

**Open learning requires open minds:  
The challenges of online and blended  
learning environments for NetGen  
students and their instructors**

Thomas C. Reeves  
The University of Georgia

2014 Chais Conference  
for Innovation and Learning Technologies

Tom  
Reeves



Trisha  
Reeves  
  
Zipper



The University of Georgia







# Keynote

- Challenge assumptions
- Raise questions
- Promote change



## Goals

- Question what we believe and disbelieve about learning, technology and today's students
- Enthusiastically endorse learning online through authentic tasks
- Reorient our online learning research from "things" to "challenges"



## Generational Boundaries

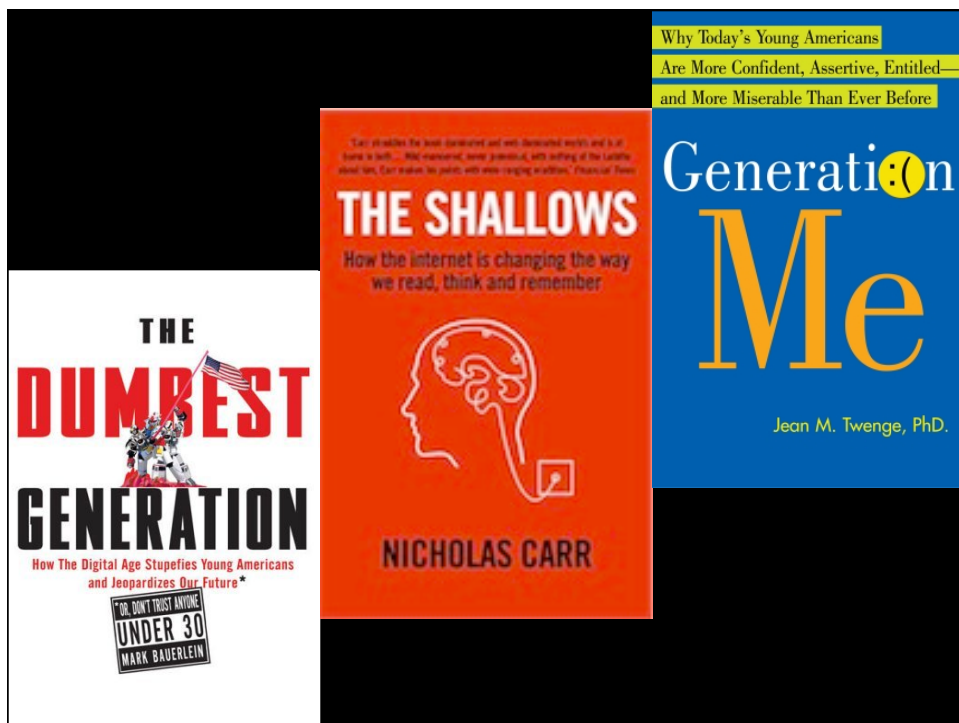
- **Baby Boomers**
  - Born between 1946 and 1964
- **Generation X**
  - Born between 1965 and 1980
- **Net Gen – Millennials – Gen Y**
  - Born between 1981 and 2000



- Generation Y
- Millennials
- Net Generation
- Generation Next
- Echo Boomers
- Boomerang Generation
- Wireless Generation
- Generation Me









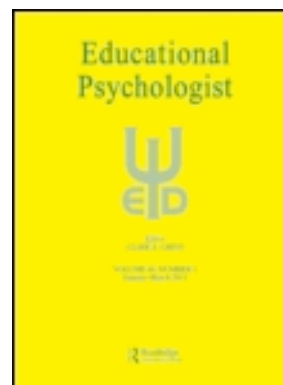
## Open Learning Requires Open Minds





## Do Learners Really Know Best? Urban Legends in Education

- digital natives
- learning styles
- self-educators



Kirschner & Van Merriënboer, 2013

## Kirschner & Van Merriënboer, 2013

- “Overwhelming evidence” that digital natives do not exist
- Today’s learners may actually suffer when educators attempt to cater to them



## Multitasking hinders learning

- Multitasking actually requires task switching
- Task switching overloads cognitive functioning and impairs learning





## Kirschner & Van Merriënboer, 2013

- Little scientific evidence supports the existence of learning styles
- Trying to accommodate learners with different learning styles with different methods is a waste of resources



“In summary, there presently is no empirical justification for tailoring instruction to students’ supposedly different learning styles.”

Rohrer, D. & Pashler, H. (2012), Learning styles: Where’s the evidence? *Medical Education*, 46, 634–635.



## Learning Styles Dichotomies

- convergers versus divergers
- verbalisers versus imagers
- holists versus serialists
- deep versus surface learning
- activists versus reflectors
- pragmatists versus theorists
- adaptors versus innovators
- assimilators versus explorers
- field dependent versus field independent
- globalists versus analysts
- assimilators versus accommodators
- imaginative versus analytic learners
- non-committers versus plungers
- common-sense versus dynamic learners
- concrete versus abstract learners
- random versus sequential learners
- initiators versus reasoners
- intuitionists versus analysts
- extroverts versus introverts
- sensing versus intuition
- thinking versus feeling
- judging versus perceiving
- left brainers versus right brainers
- meaning-directed versus undirected
- theorists versus humanitarians
- activists versus theorists
- pragmatists versus reflectors
- organisers versus innovators
- lefts/analytics/inductives/successive processors versus rights/globals/deductives/simultaneous processors
- executive, hierarchic, conservative versus legislative, anarchic, liberal

## Kirschner & Van Merriënboer, 2013

- Students as “self learners” using the Internet is a myth
- Students make bad choices when given too much control over instructional variables



Students of all generations have unacceptably low levels of information literacy.



### Oh & Reeves, 2014

- No consensus on Net Gen characteristics sufficient for use as a solid conceptual framework or as a variable in research studies
- Speculative assumptions must be replaced by substantive studies







Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist*, 41(2), 75-86.



Kirschner

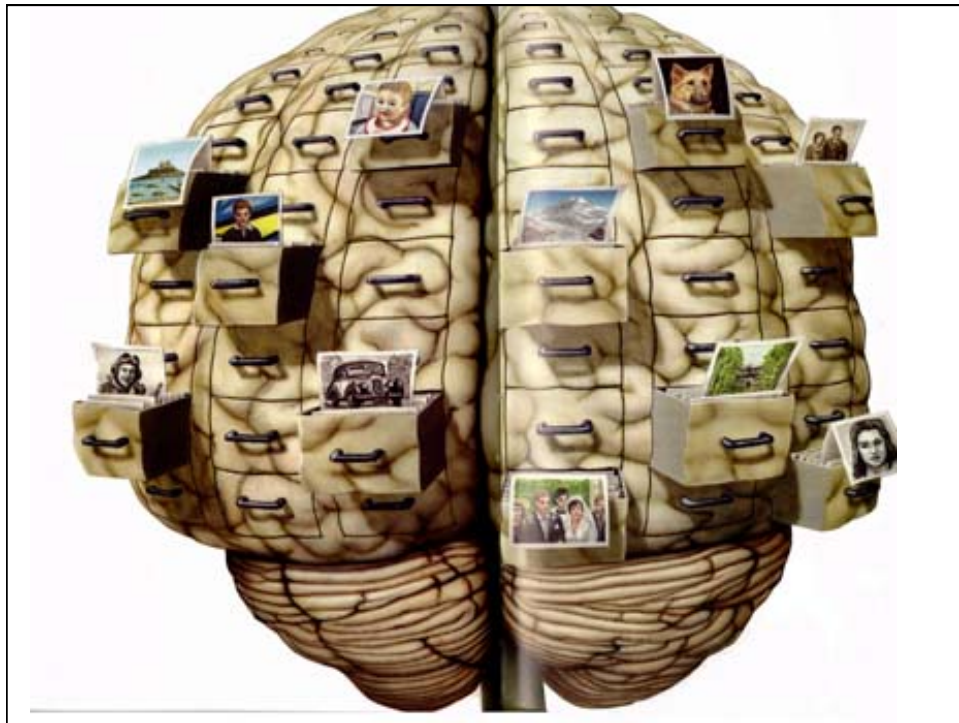


Sweller



Clark

[http://www.cogtech.usc.edu/publications/kirschner\\_Sweller\\_Clark.pdf](http://www.cogtech.usc.edu/publications/kirschner_Sweller_Clark.pdf)



## 21st Century Outcomes

- Accessing and using information
- Communicating across cultures
- Demonstrating effort and commitment to high quality work
- Applying rules and procedures
- Being creative
- Thinking critically
- Making sound judgments
- Problem-solving
- Life-long learning
- Exhibiting intellectual curiosity



## Traditional Learning Domains

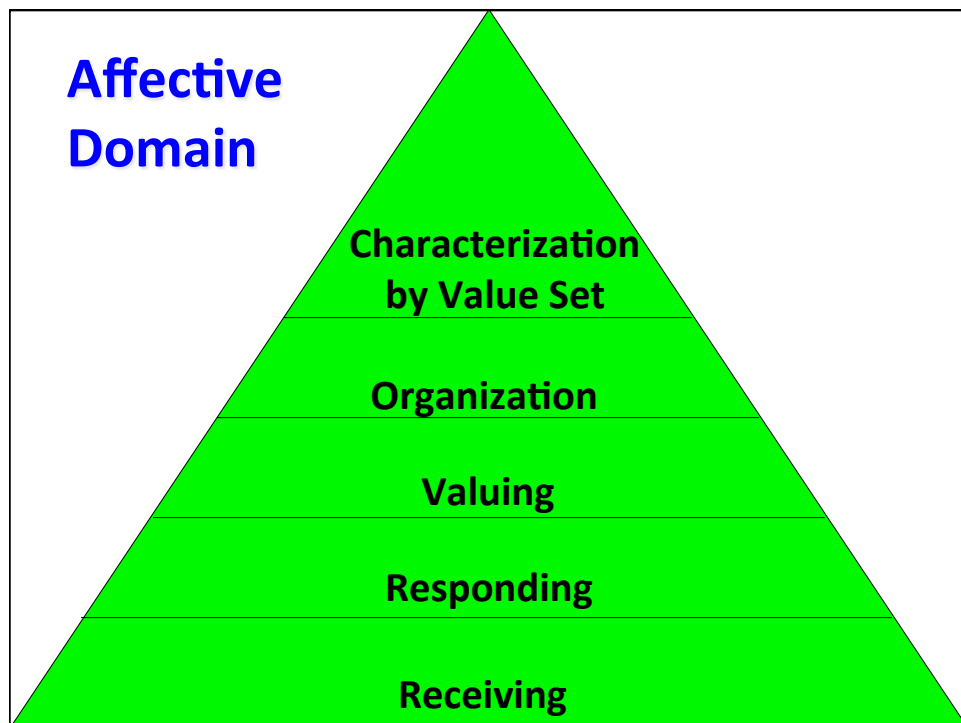
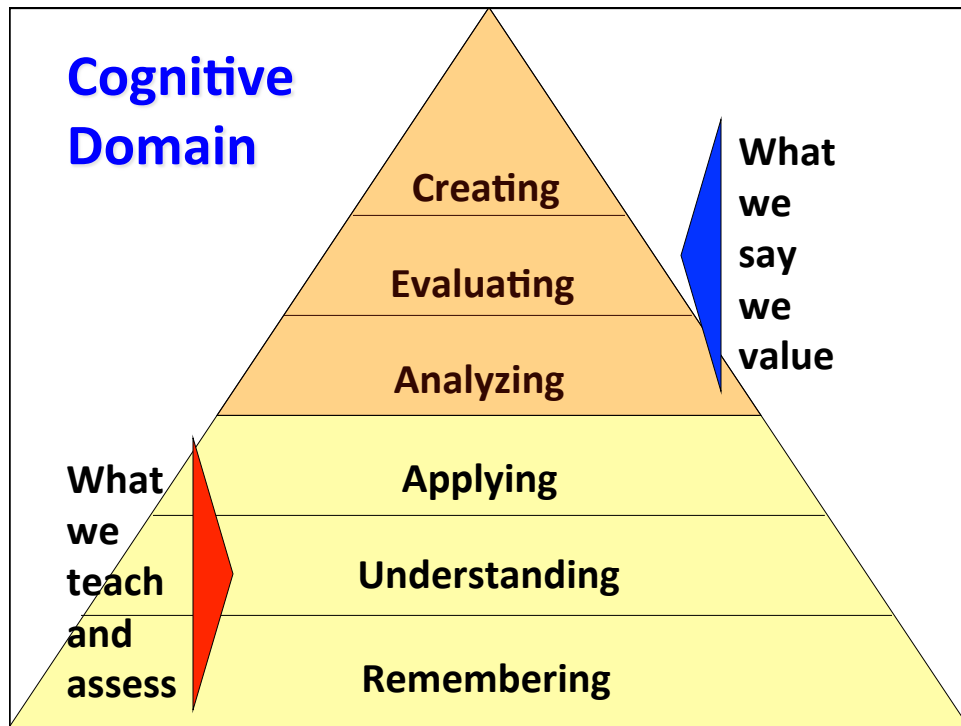
• **Cognitive**

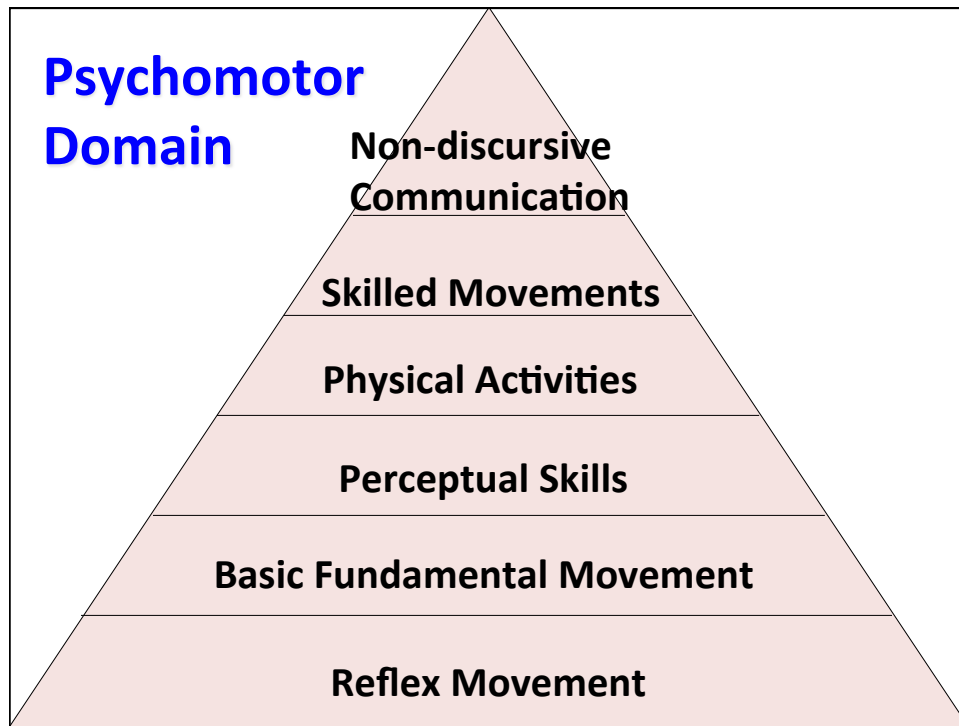
• Affective

• Psychomotor









Unfortunately, Kirschner et al. 2006 (and most of us) ignore an entire domain of learning.

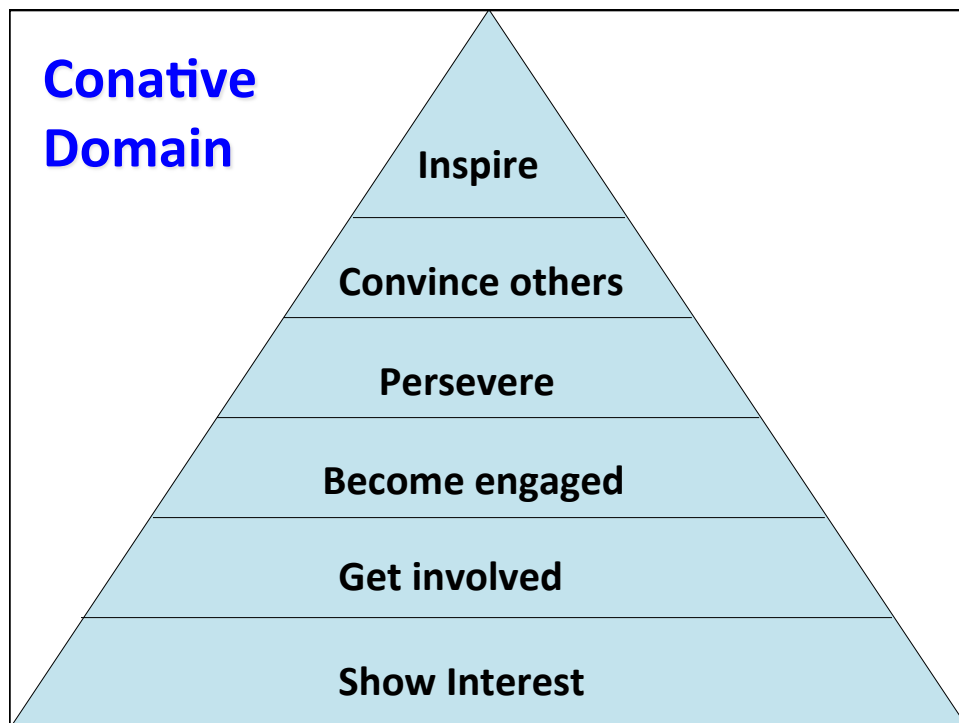


## Conative Domain

- Will
- Action
- Self-determination
- Level of effort
- Mental energy
- Drive
- Striving
- Intention

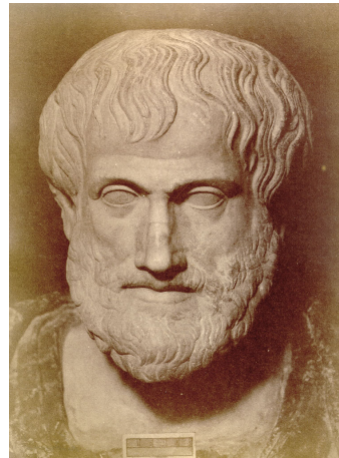


## Conative Domain

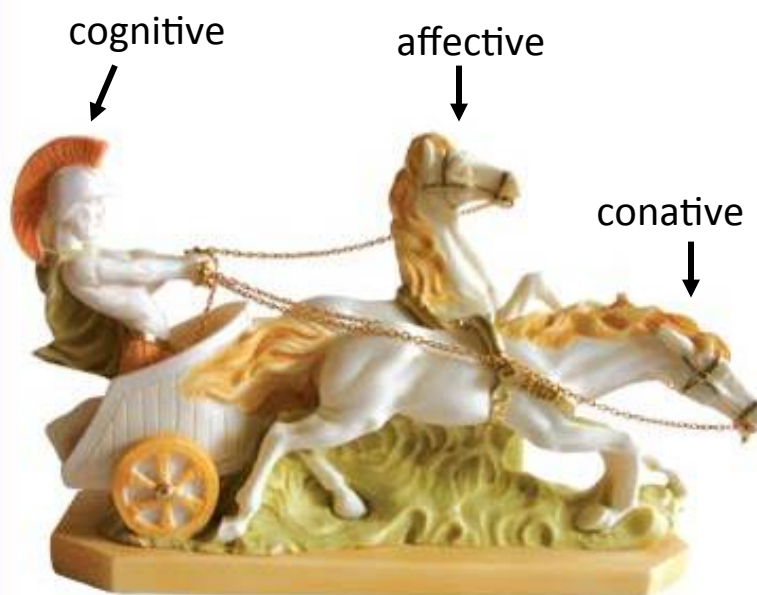


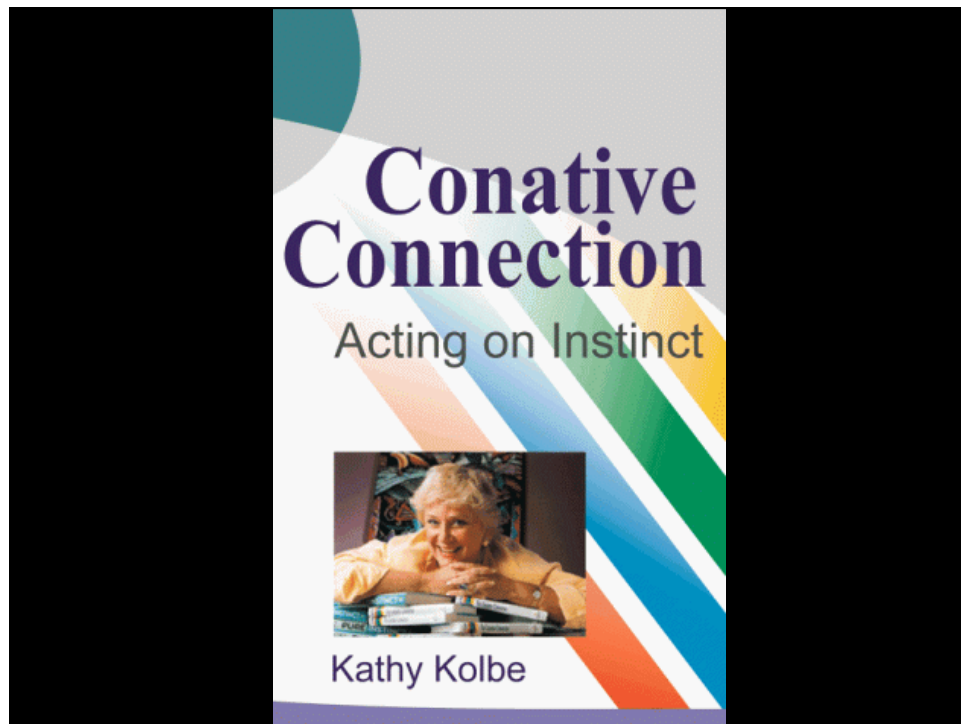


**Orexis:** (Greek)  
Striving; desire;  
the conative  
aspect of mind



Aristotle





## Cognitive – Affective – Conative

- |                |             |            |
|----------------|-------------|------------|
| • To know      | • To desire | • To do    |
| • Thinking     | • Feeling   | • Willing  |
| • Thought      | • Emotion   | • Volition |
| • Epistemology | • Esthetics | • Ethics   |
| • Knowing      | • Caring    | • Doing    |



## Grit

- Grit (defined as "the perseverance and passion for a long-term goal") is a strong predictor of the accomplishment of high-achievers in many fields.
- Grit is not positively related to IQ.



Angela Lee Duckworth

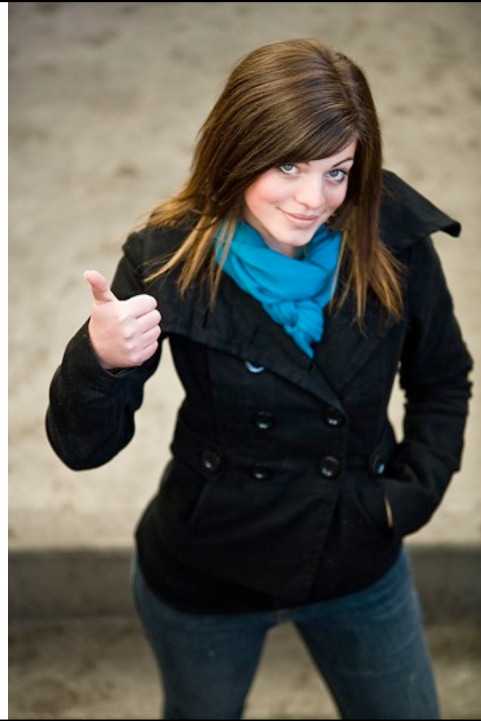
## West Point Cadets

- Grit predicted retention more robustly than did:
  - self-discipline,
  - Whole Candidate Score (high school rank, aptitude tests, leadership potential rating, etc.)
- Grit predicted drop outs better than all other measured variables combined



## Keys to Success

- Grit
- Self-control
- Zest
- Social intelligence
- Gratitude
- Optimism
- Curiosity



Unfortunately, studies show that NetGen students rarely read books and they study far too little.

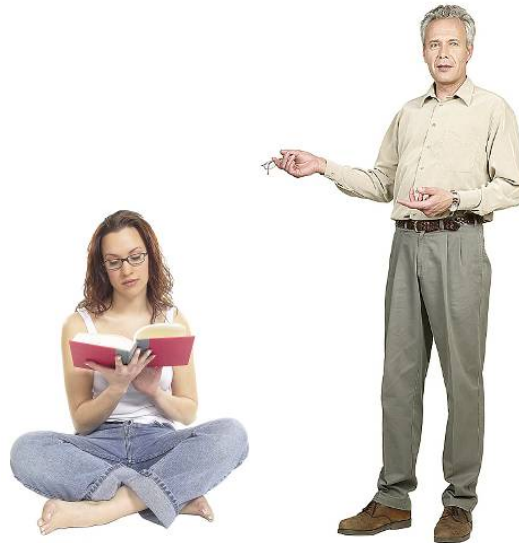






## National Survey of Student Engagement

- Work expectations for students:
  - 10-15 hrs in class
  - 25-30 hrs studying



## National Survey of Student Engagement

- Work Reality:
  - 20% study 5 hrs per week or less
  - 25% 6-10 hrs
  - 48% 11-30 hrs
  - 7% > 30 hrs





Should we require more of  
today's young generation?





## 53% of Recent College Grads Are Jobless or Underemployed—How?

By Jordan Weissmann

*A college diploma isn't worth what it used to be. To get hired, grads today need hard skills.*



*the Atlantic*





Some people  
continue to  
assume that  
technology  
will be  
enough to  
improve  
education.





Technology will replace teaching as we know it.

“because of the technological and economic advantages of computer-based learning, compared to the monolithic school model” (p. 99).

“A brilliant teacher, Christensen brings clarity to a muddled and chaotic world of education.” – JIM COLLINS, bestselling author of *Good to Great*

# Disrupting Class

*How Disruptive Innovation Will Change the Way the World Learns*



**Clayton M. Christensen**

BESTSELLING AUTHOR OF *THE INNOVATOR'S DILEMMA*

Michael B. Horn & Curtis W. Johnson

HOME ABOUT TECH.PINIONS CONTACT US

## The iPad Mini Could Spur an Education Revolution

FEATURED TECH.PINIONS | STEVE WILDSTROM | OCTOBER 24, 2012 9:05 AM

Tweet 71 Like 29 +1 5 in Share 7



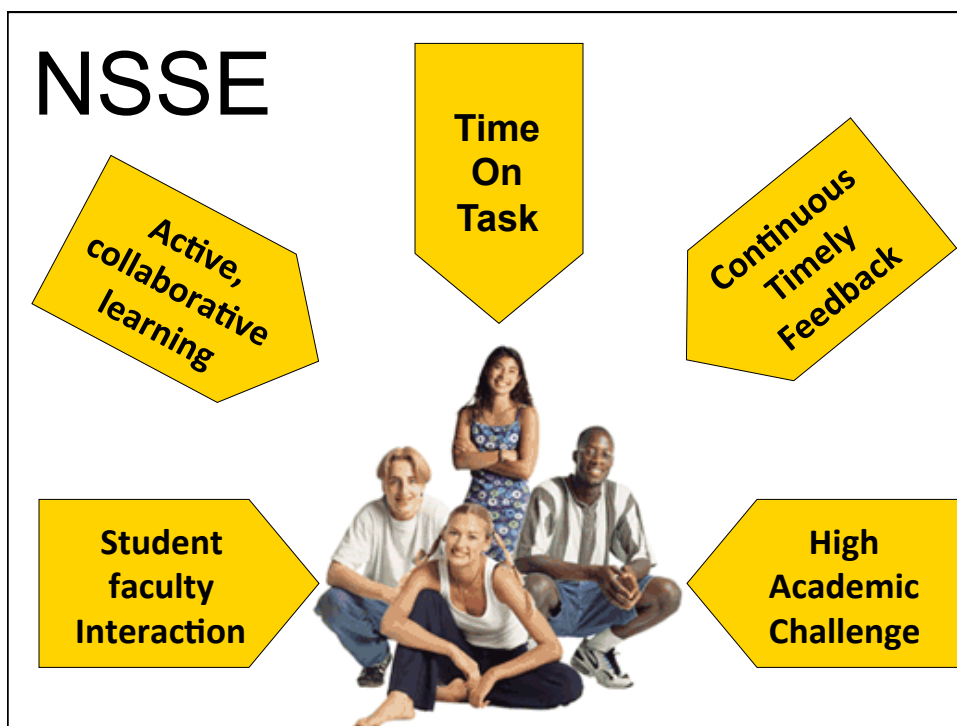




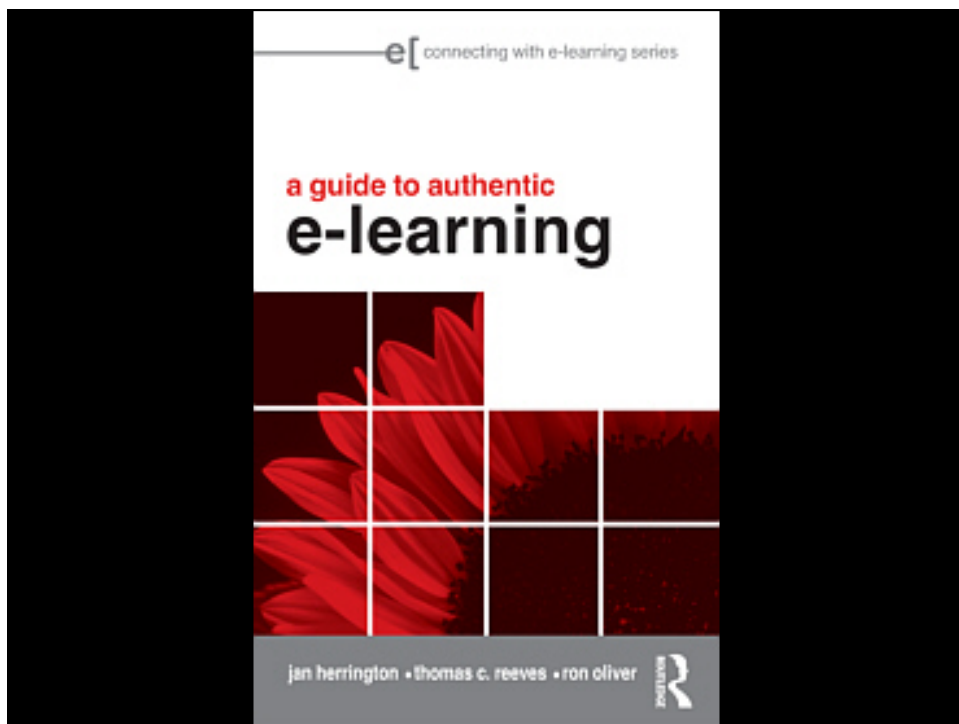
### Technology role in learning environments:

- Technology does not influence learning directly.
- Technologies are vehicles for instructional methods that account for learning.
- Instructional methods are the active agents in an educational technology just as an acid compound is the active agent in aspirin regardless of the medium.









Herrington, Reeves, Oliver

## Authentic learning design principles

- Provide **authentic contexts** that reflect the way the knowledge will be used in real life
- Provide **authentic tasks**
- Provide access to **expert performances** and the modeling of processes Provide **multiple roles and perspectives**
- Support **collaborative construction of knowledge**
- Promote **reflection** to enable abstractions to be formed
- Promote **articulation** to enable tacit knowledge to be made explicit
- Provide **coaching and scaffolding** by the mentor at critical times
- Provide for **authentic assessment** of learning seamlessly integrated within the tasks.

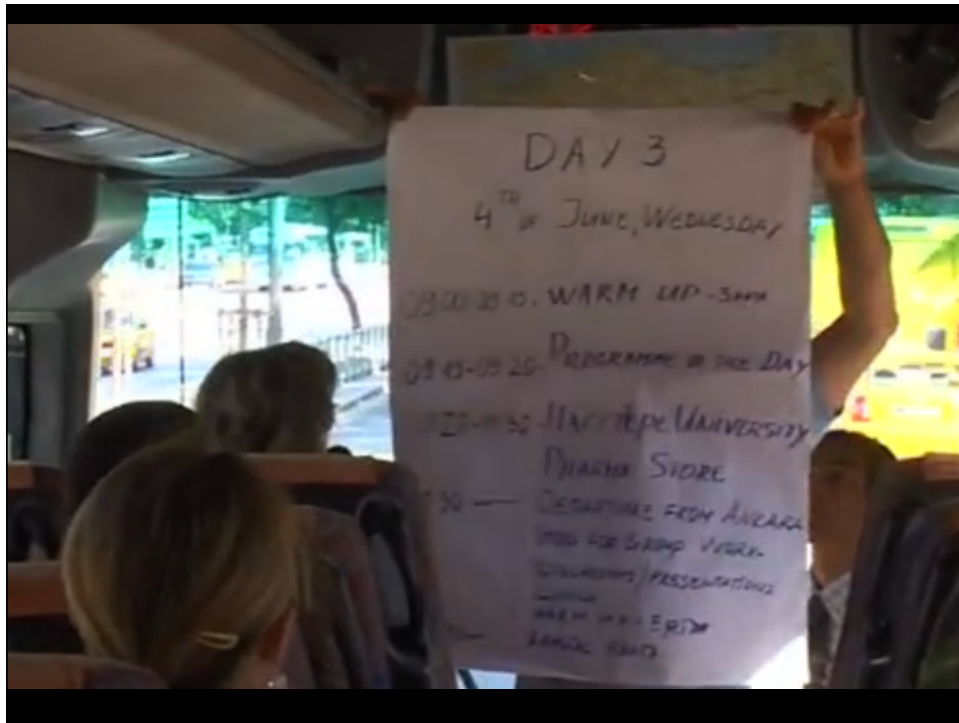
From Herrington, Reeves and Oliver, (2009). *A guide to authentic e-learning*. London: Routledge.

## Case Study

Converting  
an  
Experiential  
Learning  
Course into  
an Online  
Learning  
Environment



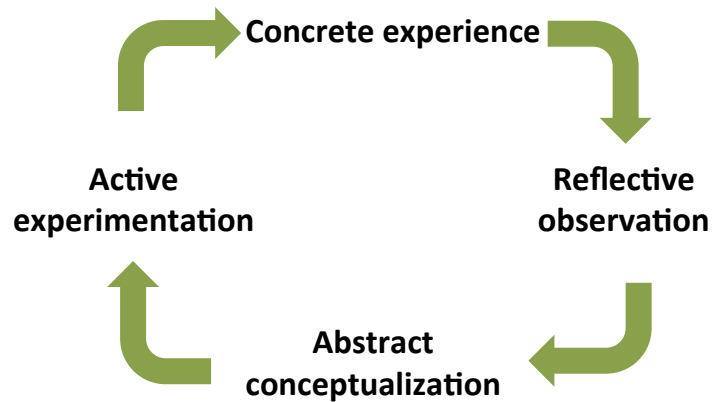








## Model of Instruction: Experiential and social learning theories



From Kolb, D. A. (1984). *Experiential Learning*. Englewood Cliffs, NJ.: Prentice Hall.



## Extensio et Progressio



e-Pharmaceutical Cold Chain Management Course

[http://www.epela.net/epela\\_web/index.php](http://www.epela.net/epela_web/index.php)



Dr. Ümit Kartoglu  
World Health Organization



Low order, discrete

High order, robust

learning objectives

## Objectives

Knowledge dimensions	Cognitive process dimensions					
	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
Factual knowledge				1	2	2
Conceptual knowledge	1	1			2	2
Procedural knowledge			1	1	3	2
Metacognitive knowledge				1	2	3

One right answer Multiple perspectives

nature of content

11:26:08 AM WED (GMT) [umitkartoglu](#) [logout](#)

**EPELA<sup>3</sup>** extensio et progressio / authentic e-learning

**e-Pharmaceutical Cold Chain Management Course**

**Course Syllabus**

**FARMALJOISTIK**  
 Step 1: Objectives  
 Step 2: Facility tour  
 Step 3: 360° photographs  
 Step 4: Task: Who am I?  
 Step 5: Task: Inspecting GDP  
 Step 6: Task: Temp. excursion  
 Step 7: Task: Quality agreement  
 Step 8: Task: Risk treatment  
 Step 9: Diary

**BURSA VACCINE STORE**  
 Step 1: Objectives  
 Step 2: Facility tour  
 Step 3: 360° photographs  
 Step 4: Task: Contingency plan  
 Step 5: Task: VVM  
 Step 6: Task: Cool water packs  
 Step 7: Diary

**HACETTEPE HOSPITALS**  
 Step 1: Objectives  
 Step 2: Facility tour  
 Step 3: 360° photographs  
 Step 4: Task: Risk treatment  
 Step 5: Diary

**ULUTAS PHARMACY**  
 Step 1: Objectives  
 Step 2: Facility tour  
 Step 3: 360° photographs  
 Step 4: Task: Prescriptions  
 Step 5: Task: Power cut  
 Step 6: Diary

**HEALTH CENTRE**  
 Step 1: Objectives  
 Step 2: Facility tour  
 Step 3: 360° photographs  
 Step 4: Task: Shake test  
 Step 5: Task: VVM  
 Step 6: Diary

**ALBANIA CASE**

How to use Programme Google.doc Discussion Video library Document library Who is who? e-mail Disclaimer

Direct instruction Experiential learning

model of instruction

6:30:33 AM WED (GMT) [umitkartoglu](#) [logout](#)

**EPELA<sup>3</sup>** extensio et progressio / authentic e-learning

**e-Pharmaceutical Cold Chain Management Course**

**FARMALJOISTIK – TASK (individual)**  
**Analyzing a temperature excursion**  
 2 days

Although 2 days are allocated to complete this assignment, the actual amount of time required is estimated at around 1 hour.

You are the **Logistics Manager** at the Farmaljoistik. Your responsibilities in general encompass organization of the storage and distribution of goods. Essentially you ensure that the right products are delivered to the right location on time and at a good cost. More specifically, your main responsibilities can be summarized as follows:

- monitoring the quality, quantity, cost and efficiency of the movement and storage of goods;
- coordinating and controlling the order cycle and associated information systems;
- analyzing data to monitor performance and plan improvements and demand;
- allocating and managing staff resources according to changing needs;
- liaising and negotiating with customers and suppliers;
- developing business by gaining new contracts, analyzing logistical problems and producing new solutions.

Farmaljoistik sent off 750 packs of Insulin in 25 L Avatherm model containers to Star Pharma Store in Izmir on 1 February 2011. The shipment was in 15 containers, each containing 50 packs of Insulin, all packed correctly following the standard operating procedure (SOP) for packaging. Each container had one Trix® LogTag data recorder. The containers were dispatched at 17:29 pm. The shipment arrived at its delivery point on 2 February at 10:59am. The Logtag datalogger showed an alarm in container #4. As per the SOP, products from this container were put on hold at Star Pharma Store pending the analysis of the temperature monitoring data.

The head pharmacist from Star Pharma Store called you to report on the alarm. He said that all the 15 LogTag

**Task 6 Temp. Excursion**

**FARMALJOISTIK**  
 Step 1: Objectives  
 Step 2: Facility tour  
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 Step 7: Task: Quality agreement  
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**ALBANIA CASE**

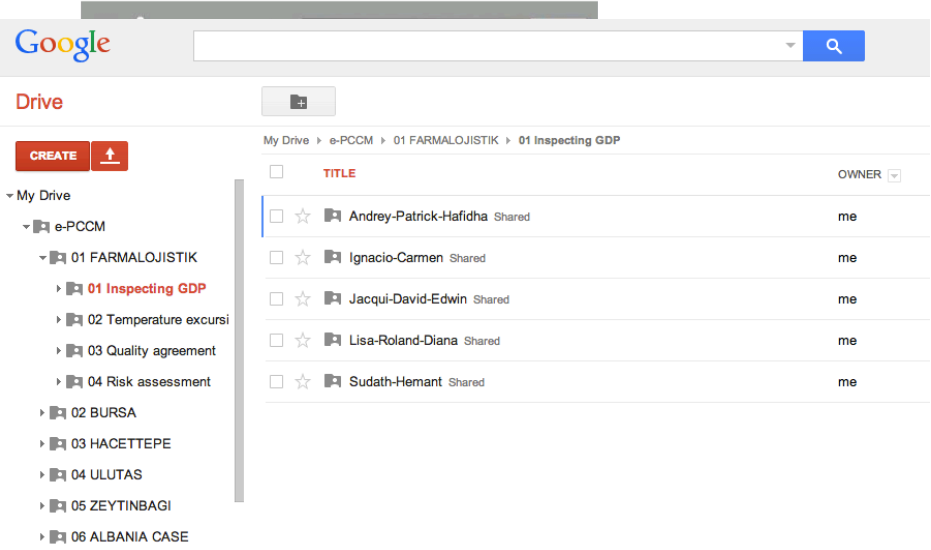
How to use Programme Google.doc Discussion Video library Document library Who is who? e-mail Disclaimer



Abstract Authentic

← learner tasks →

## Collaborative construction of knowledge



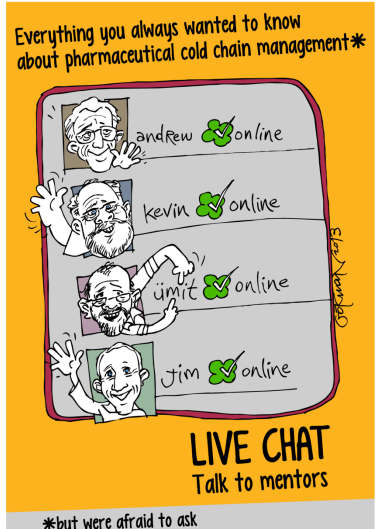
The screenshot shows a Google Drive interface. On the left, a sidebar lists the folder structure: My Drive > e-PCCM > 01 FARMALQJISTIK > 01 Inspecting GDP. The main area displays a list of shared files under the heading 'TITLE' and 'OWNER'. The files are:

TITLE	OWNER
Andrey-Patrick-Hafidha Shared	me
Ignacio-Carmen Shared	me
Jacqui-David-Edwin Shared	me
Lisa-Roland-Diana Shared	me
Sudath-Hemant Shared	me

Trainer Mentor/facilitator

← instructor roles →

## Access to expert performances



Everything you always wanted to know about pharmaceutical cold chain management\*

**LIVE CHAT**  
Talk to mentors

\*but were afraid to ask



Service Provider      End User

Specific skills ← **focus of assessment** → Mental models

9:45:55 PM TUE (GMT) umitkartoglu logout

**EPELA<sup>3</sup>** extensio et progressio / authentic e-learning

**e-Pharmaceutical Cold Chain Management Course** World Health Organization

**Zeytinbagi Shake test**

from EPELA<sup>3</sup> PLUS

LIKE LATER SHARE

02:20

For this Part 1, your task is to:  
Comment on the shake test video whether all steps were followed correctly by the nurse. Do the results indicate

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**Task 4**  
Shake test video

**Task 4**  
Shake test

**FARMALIZISTIK**  
Step 1: Objectives  
Step 2: Facility tour  
Step 3: 360° photographs  
Step 4: Task: Who am I?  
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Step 6: Task: Cool water pads  
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Step 3: 360° photographs  
Step 4: Task: Shake test  
Step 5: Task: WM  
Step 6: Diary

**ALBANDA CASE**

## Learning environment alignment



The emotional ending – with real tears –  
yet to be achieved



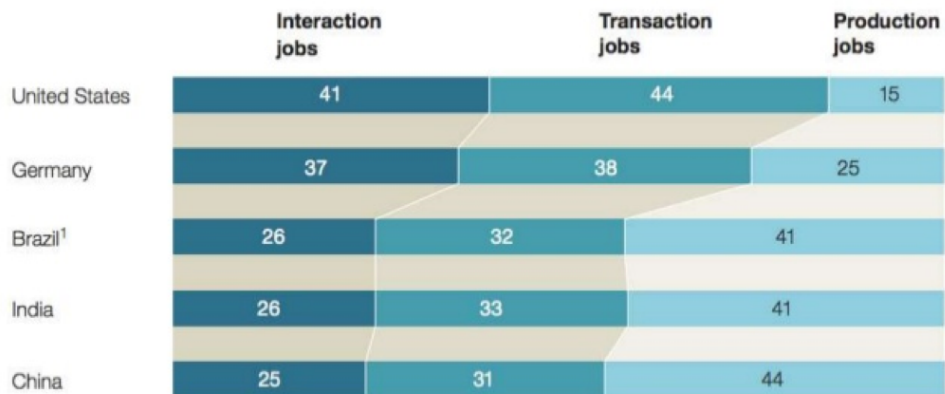
Authentic tasks and collaborative work  
are the keys to effective online learning.

- Focuses on 21st Century outcomes
- Enables intergenerational learning
- Has potential for real world impact



**Interaction-based work represents a significant proportion of jobs in developed and emerging markets alike.**

% of workforce



<sup>1</sup>Figures do not sum to 100%, because of rounding.

*McKinsey Quarterly, 2012*

# It's the task that matters most!





# AUTHENTIC LEARNING

RESOURCES AND IDEAS ABOUT AUTHENTIC LEARNING AND AUTHENTIC E-LEARNING

HOME

AUTHENTIC LEARNING MODELS

Instructional

Authentic context

Learning goals

Expert performance

Learning environments

Collaboration

Reflection

Coaching and scaffolding

Authentic assessment

AUTHENTICITY MATRIX

BOOKS

EXAMPLES OF AUTHENTIC LEARNING

EVALUATION

RESEARCH STUDENTS

“What is authentic learning, why is it needed, and how can we promote it?”

## About authentic learning

This site describes a model of authentic learning, based on 9 key elements that can be used to design authentic learning environments. It has been created to support courses and units using authentic learning and authentic e-learning.

### NINE ELEMENTS OF AUTHENTIC LEARNING:

1. Provide authentic contexts that reflect the way the knowledge will be used in real life
2. Provide authentic tasks and activities
3. Provide access to expert performances and the modelling of processes
4. Provide multiple roles and perspectives
5. Support collaborative construction of knowledge
6. Promote reflection to enable abstractions to be formed
7. Promote articulation to enable tacit knowledge to be made explicit
8. Provide coaching and scaffolding by the teacher at critical times
9. Provide for authentic assessment of learning within the tasks.

Explore these elements by clicking on the menu items on the left.

### READ ABOUT THE MODEL AND ITS IMPLEMENTATION

Herrington, J., Reeves, T.C. & Oliver, R. (2010). *A guide to authentic e-learning*. London and New York: Routledge

Herrington, A., & Herrington, J. (Eds.) (2008). *Authentic learning environments in higher education*. Hershey, PA, InfoSci.

Herrington, J., & Oliver, R. (2000). *An instructional design framework for authentic learning environments*. Educational Technology

### ABOUT THIS SITE

Created by

Dr Jan Herrington

Professor of Education

Murdoch University

Perth, Western Australia

### THIS SITE SUPPORTS

Book

*A Guide to Authentic e-Learning*

Authors

Jan Herrington

Thomas C Reeves

Ron Oliver

Award

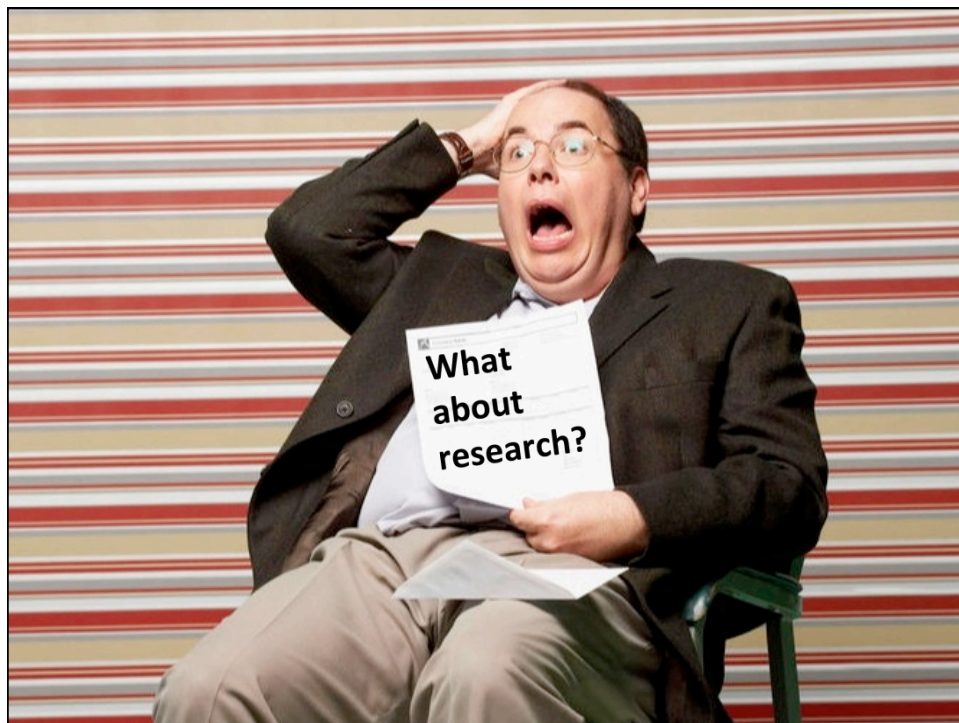
Outstanding Book of the Year, Association for Educational Communication and Technology (AECT) (2010)

### KEY RESEARCH COLLABORATORS

Tom Reeves

Website

<http://authenticlearning.info/AuthenticLearning/Home.html>



## Two Rationales for online learning

- Increase **access** for those who would otherwise not have it
- Increase the **quality** and **impact** of teaching and learning

C

F

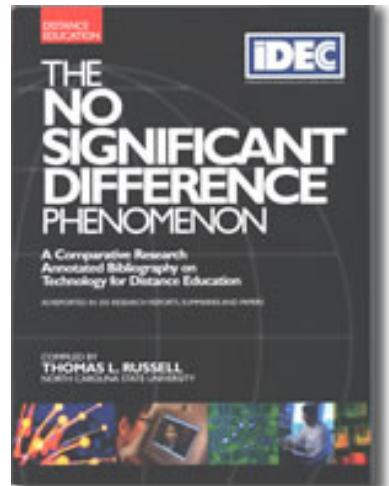
## The Future of University Teaching?



# The Future of University Learning?



- 1928-2008
- distance delivery modes from correspondence schools, radio, television, video, and now e-learning
- when the course materials and teaching methodology are held constant, there are *no significant differences* (NSD) in learner outcomes



<http://www.nosignificantdifference.org/>

## Stop Focusing Research on Things

- Learning Analytics
- Mobile Learning
- Online Learning
- 3D Printing
- Games and Gamification
- Wearable Technology
- The Internet of Things
- Machine Learning
- Virtual Assistants
- Immersive Learning





## Start Focusing Research on Problems

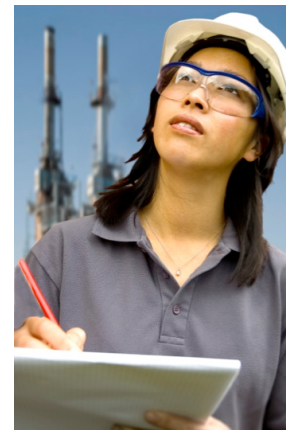
- Ineffective education
- Increasing poverty
- Child abuse
- Crime
- Lack of literacy
- Poor motivation
- Hopelessness
- Lack of engagement
- Racism, Sexism

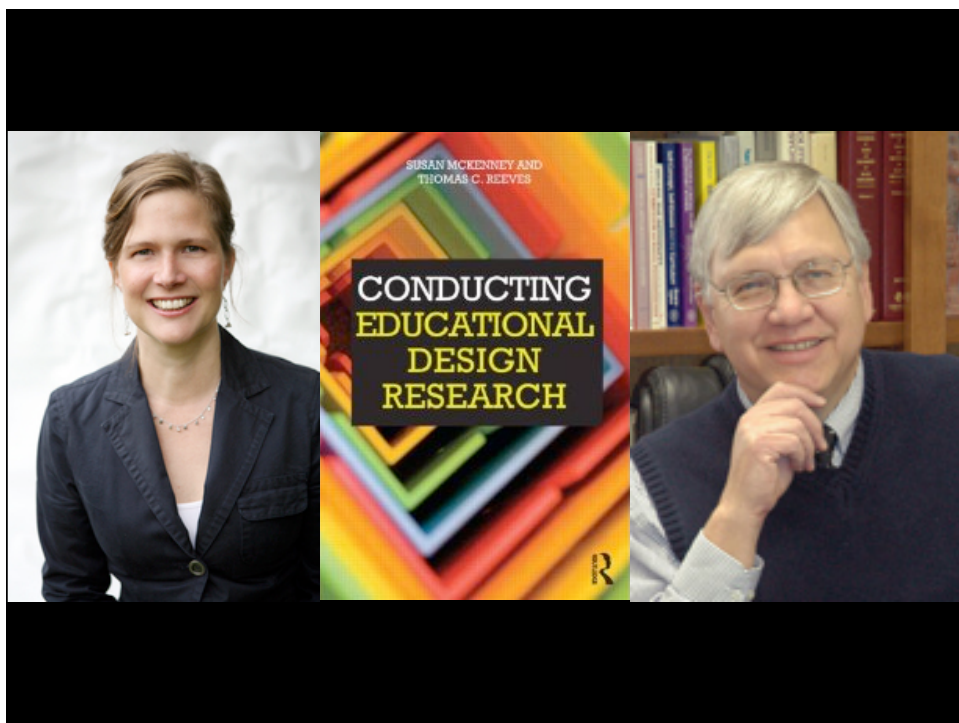




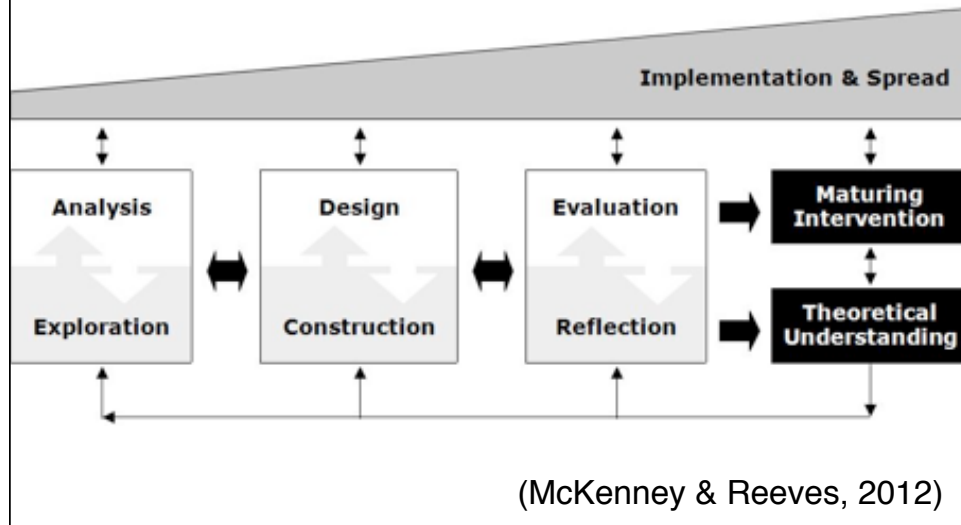
### Educational Design Research Approach:

- Working closely with academic staff, define an important pedagogical outcome and create a prototype learning environment informed by theory.
- Emphasize content and pedagogy rather than just technology.
- Give special attention to supporting human interactions.
- Test, refine, and retest learning environments until outcome is reached. Refine theory simultaneously.



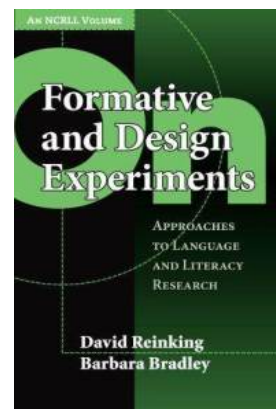
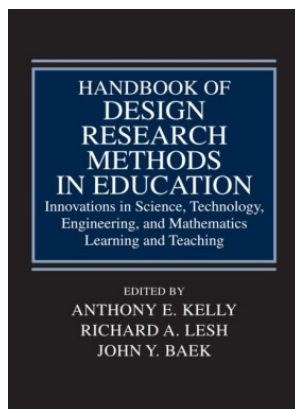


## Educational Design Research



## EDR Resources

<http://dbrxroads.coe.uga.edu/>





- NetGen students require increased motivation to learn.



- Online learning works best when tasks are authentic!

Change  
begins with  
you.

- Research must focus on problems, not things.



# Thank You!

Professor Emeritus Tom Reeves  
The University of Georgia  
Instructional Technology  
325C Aderhold Hall  
Athens, GA  
30602-7144 USA  
treeves@uga.edu  
<http://www.evaluateitnow.com>

