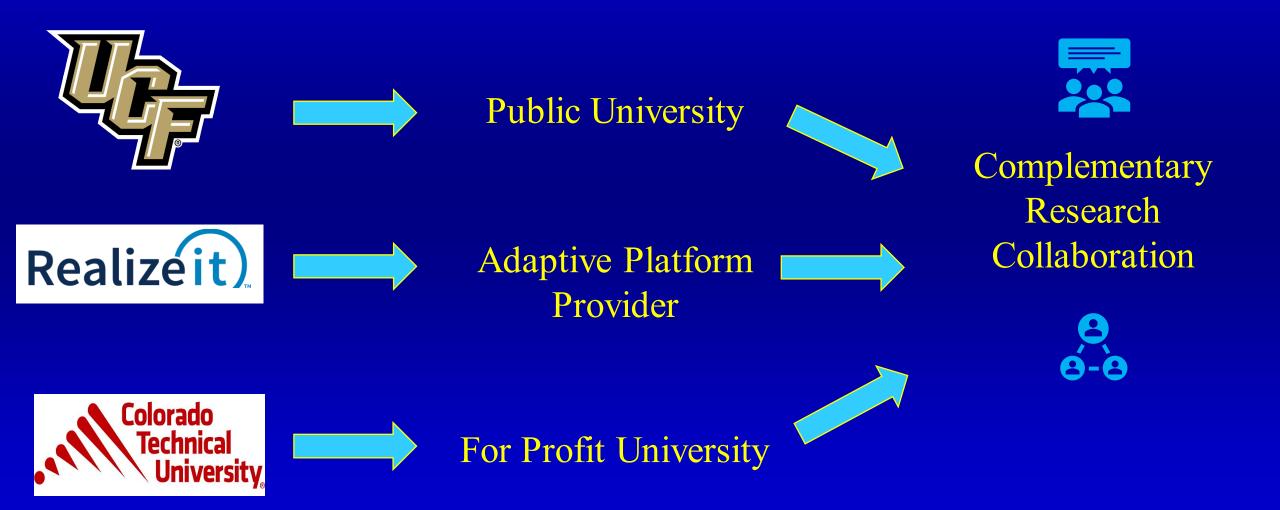


Teaching and Learning in the Digital Age: Adaptiveness and Instructional Technology

Charles "Chuck" Dziuban, University of Central Florida Patsy Moskal, University of Central Florida

The Research Partnership



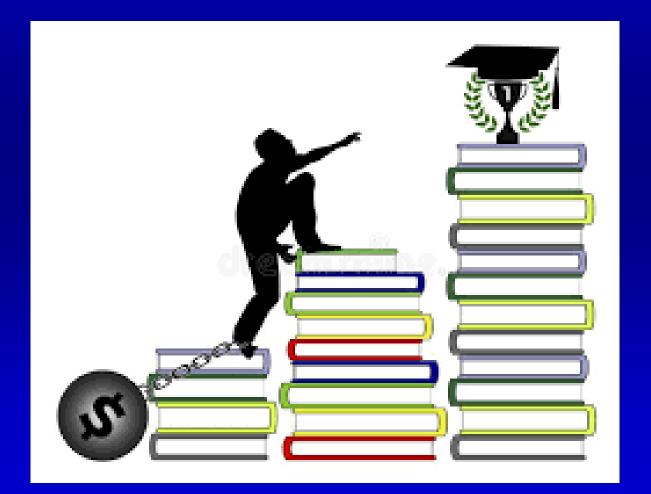


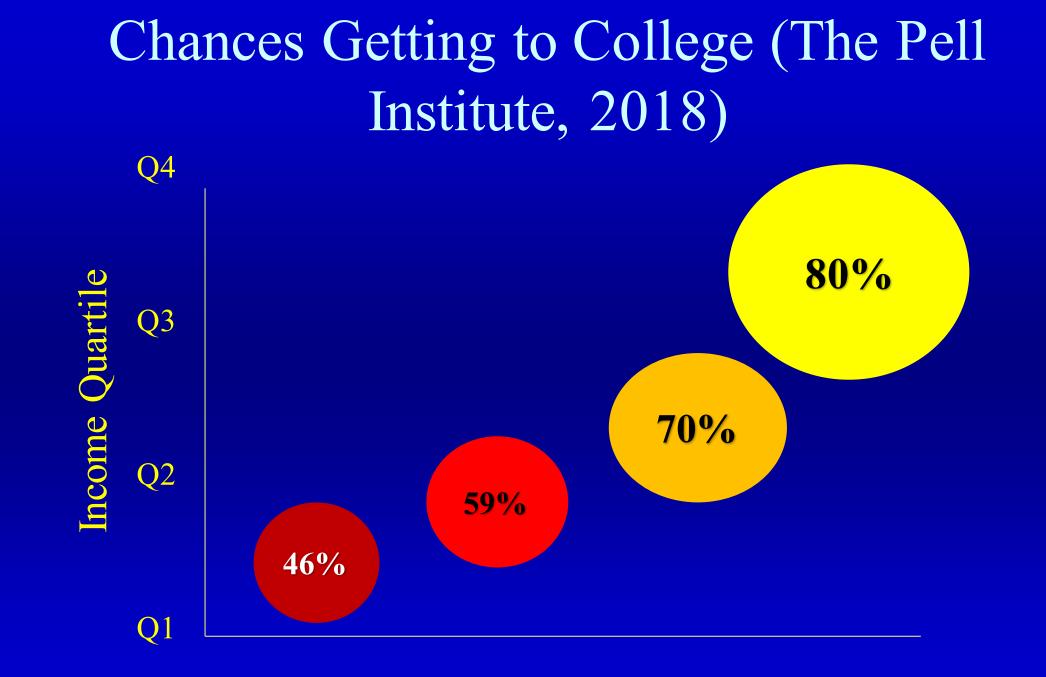
What Problem Are We Trying To Solve?



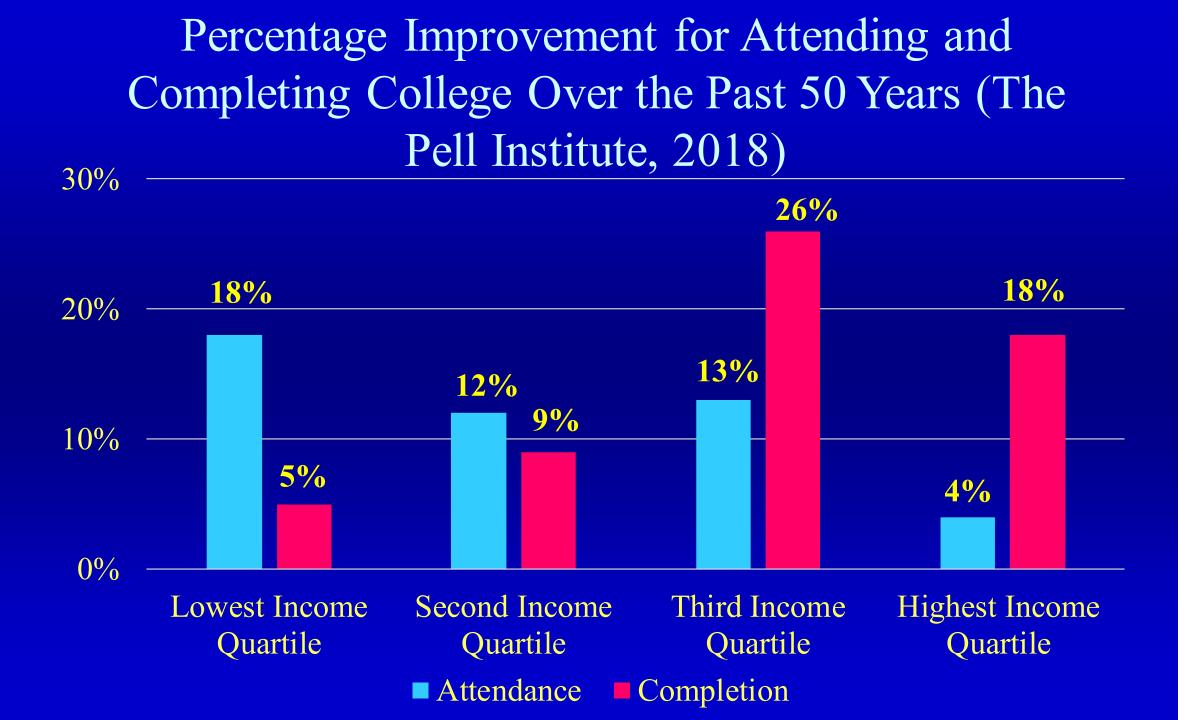


The Chances of Getting a Good Education





Chances of Completing College (The Pell Institute, 2018) **Q4 60%** Income Quartile Q3 41% Q2 20% 11% Q1



United States of Debt

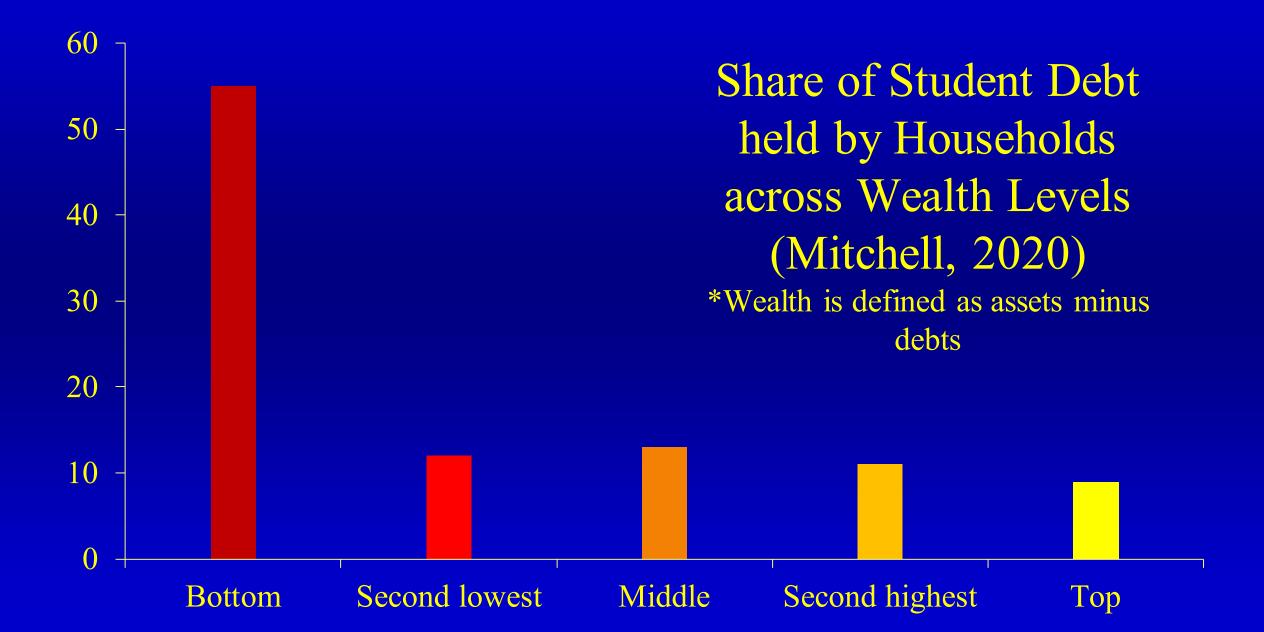
• Total US Student Debt (2020): \$1.7 trillion (Hess, 2020).



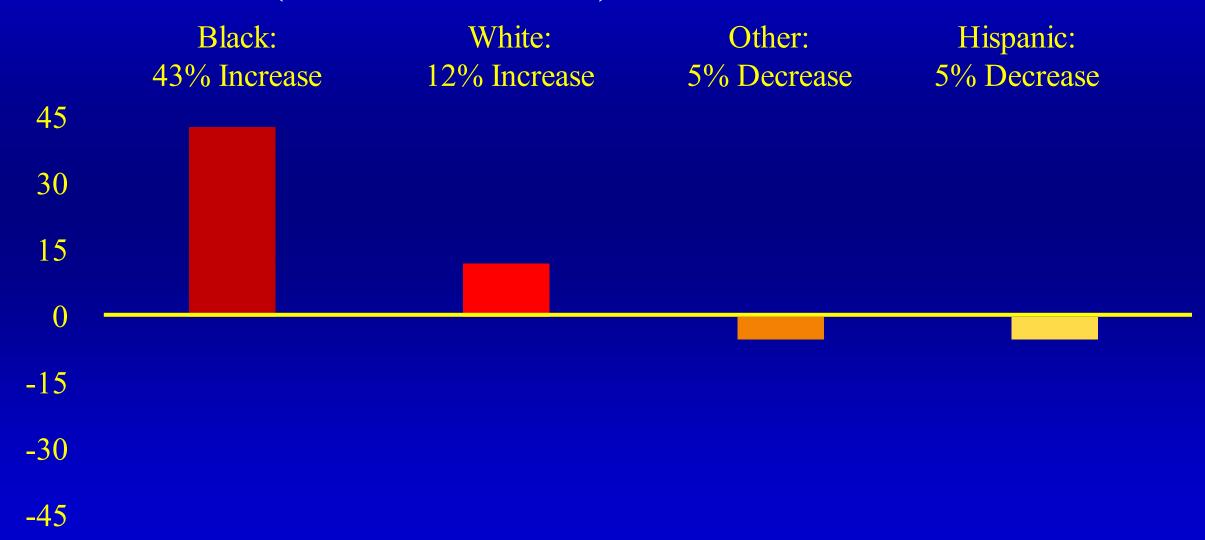
If student debt in the United States was a Gross Domestic Product it would be the 11th largest economy in the world (Silver, 2020).

Slate Academy (2016). The United States of Debt. http://www.slate.com/articles/slate_plus/debt_academy_2016.html





Median Student Debt Snapshot: % Change From 2016-2019 (Mitchell, 2020)





INE SC PABLE



"In a free market economy without redistribution of resources and compensation for the *Wealth Advantage*, that wealth will always flow from the poor to the rich because of the Yard Sale Model repeated billions of times"

Bruce M. Boghosian Scientific American, November 2019





The Learning Yard Sale Model for the Wealth Advantaged and the Underserved



Quality preschool

Academic preparedness



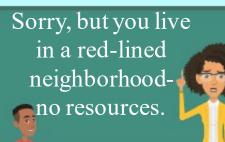
School Readiness

College readiness



I want the BEST Education I can get!

=





I should be further ahead by now. Diminished Educational Net Worth

About Adaptive Learning

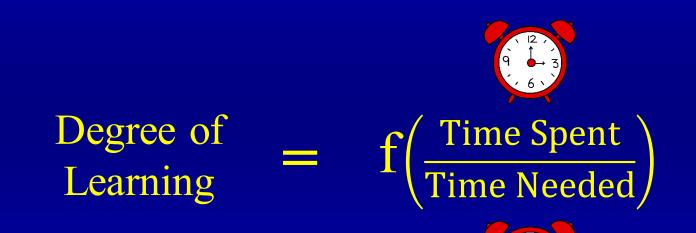


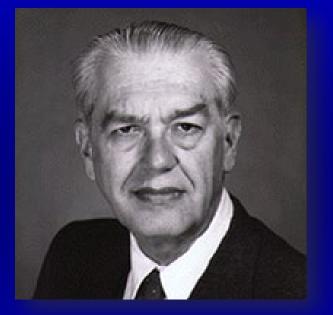
1. Personalizes the educational experience

2. Customizes content

3. Assesses continuously

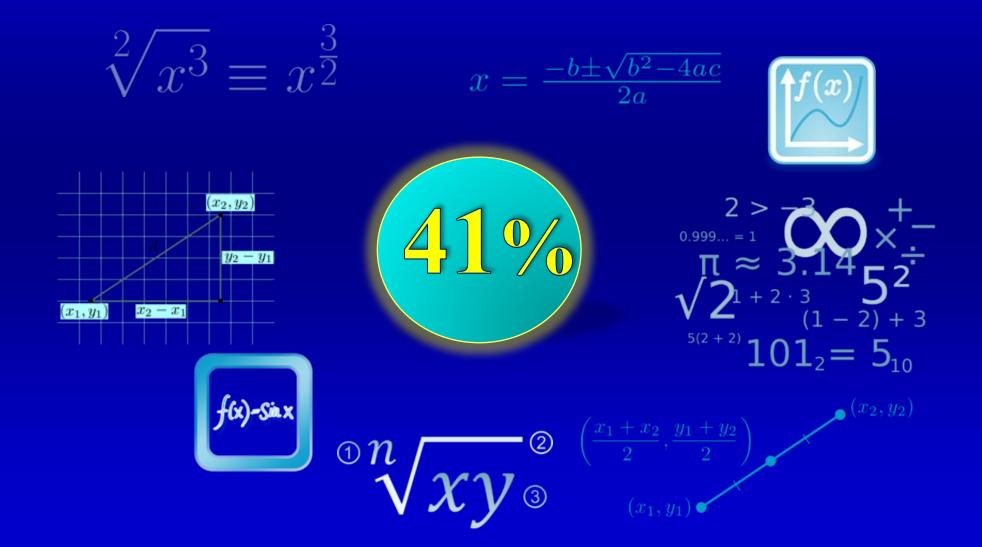
A Model of School Learning: John Carroll 1963, *Teachers College Record*





Nonsuccess in UCF College Algebra: An Inter-domain Study of SIS and Real-time Variables

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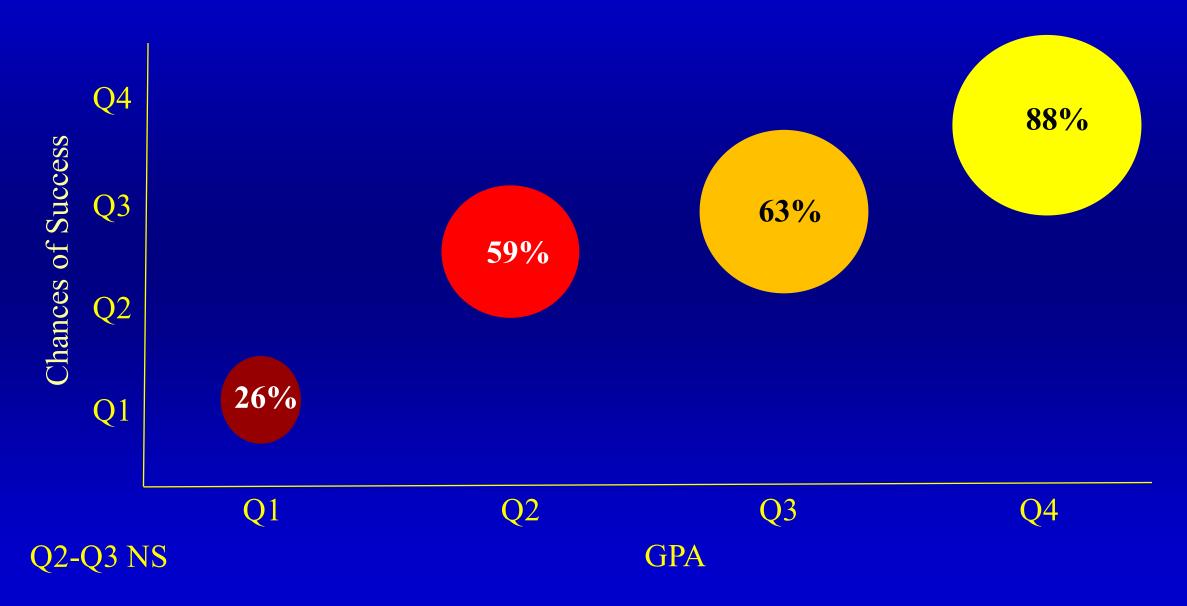
Two Variable Sets

Student Information Systems

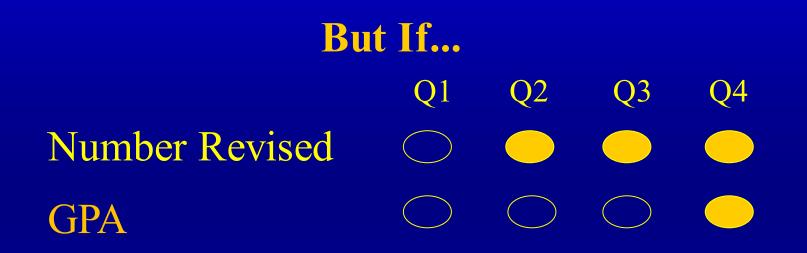
Adaptive Analytics Real Time Class Variables

= **Configuration of Realizeit Indices** Status Knowledge State Growth Knowledge State Knowledge Covered Growth Knowledge Covered Determine Knowledge Covered Calculated Score Average Score Growth Messages Sent Total Time Interactions Number Revised Engagement Determine Knowledge Number Practiced Baselir

Algebra Success by GPA Quartile (n=465)



Nonsuccess in UCF College Algebra (41%)



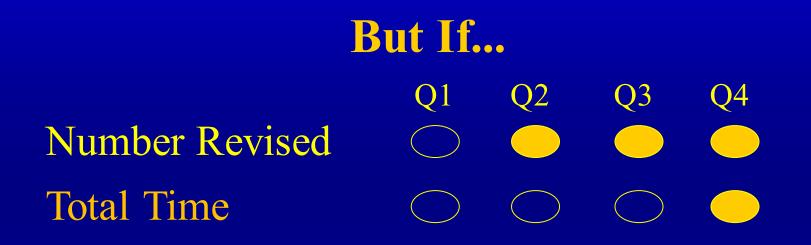
Then...

Nonsuccess = 7%

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n=495

Nonsuccess for Q1 GPA in Algebra 1 (74%)



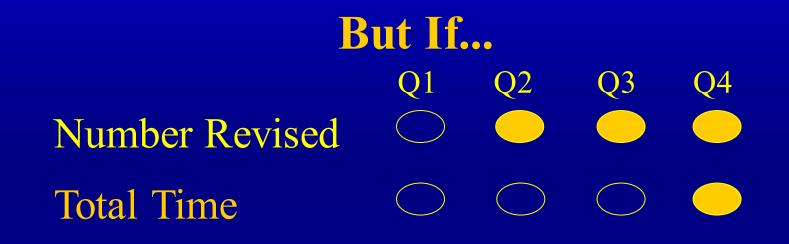
Then...

Nonsuccess = 39%

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n=124

Nonsuccess Q2, Q3 GPA in College Algebra (39%)



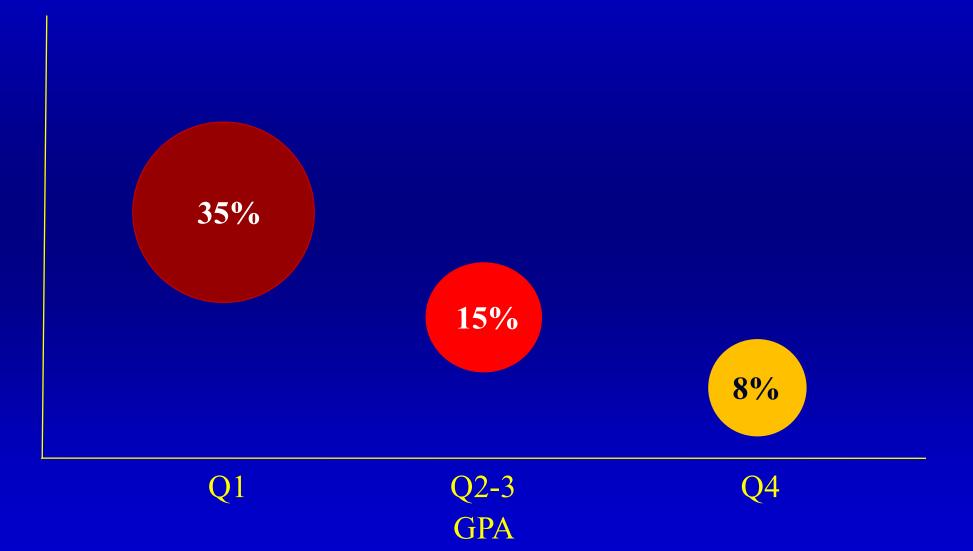
Then...

Nonsuccess = 24%

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n=248

Rule Based Algebra Gains by GPA



Gains

Quantum Entanglement



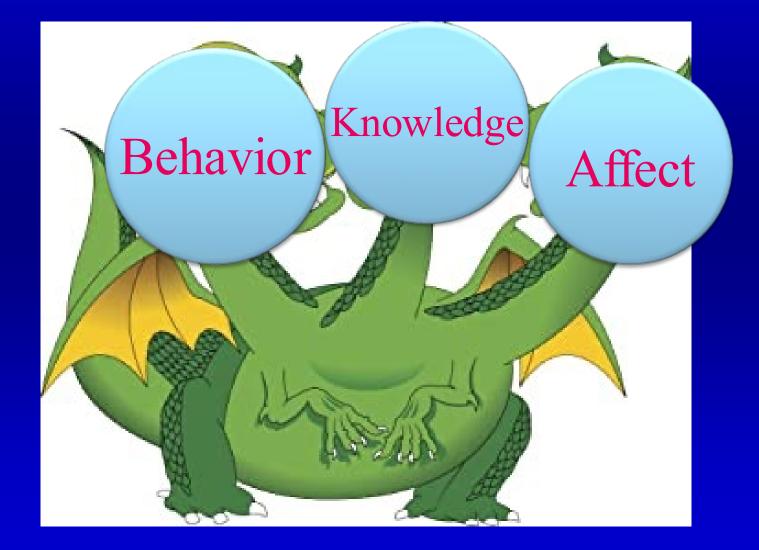
This Photo by Unknown Author is licensed under <u>CC BY-NC</u>

Supply Chain Management

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Student Engagement is a Three-Headed Monster



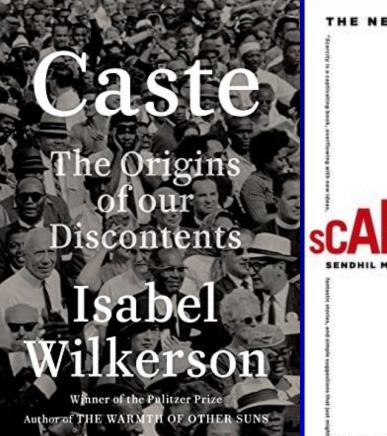


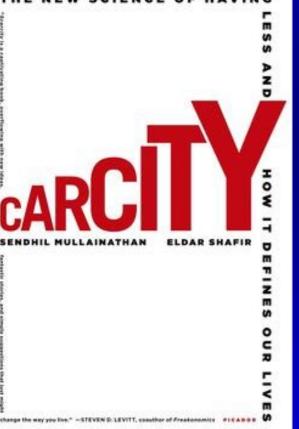
Student Behaviors

Psychology http://bit.ly/RealizeitPsyc

Intermediate and College Algebra http://bit.ly/RealizeitAlg

Reading Assignment





THE "I NEW YORK TIMES BESTSELLER BY THE AUTHOR OF THE BLACK SWAN SKIN IN THE GAME Hidden Asymmetries in Daily Life



NASSIM NICHOLAS TALEB

The Manifesto for Teaching Online

Online can be the privileged mode. Distance is a positive principle, not a deficit. Place is differently, not less, important online. * Text has been troubled: many modes matter in representing academic knowledge. K We should attend to the materialities of digital education. The social isn't the whole story. S Openness is neither neutral nor natural: it creates and depends on closures. X Can we stop talking about digital natives? ... Digital education reshapes its subjects. The possibility of the "online version" is overstated. . There are many ways to get it right online. "Best practice" neglects context. S Distance is temporal, affective, political: not simply spatial. Aesthetics matter: interface design shapes learning. Massiveness is more than learning at scale: it also brings complexity and diversity. Nonline teaching need not be complicit with the instrumentalization of education. A digital assignment can live on. It can be iterative, public, risky, and multivoiced. 💥 Remixing digital content redefines authorship. . Contact works in multiple ways. Face time is overvalued. Soline teaching should not be downgraded to "facilitation." Assessment is an act of interpretation, not just measurement. Algorithms and analytics recode education: pay attention! A routine of plagiarism detection structures-in distrust. 💥 Online courses are prone to cultures of surveillance. Visibility is a pedagogical and

ethical issue. * Automation need not impoverish education: we welcome our new robot colleagues. * Don't succumb to campus envy: we are the campus.



Siân Bayne, Peter Evans, Rory Ewins, Jeremy Knox James Lamb, Hamish Macleod, Clara O'Shea, Jen Ross, Philippa Sheail, and Christine Sinclair illustrated by Kirsty Johnston

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