

# Active Learning Strategies

## IGET Interest Group for Educational Technology

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



# IGET Interests

- Topics from Survey
  - Evaluating effectiveness
  - Active learning strategies
  - Emerging technologies
  - Faculty development
  - Learning analytics
  - Assessment techniques
  - Academic integrity, tools



# Welcome!

- **Topic:** *Active Learning Strategies*
- **Active Learning:** ET's perspective (Dr. Ava Wolf)
  - Research behind the concept
  - Application and Backward Design
  - Digital tools and activities
- **Active Learning:** Instructor's perspective (Dr. Jose Vazquez)
- **SGD:** Lesson planning with active learning
- **Learning take-away:** Collaborative Grading Platforms

# IGET Goal

Cultivate a community in which members engage with and learn from each other, generate new ideas and share best practices, as well as identify and help adopt technologies that advance the overall educational mission of our institution.



# Active Learning: ET Perspective



**Ava R Wolf, PhD**  
ELEARNING PROFESSIONAL

Center for Innovation in Teaching &  
Learning

Instructional Spaces and Technologies





# Active Learning in the Classroom

**What will you do in class today?**

# Food for Thought:

## Why and How?



“Give the pupils something to do, not something to learn...”

-- John Dewey



# THE LEARNING PYRAMID

## KNOWLEDGE RETENTION RATES

**Passive  
Teaching  
Methods**

**Participatory  
Teaching  
Methods**



Adapted from National Training Laboratories, Maine



# “Doing Things” → Increases Retention



**5%** *lectures*  
**10%** *reading*  
**20%** *images*  
**30%** *demonstrations*  
**50%** *group discussion*  
**75%** *practicing*  
**90%** *doing or teaching*

# “decrease in failure rates...”

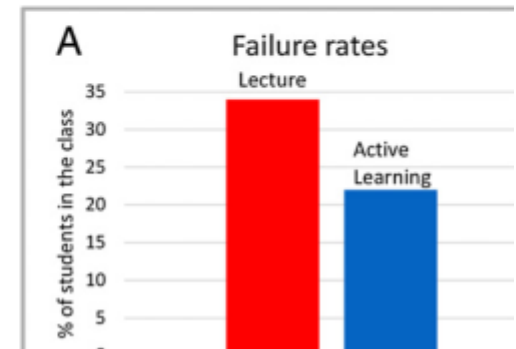
## Large-scale comparison of science teaching methods sends clear message

**Carl E. Wieman<sup>1</sup>**

*Department of Physics and Graduate School of Education, Stanford University, Stanford, CA 94305*

The quality of science, technology, engineering, and mathematics (STEM) education in the United States has long been an area of national concern, but that concern has not resulted in improvement. Recently, there has

been a shift in the lecture method has usually been carried out by scientists and engineers in the multiple respective disciplines, because the desired learning and the implementation of the teaching methods are quite discipline specific and



*(2014) Wieman, Carl E. “Large scale comparison of science teaching methods sends strong message”*

“... increases in exam performance that would raise average grades by half a letter or more...”

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## Active learning increases student performance in science, engineering, and mathematics

Scott Freeman<sup>a,1</sup>, Sarah L. Eddy<sup>a</sup>, Miles McDonough<sup>a</sup>, Michelle K. Smith<sup>b</sup>, Nnadozie Okoroafor<sup>a</sup>, Hannah Jordt<sup>a</sup>, and Mary Pat Wenderoth<sup>a</sup>

Author Affiliations 

Edited\* by Bruce Alberts, University of California, San Francisco, CA, and approved April 15, 2014 (received for review October 8, 2013)

Abstract | Full Text | Authors & Info | Figures | SI | Metrics | Related Content | PDF | PDF + SI

<http://www.pnas.org/content/111/23/8410.abstract>



# “...benefits greater for women and minorities...”

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**FEATURES**

## **Classrooms are getting a makeover to accommodate new forms of teaching**

New designs address the trend towards student-centred, active learning.

By DIANE PETERS | September 28, 2016



2 Comments

Share



<http://www.universityaffairs.ca/features/feature-article/student-centred-active-learning-gaining-popularit>

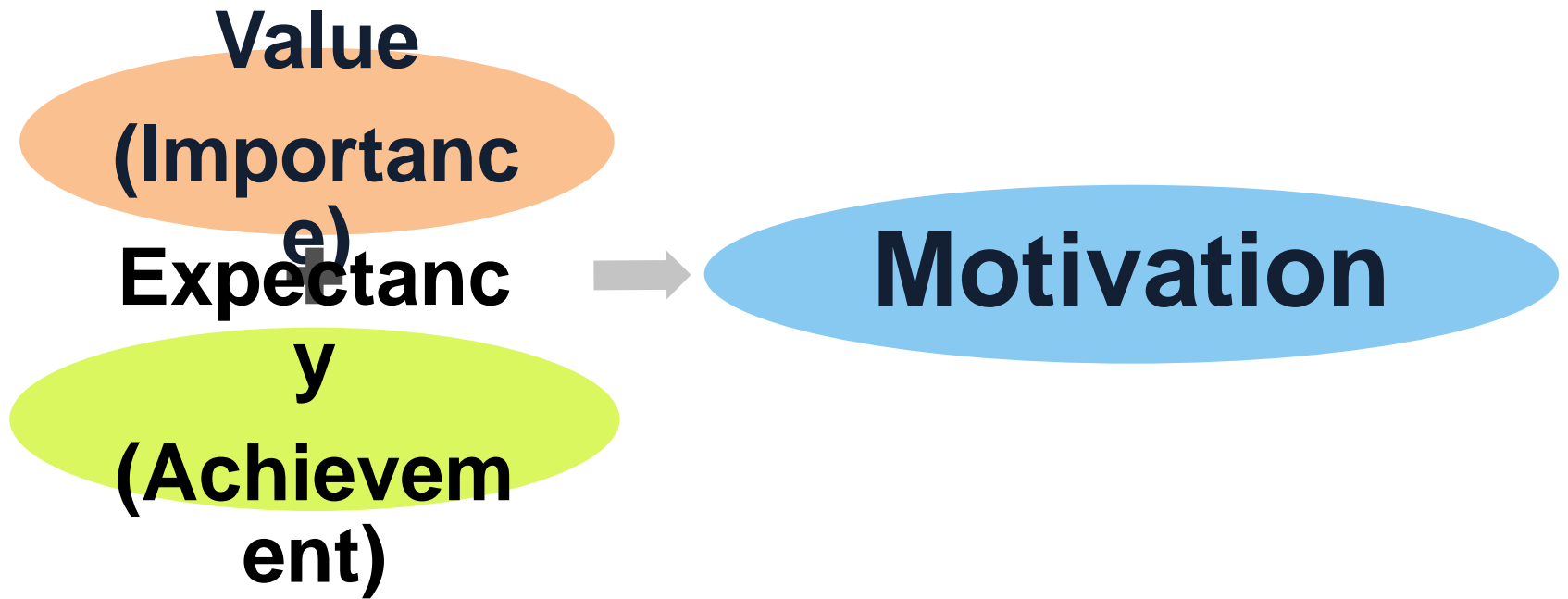


# Active Learning Builds Skills → Jobs

The *Job Outlook 2016* survey was conducted from August 5, 2015, through September 13, 2015, among NACE employer members. A total of 201 NACE employer members participated in the survey—a 20.1 percent response rate. - See more at: <http://www.naceweb.org/s11182015/employers-look-for-in-new-hires.aspx#sthash.5CM7vMew.dpuf>



# The “Psychology” of Active Learning



# Attainment VALUE



Photo by Vern, creative commons [license](#)





# Intrinsic VALUE

[Photo](#) by Jaclyn Aulleta, creative commons  
license



# Instrumental VALUE

Photo by Jens Schott Knudsen, [creative commons license](#)

A long, straight asphalt road stretches into the distance under a cloudy sky. The road has a yellow double line in the center and white lines on the sides. The landscape is flat and arid, with sparse vegetation and distant mountains on the horizon.

# Outcome EXPECTANCY



# Efficacy EXPECTANCY



Photo by Matt, creative commons license



# Active Learning Challenge: Tap into what students value and can do

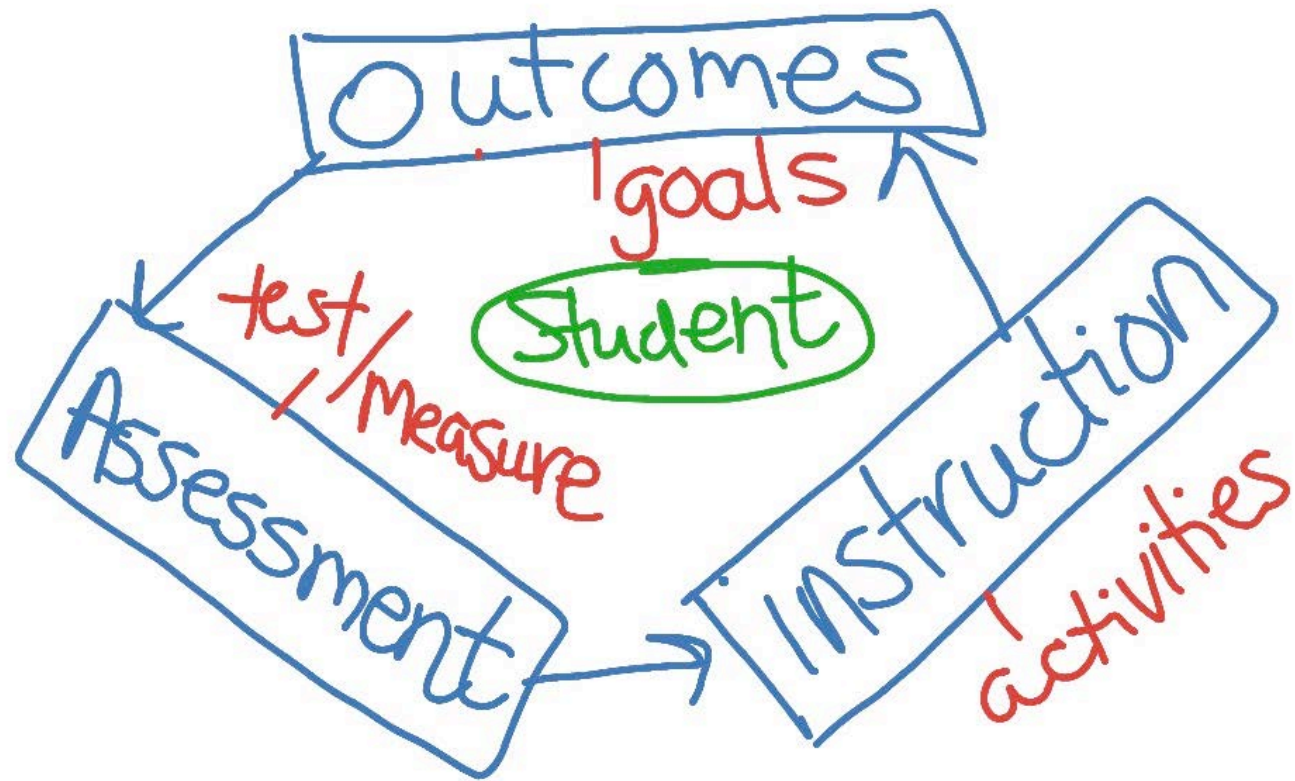


# Backward Design Instructional Model


“ One starts with the end- the desired results- and then derives curriculum from the evidence of learning” –  
Wiggins and McTighe, 2000

# Backwards Design

3 main steps



# Backwards Design Framework: 3 Questions



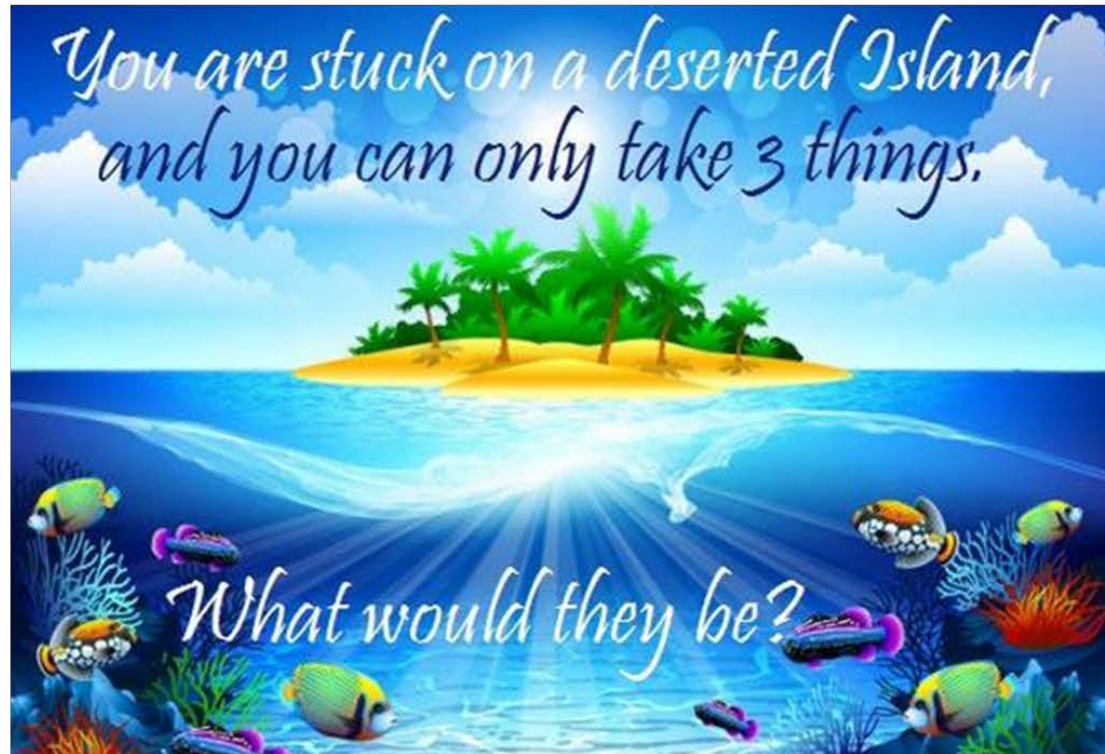
What students  
will know/be  
able to do?

How you will  
know they can  
do it?

What activities  
will get them  
there?



# Build Consensus: Teams, Icebreakers



# Facts vs. Feelings: Role Plays, Case Studies







# Curate Content: Scoop-It, Flipchart, Diigo



Hi Ava R Wolf!

These are the top stories on the topics you follow. (See all)

 <p>Scooped by <a href="#">Nik Peachey</a> onto Tools for Teachers &amp; Learners</p>	 <p>Scooped by <a href="#">Nik Peachey</a> onto Learning Technology News</p>
<h3>Edorable – A 3D Virtual Classroom</h3> 	<h3>Q&amp;A With Off2Class Co-Founder Kris Jagasia</h3> 

<http://www.scoop.it/>

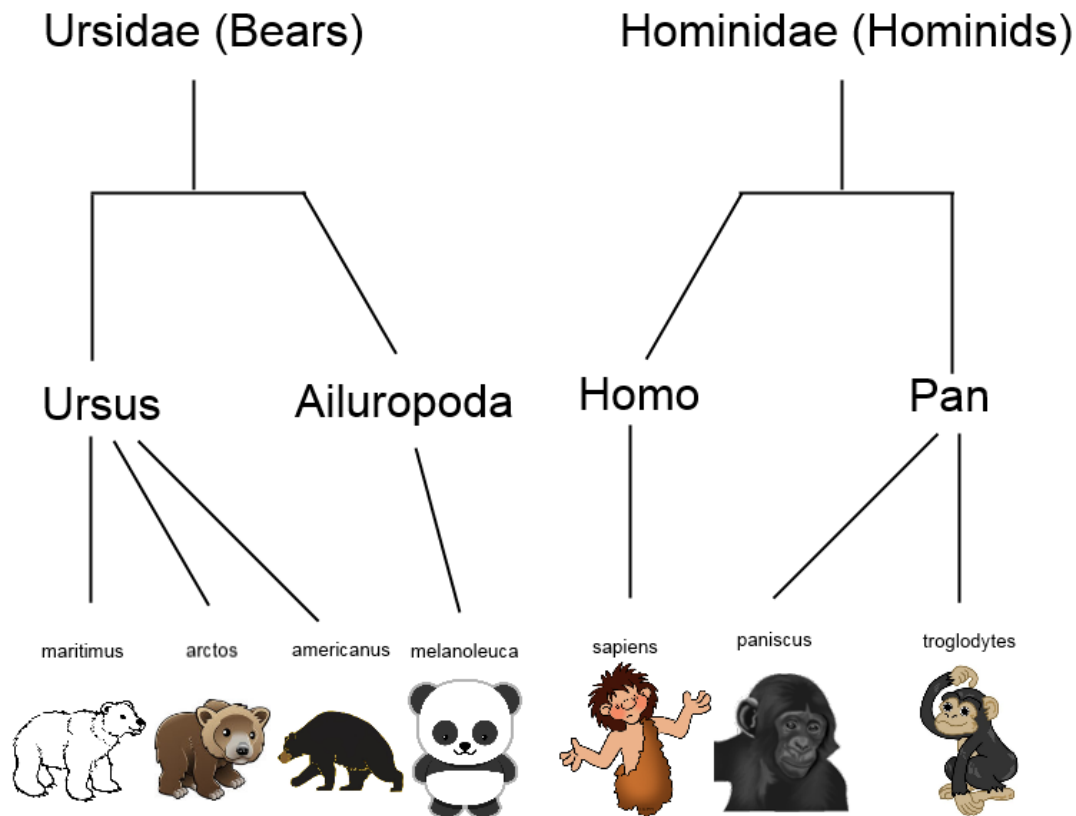


# Play Games: Build, Problem- solve, Compete

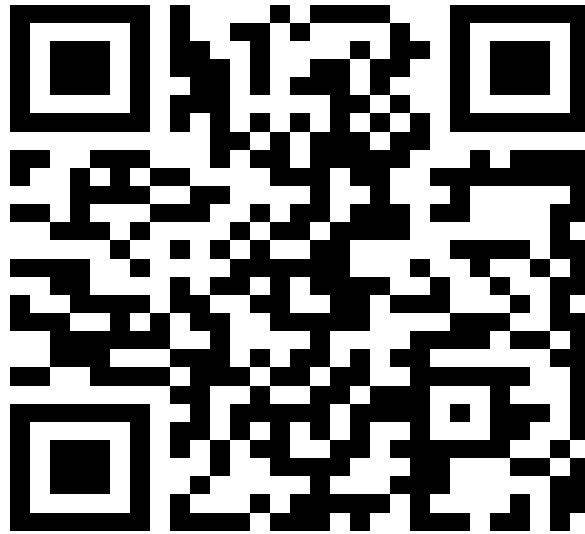


# Whiteboards: Create-Rotate-Critique-Revise

(D. Matthes, UMN)

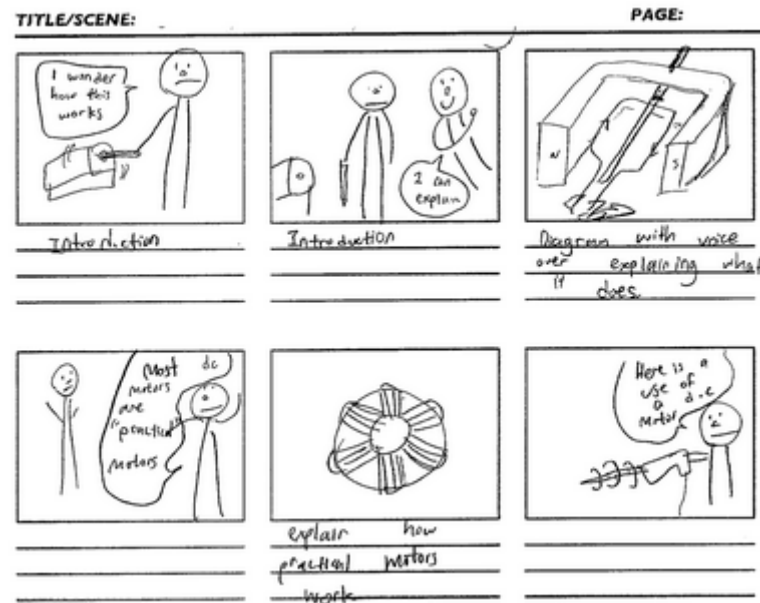


# Digital Sharing: Polling, Padlet, Google Slides



<http://bit.ly/1T4jC3p>

# Tell Your Story: Videos, Interviews, Blogs



# Digital Authoring: iBooks, Adobe, Uduku



<https://elearningindustry.com/10-authoring-tools-easy-elearning-design>





# Storymapping: Google, ArcGIS, Lit



[http://www.googlelitt  
rips.org/](http://www.googlelitt<br/>rips.org/)

[http://schoolofdata.org  
/2014/08/25/seven-  
ways-to-create-a-  
storymap/](http://schoolofdata.org<br/>/2014/08/25/seven-<br/>ways-to-create-a-<br/>storymap/)



# A Deeper Dive



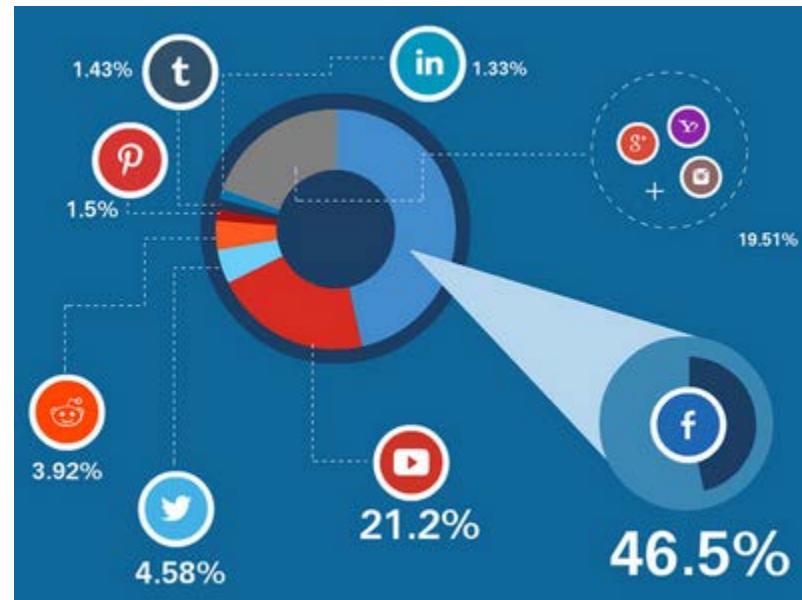
 View  Create  Use



<http://gigapan.com/cms/view#>



# Fun with Data: Infographics, Tableau, Timelines



<http://www.creativebloq.com/design-tools/data-visualization-712402>

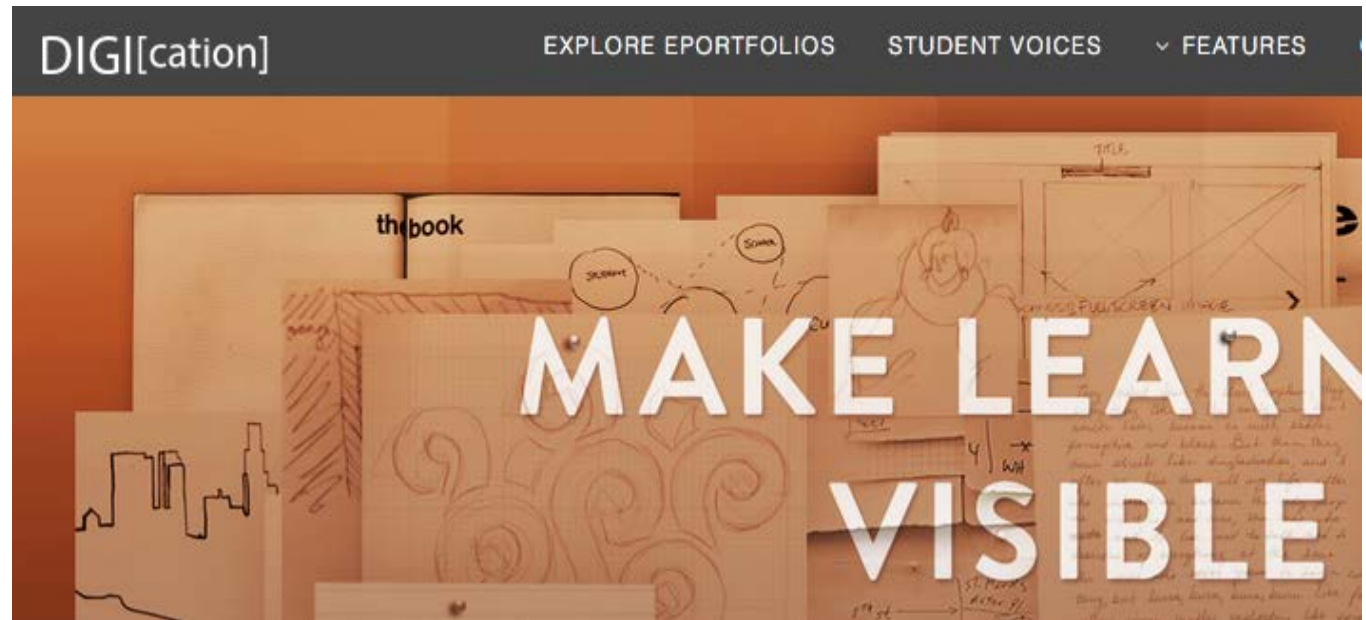
<https://piktochart.com/>





# Document Learning: Digital Portfolios

<https://www.aacu.org/publications-research/periodicals/benefits-e-portfolios-students-and-faculty-their-own-words>



<https://www.digication.com/>



“... we learn from reflecting on  
experience.”

-- John Dewey

# The Power of Reflection: Billboards, Bumperstickers, One-Minute Papers, More



<https://www.youtube.com/watch?v=oD7DFpvrzNE>

<http://www.wiley.com/WileyCDA/WileyTitle/productCd-047028191X.html>





Ava Wolf, PhD

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# Active Learning: Instructor's Perspective



Dr. José J. Vázquez-Cognet  
Clinical Professor  
Department of Economics  
University of Illinois at Urbana-Champaign



# Group Discussion

## Lesson Planning and Suggestions

**AT YOUR TABLE: (12 mins)**

- ...



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- Topics from Survey
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# Learning take away

## Collaborative Grading Platforms

