Integrating Educational Technology into Medical Education

Process versus Product

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tysonpillowmd.com

Objectives

1. Discuss the process of integrating technology into medical education
2. List common barriers to integrating technology and ways to overcome them
3. List at least one method to integrate technology into teaching

Why Tech Matters


2005

2013

“Digital native”

iPad 8/16 - 5:49 44%

Gen C is a state of mind

80% of Millenials

Creation
Curation
Connection
Community

understanding the data deluge: comparison of scale with physical objects

1 megabyte

(A large novel)

A tiny ant

x 1000

1 gigabyte

(Information in the human genome)

Height of a short person

x 1000

1 terabyte

(Annual world literature production)

Length of the Auckland Harbour Bridge

x 1000

1 petabyte

(All US academic research libraries)

Length of New Zealand

x 1000

1 exabyte

(Two thirds of annual production of information)

Diameter of the Sun

www.saradigm.co.nz

The Effect of Technology on Modern Education

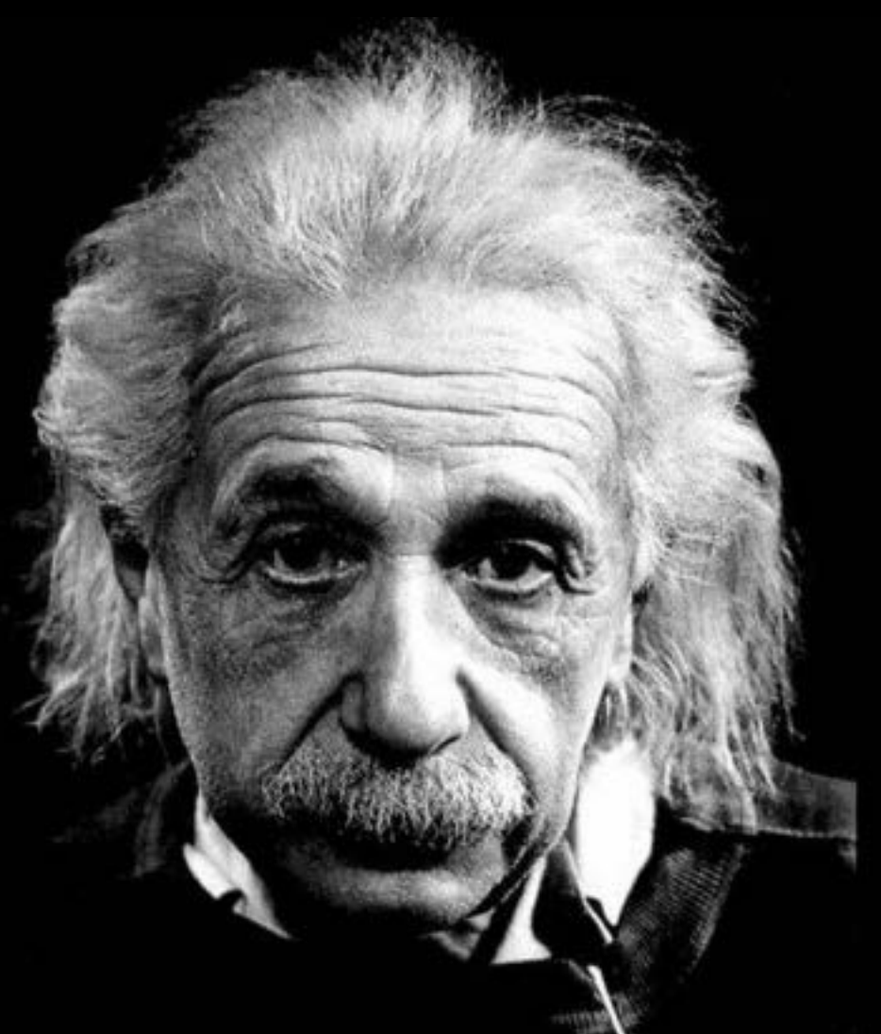
“Today’s students are no longer the people our educational system was designed to teach.”

-Marc Prensky,
Digital Natives, Digital Immigrants

#IMPAC
T

Education in the Digital Age

“I never teach my pupils; I only attempt to provide the conditions in which they can *learn*.”



“[Metacognition is]…essential to foster deep and durable learning.”

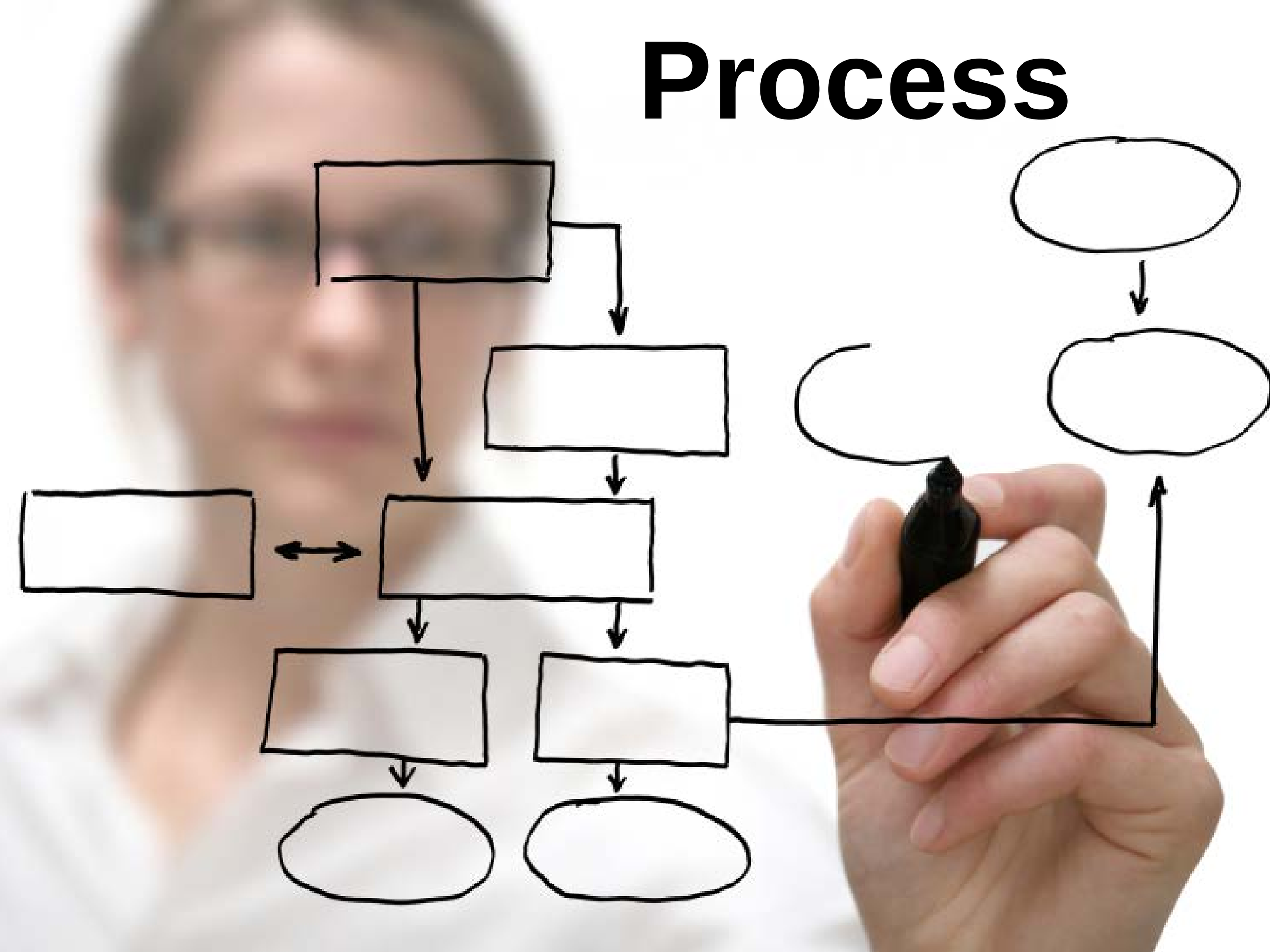
Interactive teaching styles that facilitate reflection, self-assessment, and perspective-taking

-Gonullu, Artar. Educ Health 2014;27:225-6

Educational design is the creation of curriculum and instruction which optimizes an immersive learning environment

-Me

Process



Educational technology

"...a process-oriented and systems-based pedagogical approach for facilitating learning and improving performance in patient care by the integrated mode of creating, using, and managing technological process and resources."

Han, et. al. Teach and Learn in Med. 2013;25(S1):S39-

Discussion Time:

So we live in a digital world?

How do our trainees learn and how do they want to learn?

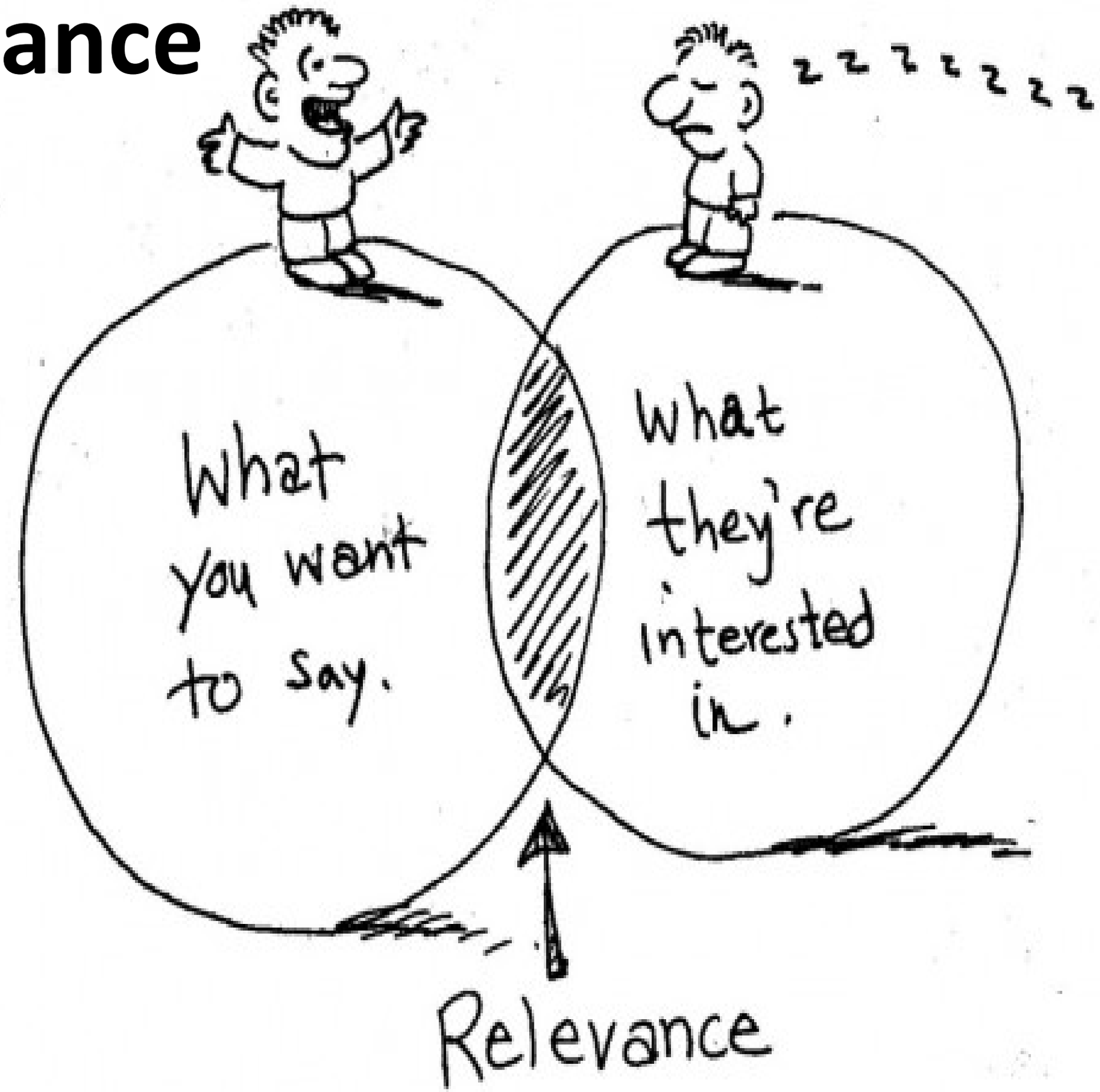
Why Don’t My Students Think I am Groovy? The 5 R’s For Engaging Millennial Learners

Christie Price-Dalton State U

Connected Faculty

1. **Tech-Savvy:**
2. **Relevant:**
3. **Seriously Humorous…..**
4. **Relaxed and Relatable:**

Relevance



Rationale


CHAPTER 9
Heart Muscle: The Heart As a Pump


Relaxed

Rapport

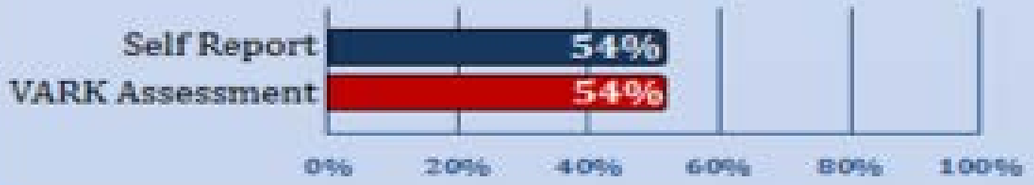
Research Based Active Learning

What Methods Do You Use to Teach?

http://vark-learn.com/the-vark-questionnaire/teaching-questionnaire/

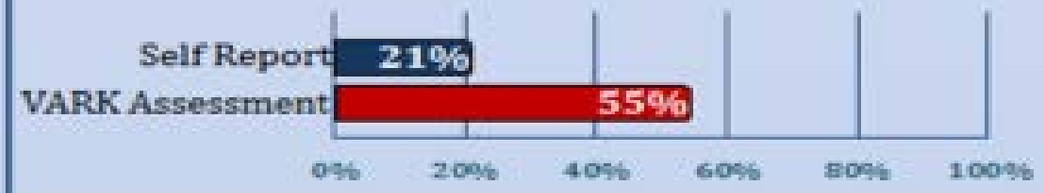
VISUAL

I prefer to see information graphically through maps, charts, graphs, flow charts, labeled diagrams. I like to see meaningful symbols for relationships between different concepts. Please note, it does NOT include movies, videos, or PowerPoint.



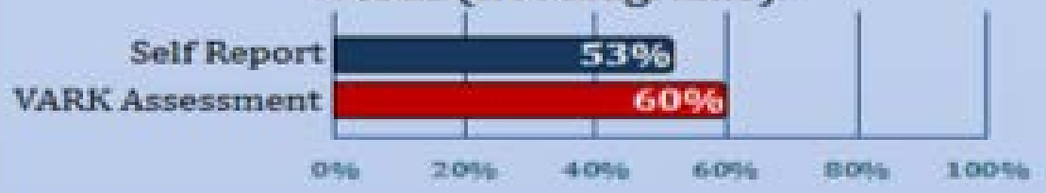
AUDITORY

I prefer to learn by hearing or speaking such as from lectures, books on tape, group discussion, talking to others. I want to sort out ideas by speaking them first. I may need to say something in my own way to learn it.

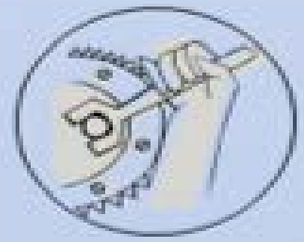


READ/WRITE

I prefer to see information displayed as words. I like to learn by reading books and essays, watching PowerPoint, and completing written assignments. I often have to write something down to help learn it. Anything that involves reading or writing words (not diagrams).

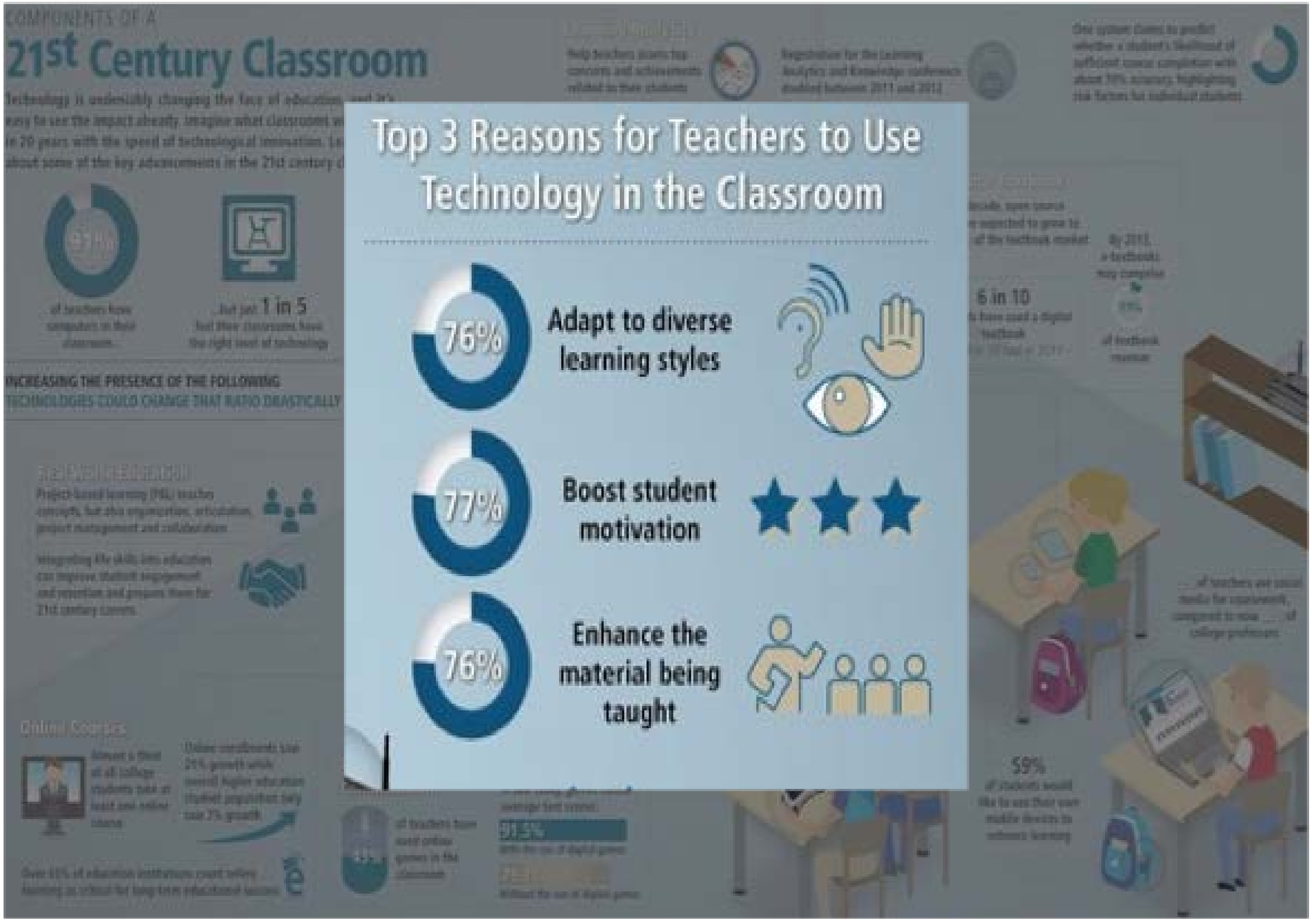


KINESTHETIC



I prefer to learn by experience and practice. In other words, I learn by doing (or seeing something be done). I like learning through demonstrations, simulations, case studies, and practical applications.

iPad 10:45 am


COMPONENTS OF A
21st Century Classroom
Top 3 Reasons for Teachers to Use Technology in the Classroom
76%
Adapt to diverse learning styles
77%
Boost student motivation
76%
Enhance the material being taught
1 in 5
6 in 10
59%

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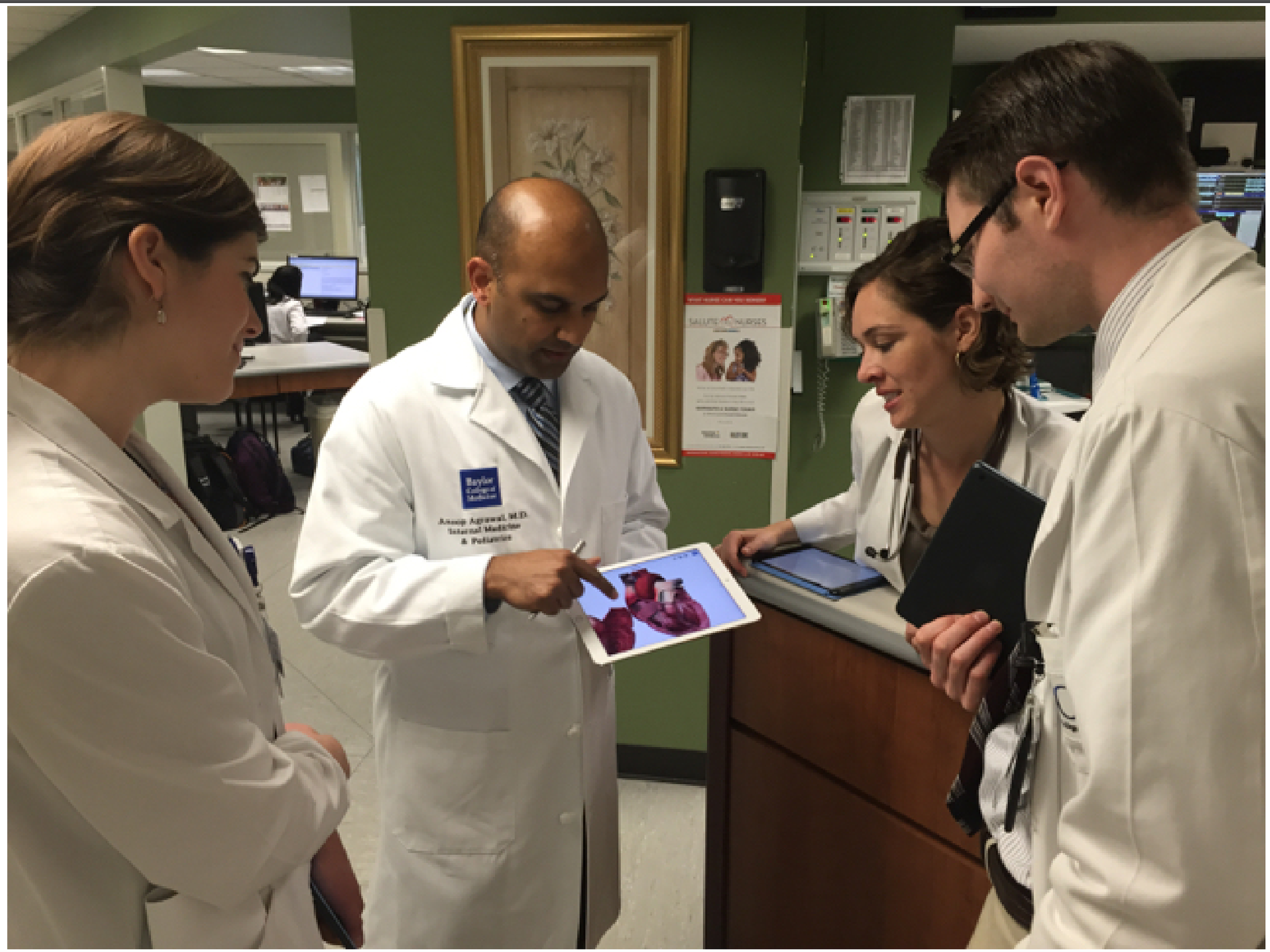
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Anoop Agrawal, M.D.
Internal Medicine
& Pediatrics

What are Our Current Teaching Methods (aka How to Do It Better)

Evolution of ET

Use	Delivery
Exposure	Mastery
Facts	Concepts

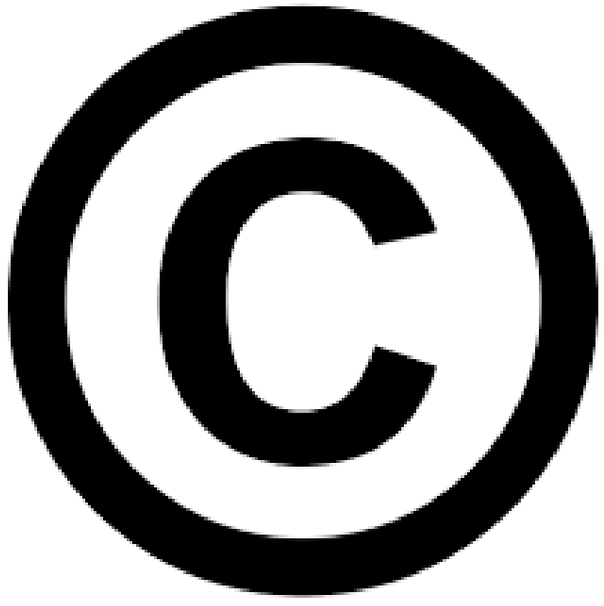
Integrating Educational Technology

1. Understand and embrace the technology
2. Add to an existing educational framework
3. Start slow and build slowly
4. Don’t be afraid to experiment and innovate

Embrace Technology

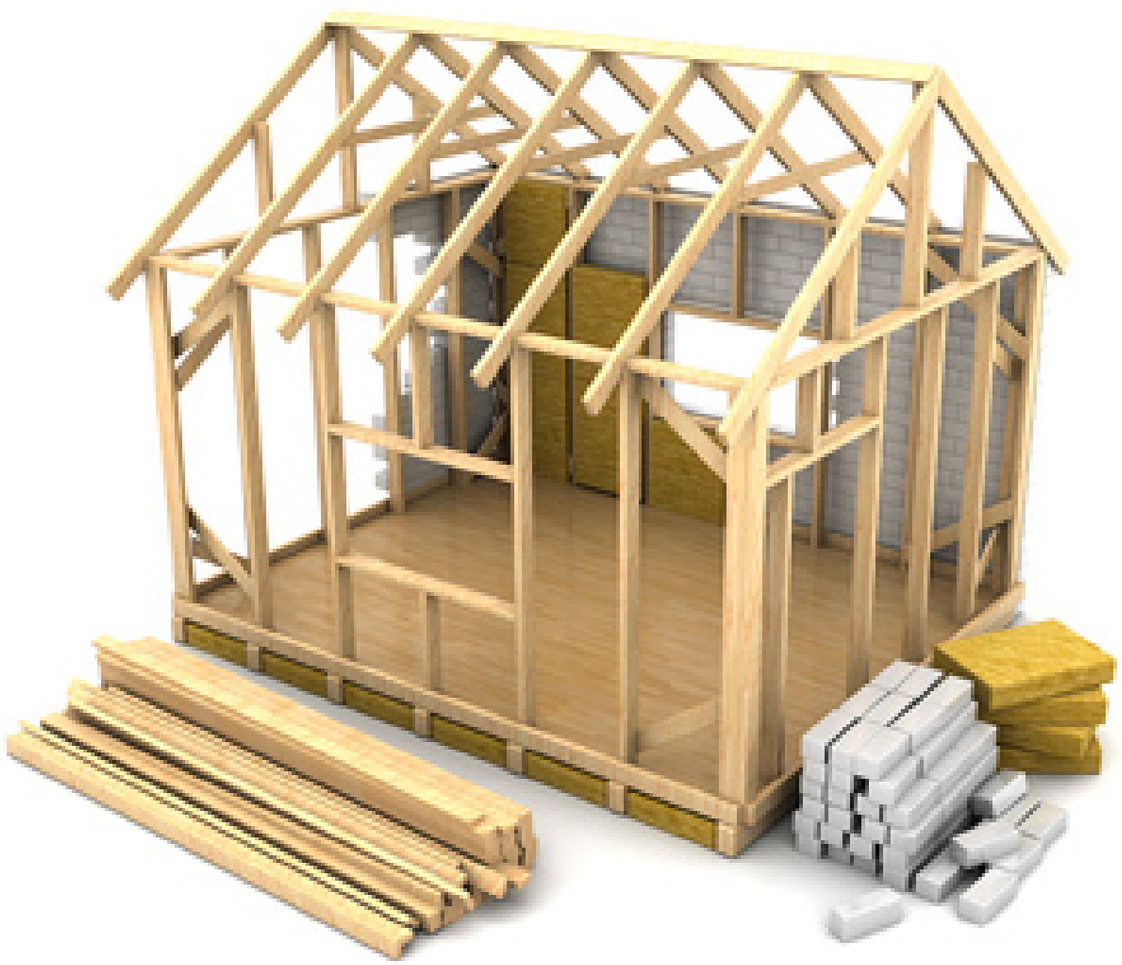
Cloud Storage

Become a hoarder



Confidentiality of Personal Health Information

Establish a framework



Add the technology into an existing framework to enhance delivery or retention of information

2015, 1–4, Early Online MEDICAL TEACHER

The importance of educational theories for facilitating learning when using technology in medical education

JOHN SANDARS[1], RAKESH S. PATEL[2], POH SUN GOH[3], PATRICIA K. KOKATAILO[4] & NATALIE LAFFERTY[5]

1. Problem identification and general needs assessment

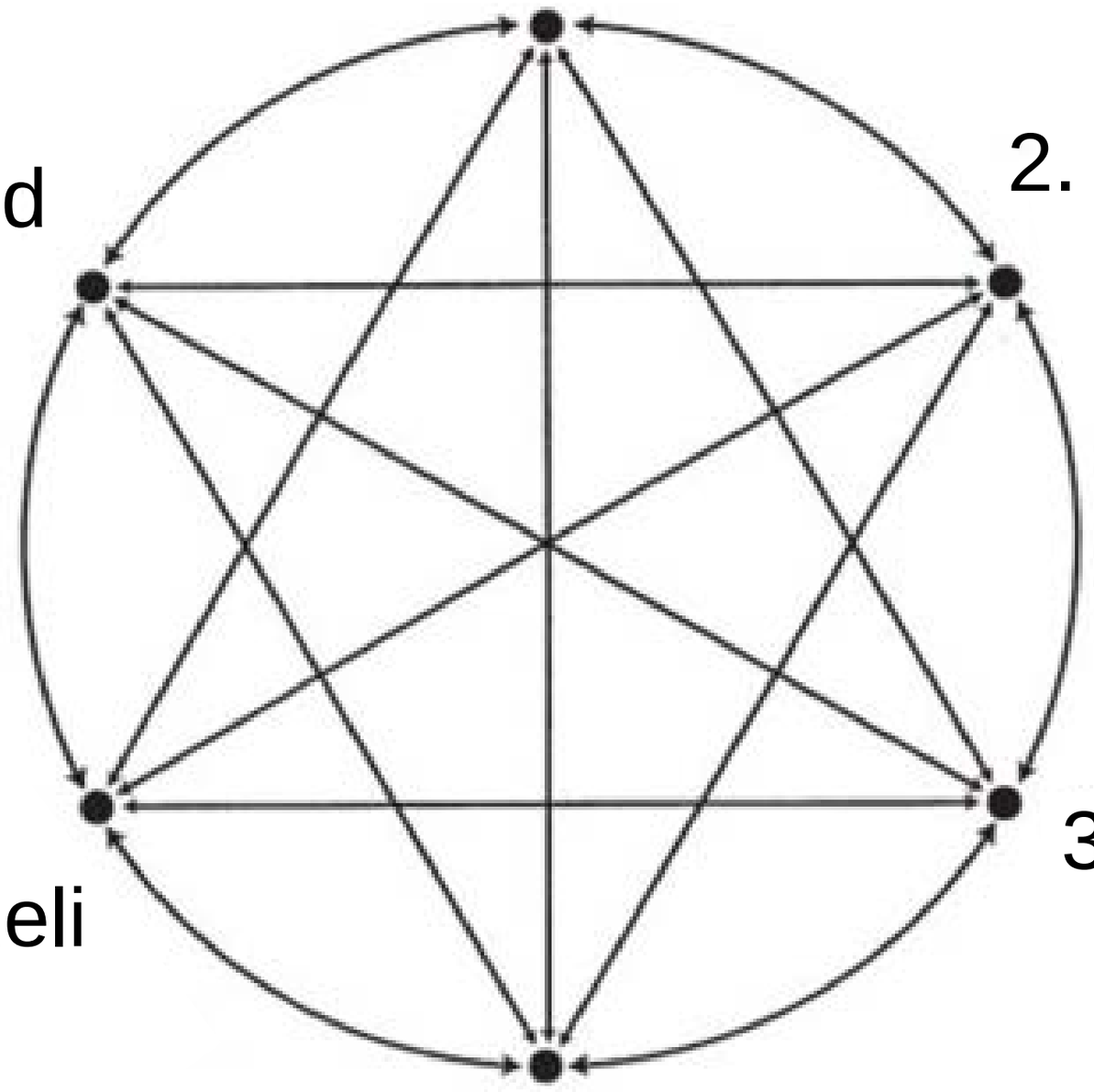
2. Targeted needs assessment

3. Goals and objectives

4. Educational strategies

5. Implementation/delivery

6. Evaluation and Feedback



Kern, et. al. 2009

Take your time…

Experiment and innovate

Adopt the beginner’s mind

Foster communication

project-management.com

…but recognize that
it is just a tool

Simplicity

Success Stories

Educational Technology and Scholarship in the Digital Age


KEEP
CALM.
THERE'S
AN APP
FOR THAT

Baylor College of Medicine


VISIBLE BODY
Bb
ExamSoft


doceri


tv


CRESTRON
AirMedia™


KEEP
CALM
AND
GET OUT
OF THE WAY

ŠAMR

R

REDEFINITION
Tech allows for the creation of new tasks

M

MODIFICATION
Technology allows for significant task redesign

TRANSFORMATION

A

AUGMENTATION
Tech acts as a direct substitute, with functional improvement

S

SUBSTITUTION
Technology acts as a direct substitute, with no functional change

ENHANCEMENT

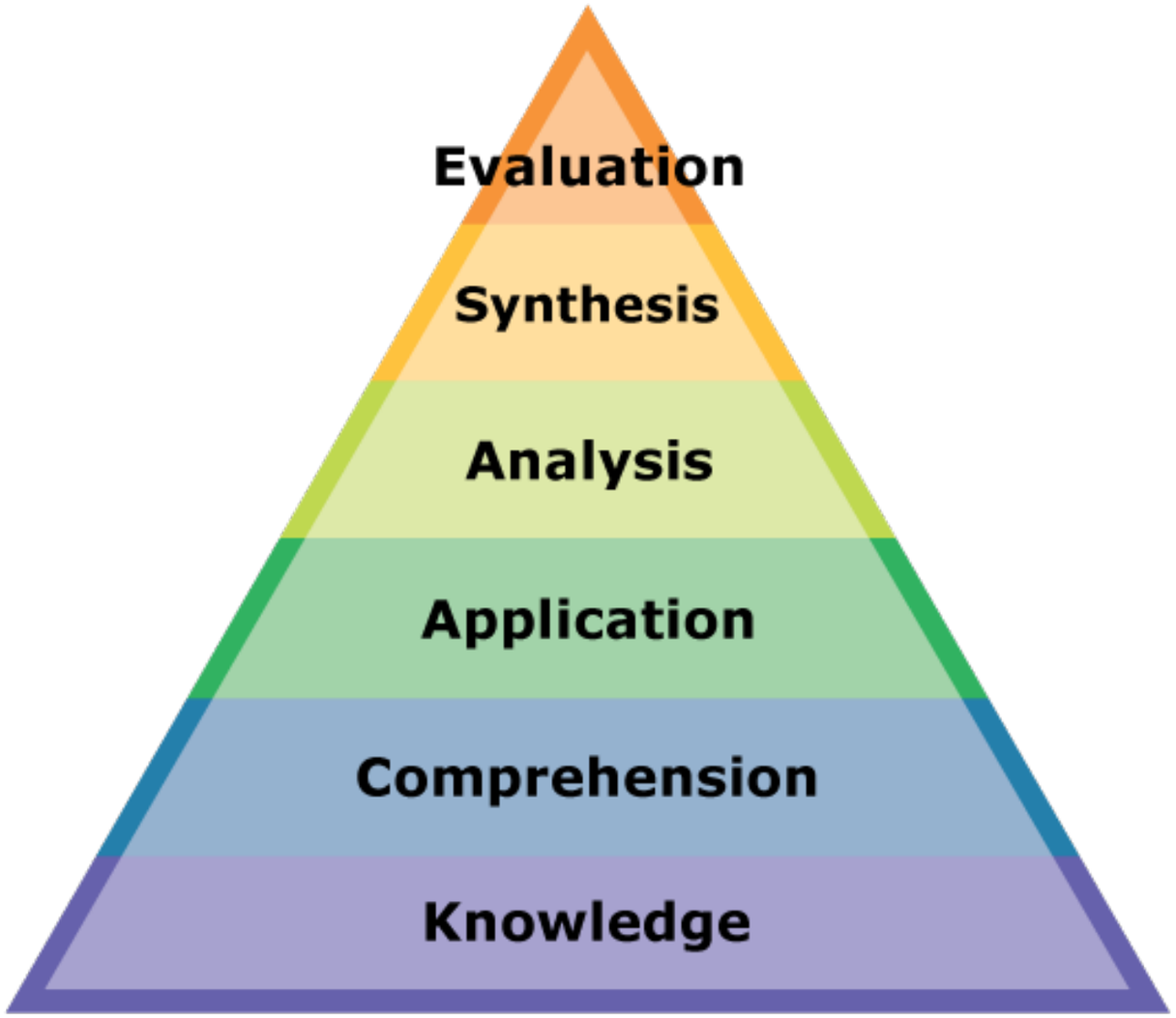
SAMR and Bloom's

Redefinition

Modification

Augmentation

Substitution



The SAMR Model for Technology Integration

S A M R

I wonder what's in the ocean?

NO TECH

SUBSTITUTION
Tech acts as a direct tool substitute, with no functional change.

AUGMENTATION
Tech acts as a direct tool substitute, with functional improvement

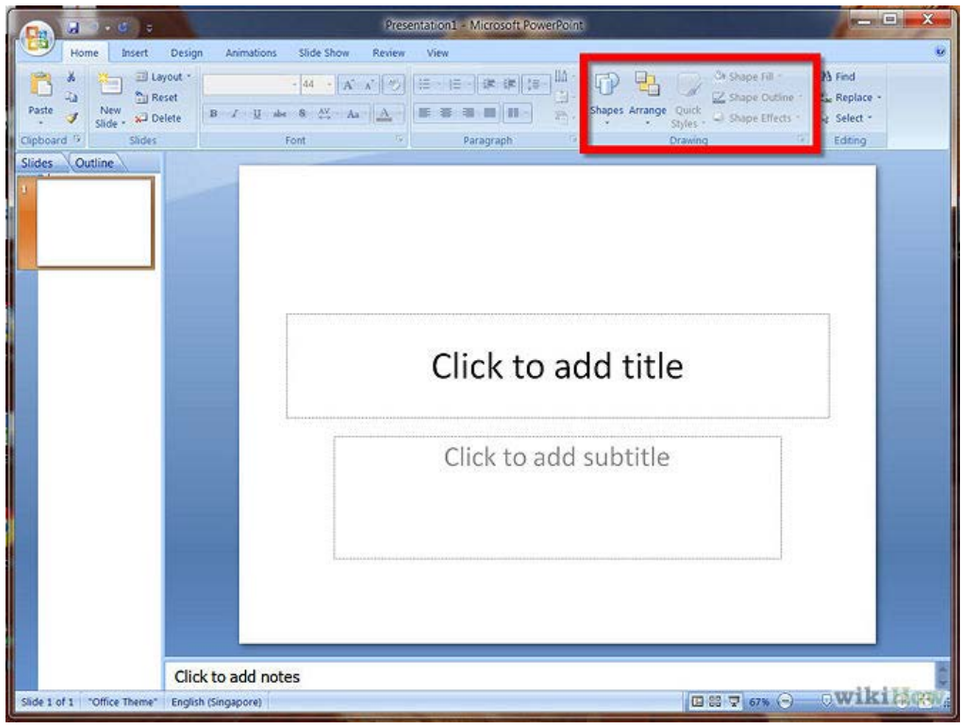
MODIFICATION
Tech allows for significant task redesign

REDEFINITION
Tech allows for the creation of new tasks, previously inconceivable.

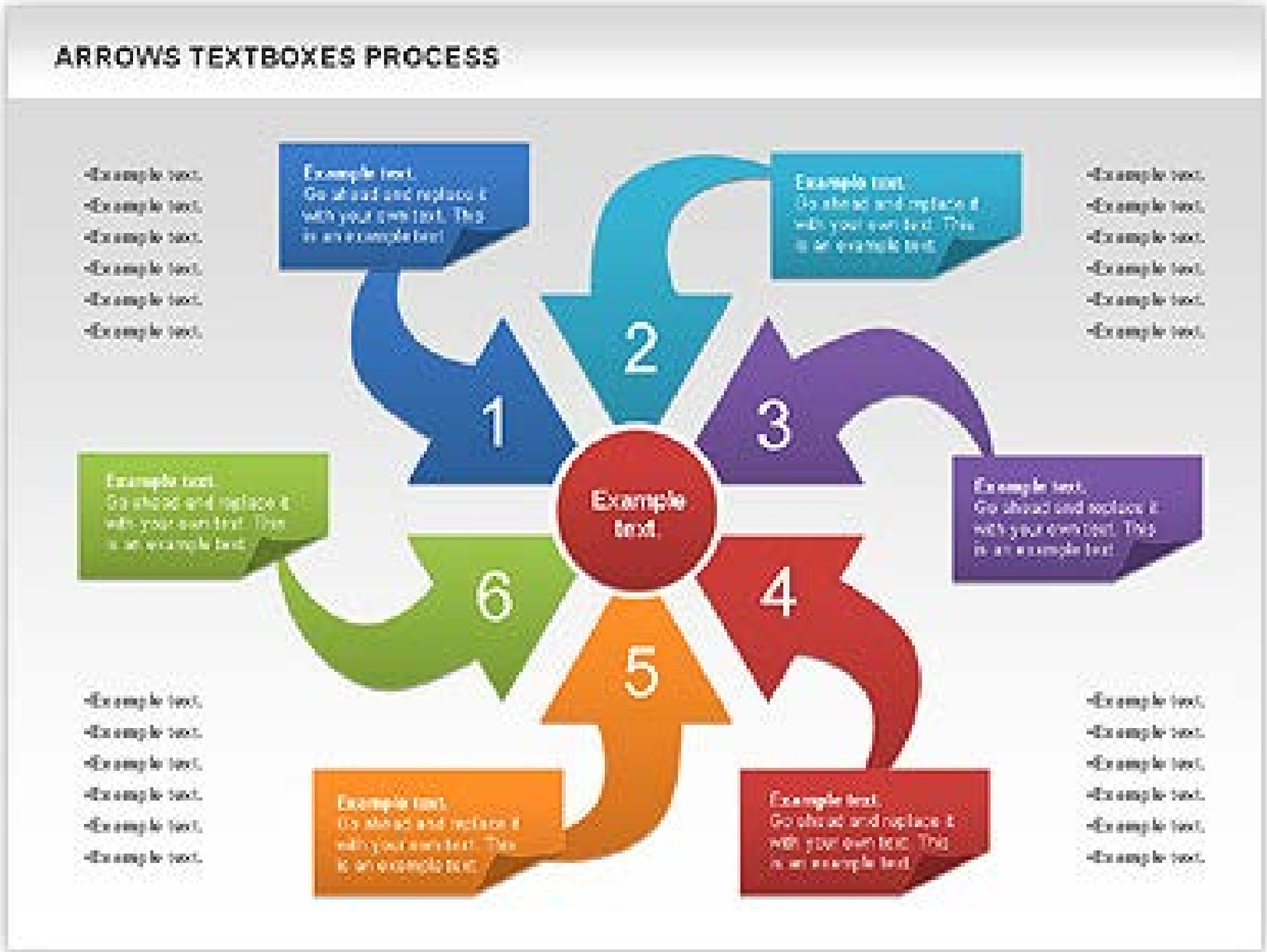
ENHANCEMENT

TRANSFORMATION

Substitution



Augmentation



Modification

“THE FLIPPED CLASSROOM”

Student watches video at home.

Team based learning exercise in classroom instead of didactic instruction.

Redefinition

Tech allows for creation of new tasks previously inconceivable.

SAMR Worksheet

Transformation	Redefinition	Tech allows for the creation of neew tasks, previously inconceivable		
	Modification	Tech allows for significant task redesign		
Enhancement	Augmentation	Tech acts as a direct tool substitute, with functional improvement		
	Substitution	Tech acts as a direct tool substitute, with no functional change		

Best Practices (Q&A)

Becoming paperless

Step 1: Mimic your paper system

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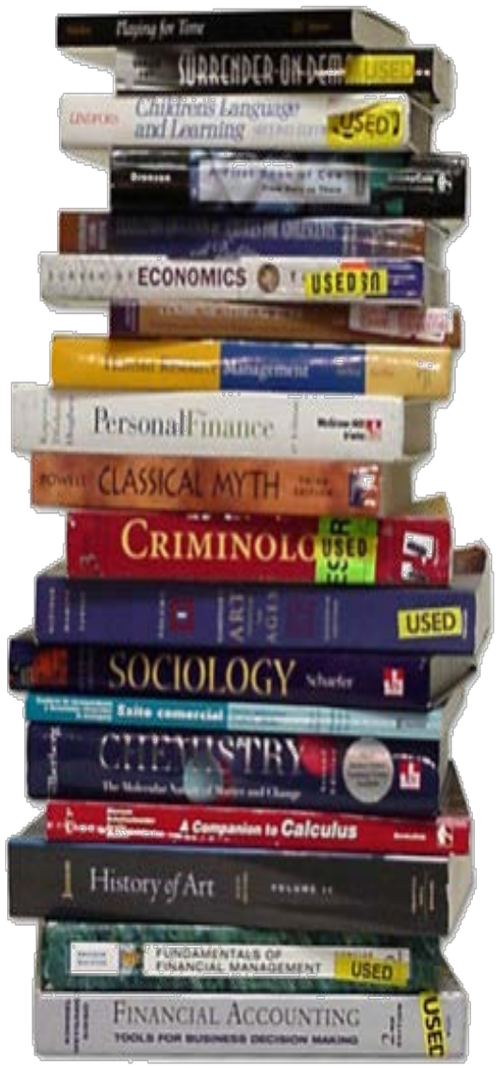

Step 1: Mimic your paper system

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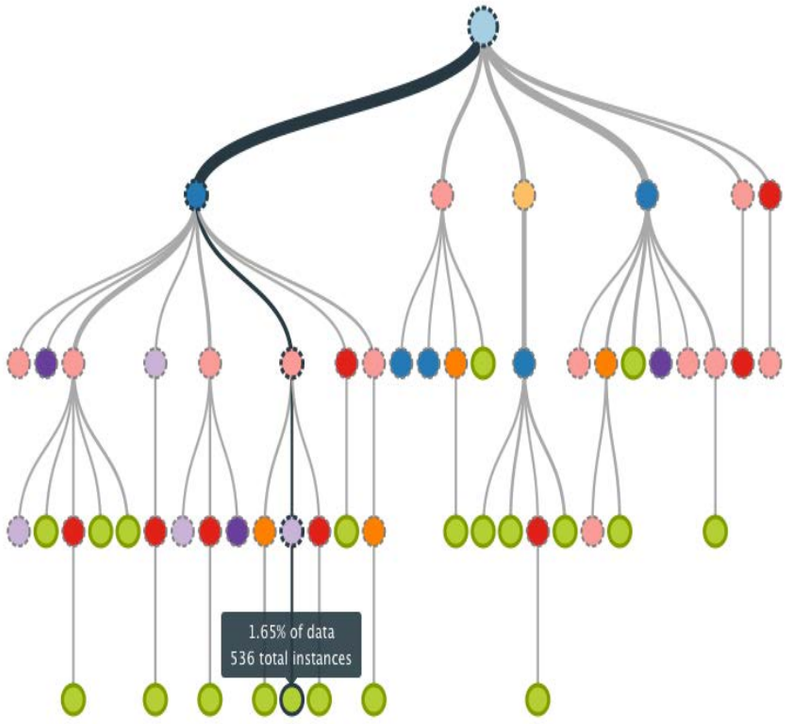
Written Clinical Simulation Exam



Film, Analyze, Mirror, Present

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LEAD

Lecture Enhanced Active Didactics

Move to the Lecture Enhanced Active Didactics

1. Make a shift in lecture content- No Lecture segment lasts more than 45 min
2. We increased our expectations and communicated that message
3. Active learning experiences every hour
4. Constructivist Classroom/Constructivist Bedside?

HOW: Constructivist

1. We engage learners using desirable difficulties
2. We allow their responses and their baseline knowledge help in tailoring the learning experiences
3. We build off of the initial learning experience or benchmark set by the initial desirable difficulty
4. Students reflect, process, and present with frequency

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