 – 10,000	90 -100%
Paper	1,500		B	8,000 – 8,999	80 – 89.9%
Quiz 2	1,000		C	7,000 – 7,999	70 – 79.9%
Quiz 3	2,000		D	6,000 – 6,999	60 – 69.9%
Midterm	2,500		F		
Final	2,500				
TOTAL	**10,000**				

Excessive points convey fairness.

A Qualitative Analysis:
The Effect of Total Possible Points on
Student Perceptions of a Course
(% of students describing course as...)

Fair — Unfair
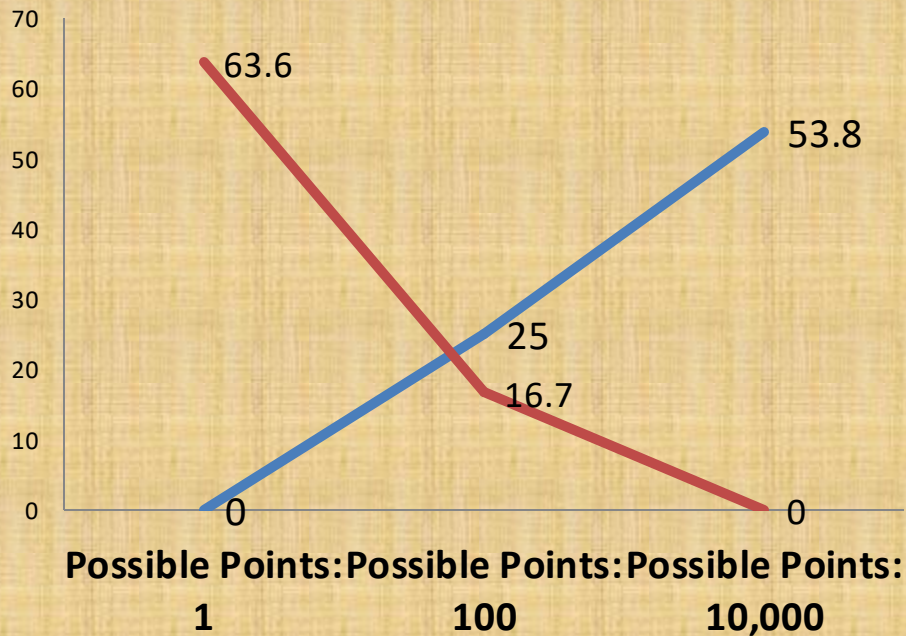
A Quantitative Analysis:
The Effect of Total Possible Points on
Student Perceptions of a Course
(Ratings 1-5)

Fair — Unfair
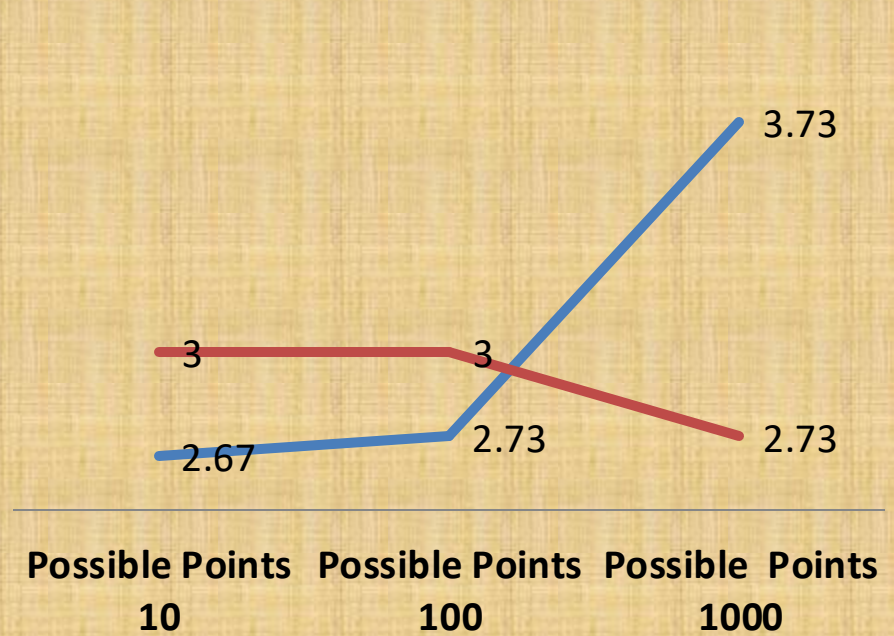
Our job is to design obstacles.

Graduation joy is a powerful motivator.
Why do we only allow students to experience it after it is too late to use it?

How to use graduation joy:

a. Level up motivation with modest step ceremonies.

b. Use the motivating power of anticipation (drug addicts get stoned at the sight of their paraphernalia).

c. Prime graduation joy with graduation photographs.

d. Bring in lots of recent alumni.

e. Recruit at-risk students as graduation marshals.

Please evaluate and publish everything, so we don't waste time and money.
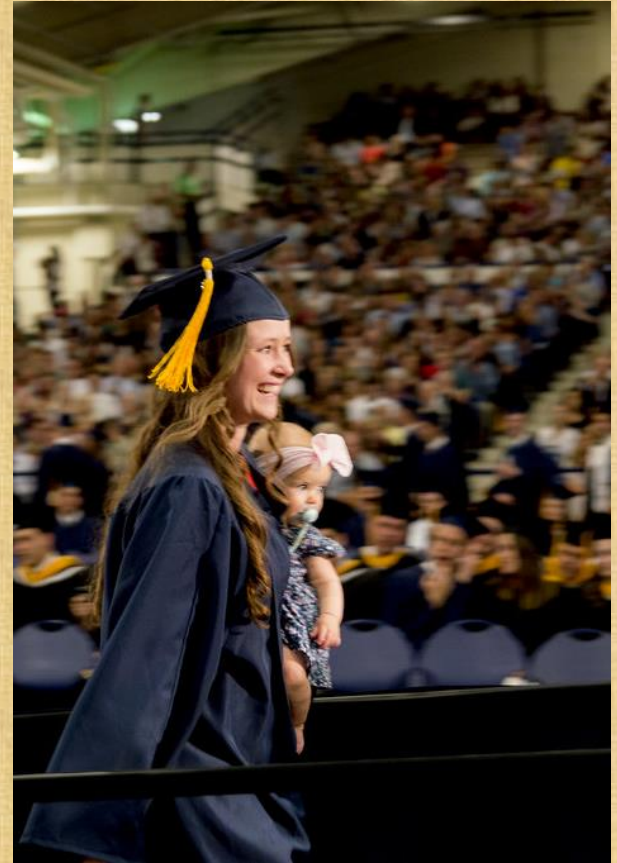
The Retention Formula: Prime graduation joy.

First Term Survivor

A game that teaches at-risk students…

The unwritten rules of student success.

The Sprint

Don't be late for class.
Try to collect as many coins as you can without running into any obstacles. The coins you collect will be converted into points.

Next

(c) Edge 2020

PAUSE

Sign on the bus:

Spend your points at the campus bookstore and food court.

PAUSE

3

Earn points by selecting the Challenge letters for that week.

SKIP

Points this Round: 1000

17.926
Time Remaining

WEEK 2

W _ A T ' _ _ A

_ Y _ A

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z

PAUSE

NJ Edge 2020

Points this Round: 1000

17.752
Time Remaining

```
   W E E K   2
   W H A T ' S   A
   S Y L L A B U S
```

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z

NJ Edge 2020

Week 1: What's a syllabus?

a.   All the rules of the game for each course.

b. A test schedule for the course.

c.   A piece of paper they hand out on the first day of class.

- 'a' response from Prof. Rant: "Good choice. The syllabus tells you everything about the course." (maximum points)

- 'b' response from Prof. Rant: "Well, that's worth a few points. The syllabus also tells you how grades are computed, the professor's office hours... everything!" (fewer points)

- 'c' response from Prof. Rant: "That's an empty answer! Come on! Think! No points, my friend."

Week 2: Do I really have to buy the expensive textbook?

a. You don't have to buy any book if you don't want to.

b. You must buy the expensive book.

c. There are sometimes cheaper ways to get textbooks.

- 'a' response from Prof. Sympathy: "You don't have to do anything you don't want to. But paying tuition without buying the book is like buying a car but being too cheap to put gas in it." (Minimum points)

- 'b' response from Prof. Sympathy: "Buy it, one way or another. Paying tuition but not the book is like buying a car but being too cheap to put gas in it!" (many points)

- 'c' response from Prof. Sympathy: "Here are some before the first-day-of-class tricks: Look online, in the library, or buy from previous students." (many points)

Week 3: What happens if I fall in love?

a. Propose marriage.

b. Enjoy it.

c. Don't make any long-term decisions.

- 'a' response from Prof. Sympathy: "Bad, bad, bad choice!" (Minimum points) "Bus! Go!"

- 'b' response from Prof. Sympathy: "Relax. A sunny day today does not mean a sunny day next month." (many points)

- 'c' response from Prof. Sympathy: "I hope you do fall in love. But don't let it mess up your future."

- What's a syllabus?
- Do I really have to buy the expensive textbook?
- What happens if I fall in love?
- Do I really have to study?
- What if I don't like my first friends?
- Will I get arrested if I get stoned?
- How do I know what to major in?
- What can I do about a bad professor?
- Would pregnancy be a problem, or just my new life?
- Will someone try to stop me from dropping out?
- What if I really am too stupid or unprepared?
- Is making money the main point of college?
- If my parents are divorced, will I end up divorced?
- What if I get a reputation I don't want?
- Will I make more money if I graduate?
- Do I get my money back if I drop out?

Thank you.

- In your particular job, how could you apply any of the following principles?

  - Focus on the delivered experience
  - Onboard more consistently
  - Level up to create a flow zone
  - Design obstacles that encourage failing forward