

Universal Design for Learning: Better Learning by Design



University of Vermont, May 17, 2010

Skip Stahl, CAST





Universal Design = access

- "The term 'universal design' means a concept or philosophy for designing and delivering products and services that are usable by people with the widest possible range of functional capabilities, which include products and services that are directly accessible (without requiring assistive technologies) and products and services that are interoperable with assistive technologies."

(Section 3(17) of Assistive Technology Act of 1998)



Universal Design *for Learning*

❖ Section 103(24) **UNIVERSAL DESIGN FOR LEARNING.--**

The term 'universal design for learning' means a scientifically valid framework for guiding educational practice that—

- ``(A) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and
- ``(B) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient.".

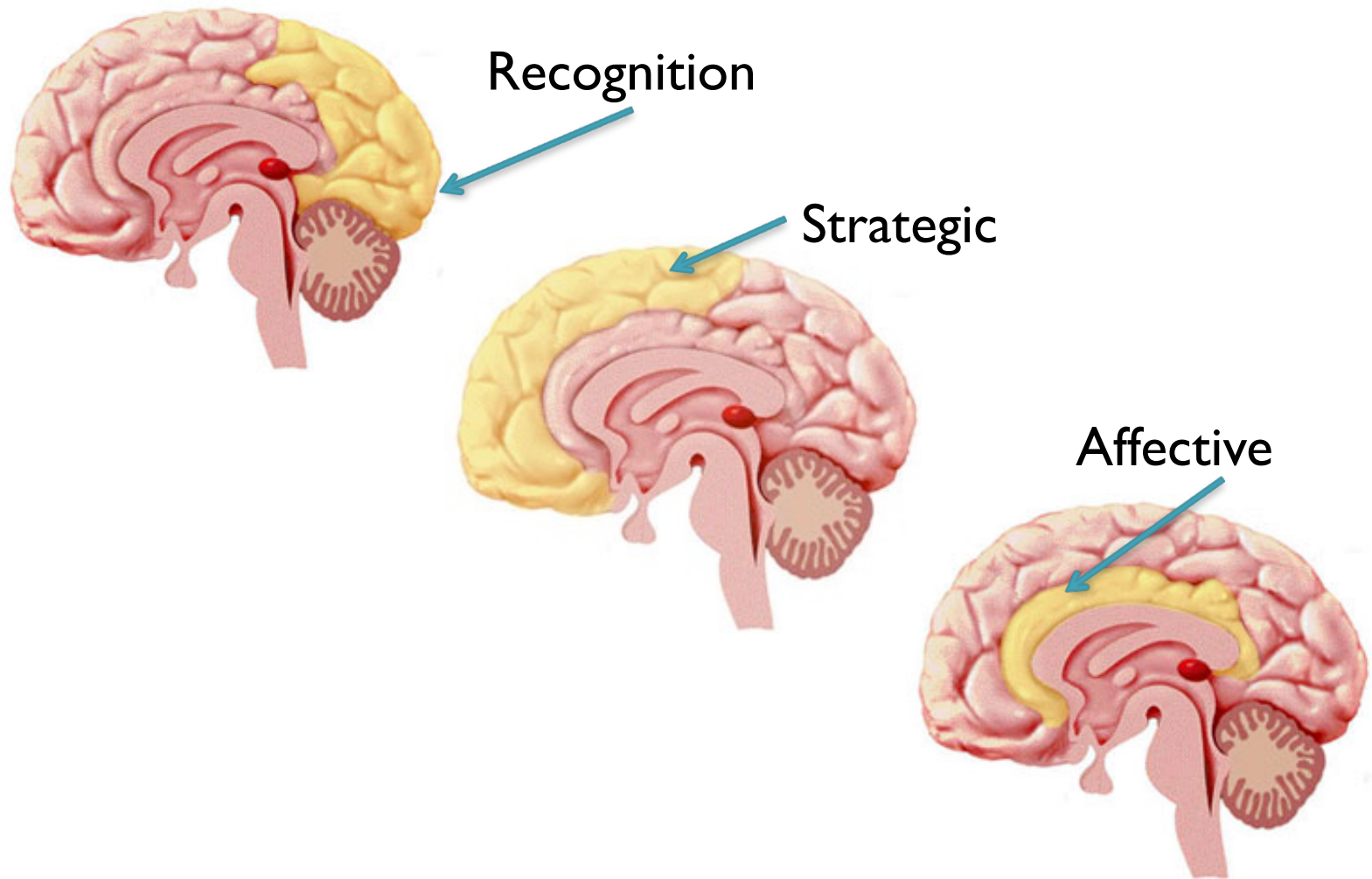
Higher Education Opportunity Act of 2008



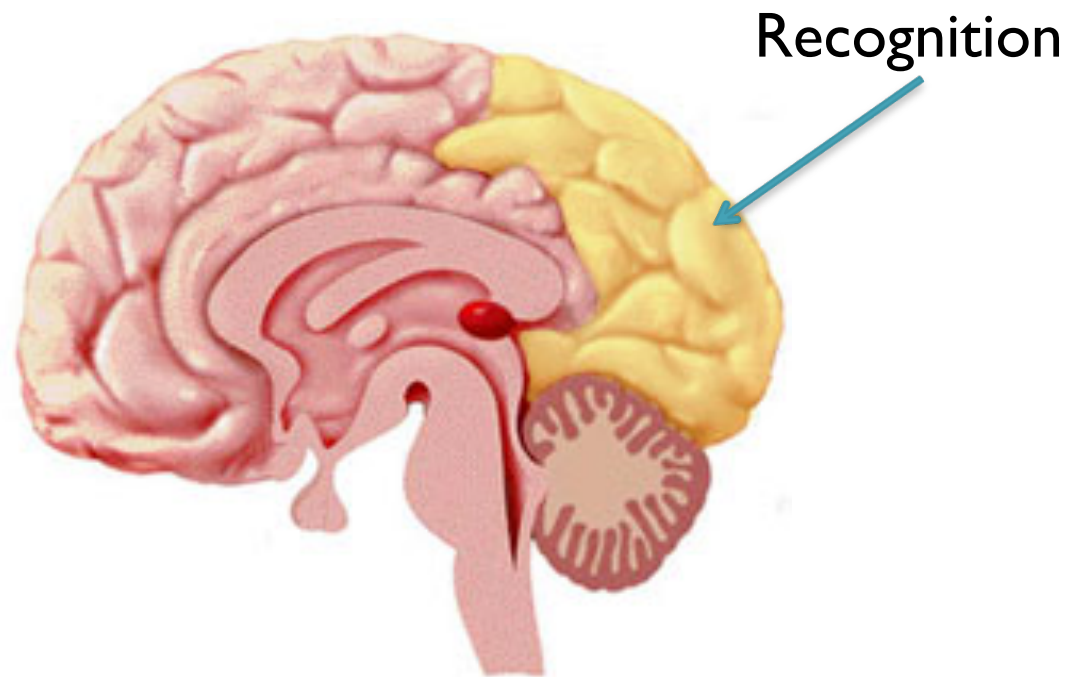
Three Core UDL Principles

- **Multiple Means of Representation**
 - - provides flexibility in the ways information is presented,
- **Multiple Means of Action & Expression**
 - - in the ways students respond or demonstrate knowledge and skills, and...
- **Multiple Means of Engagement**
 - - in the ways students are engaged...

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People



Adults, Children

Furniture



Chair, table, piano?

Environment



wallpaper, framed pictures

Locale

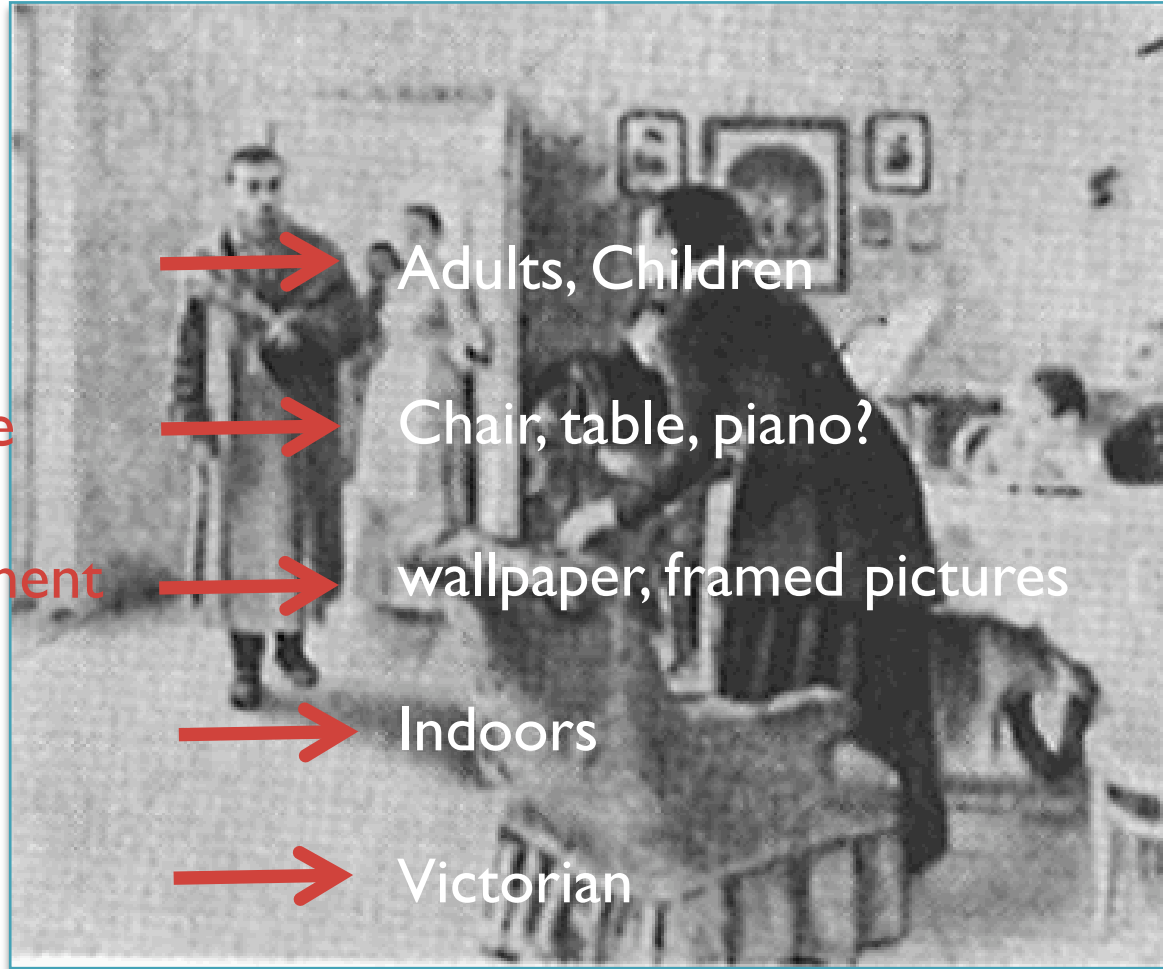


Indoors

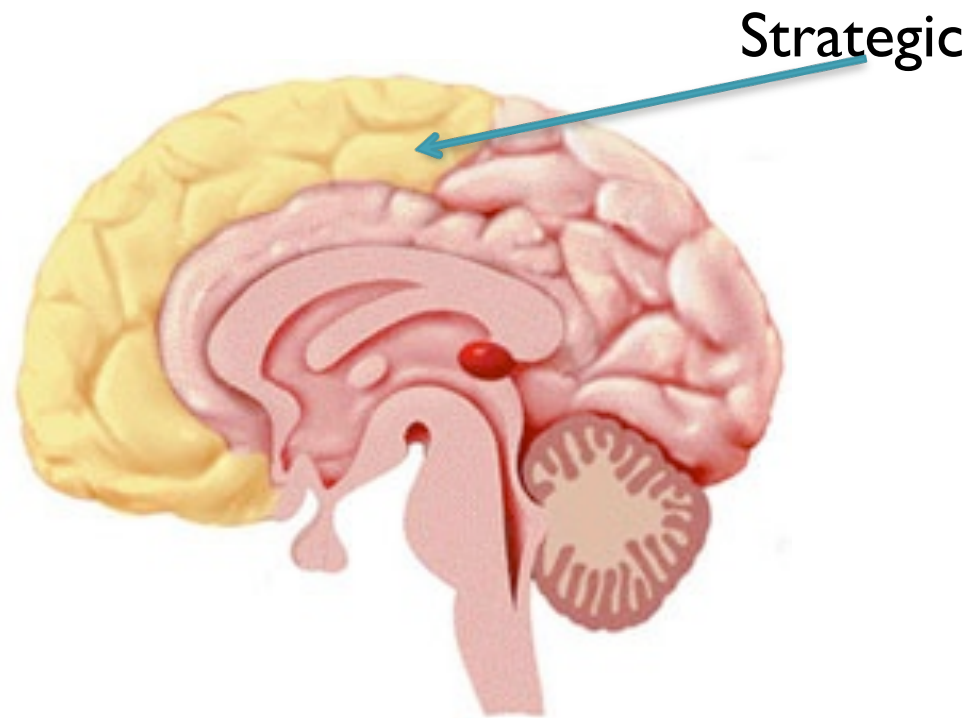
Era



Victorian



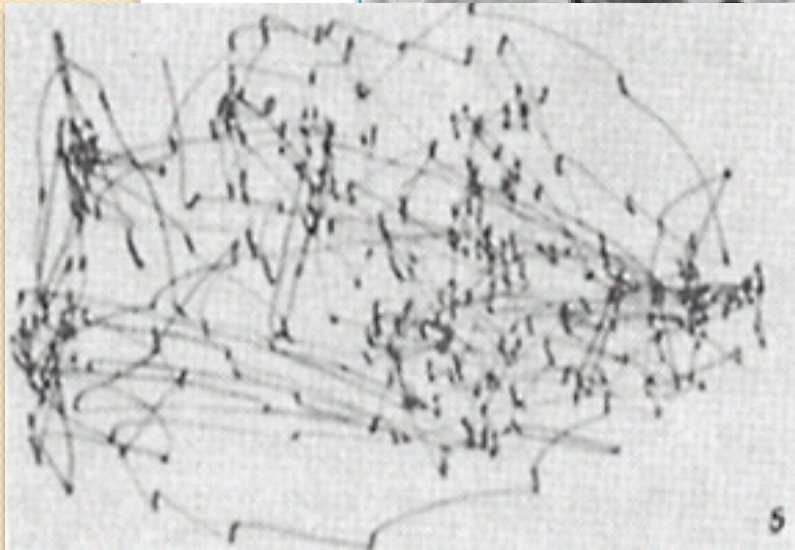
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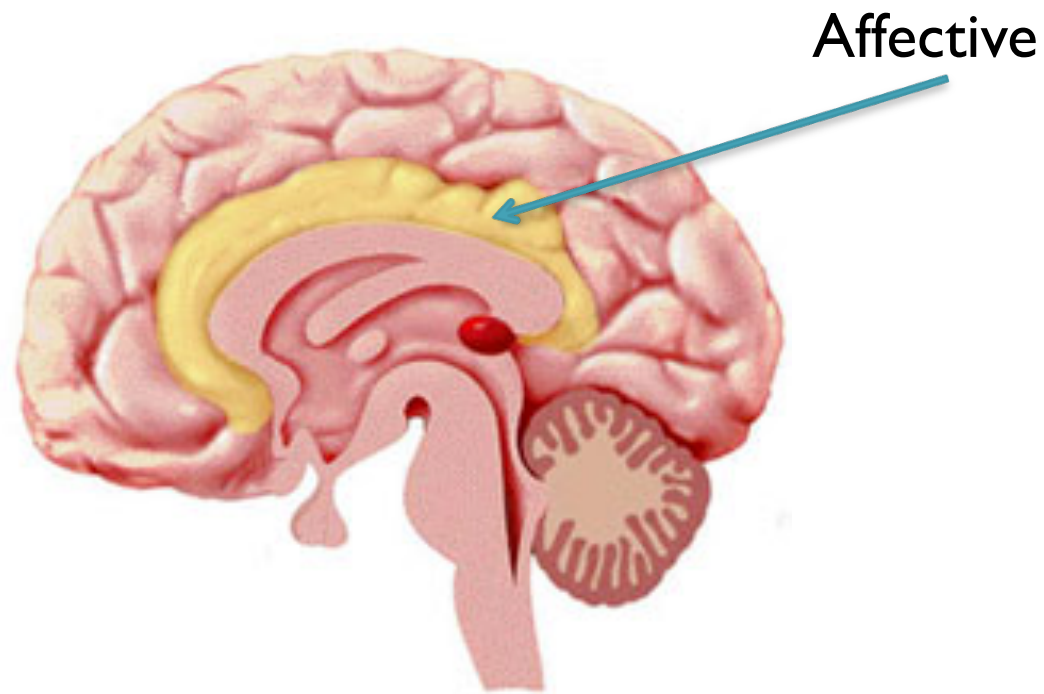
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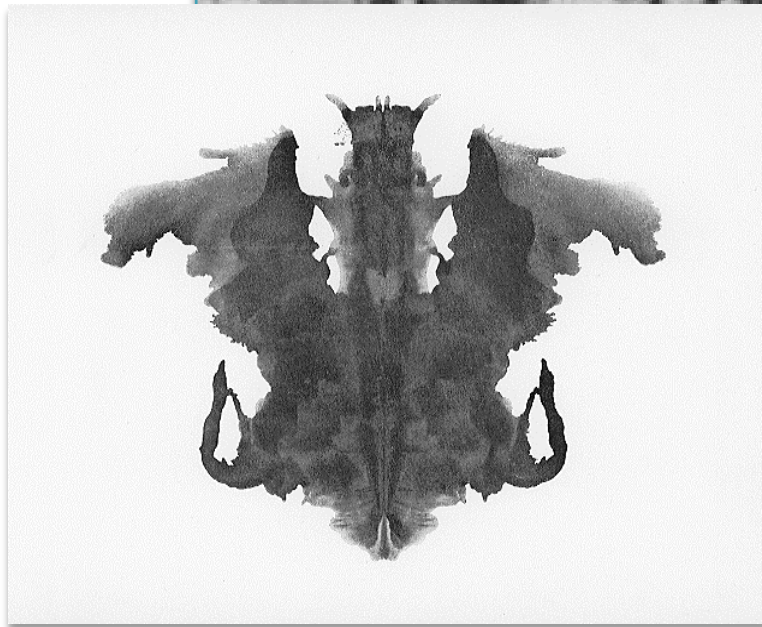
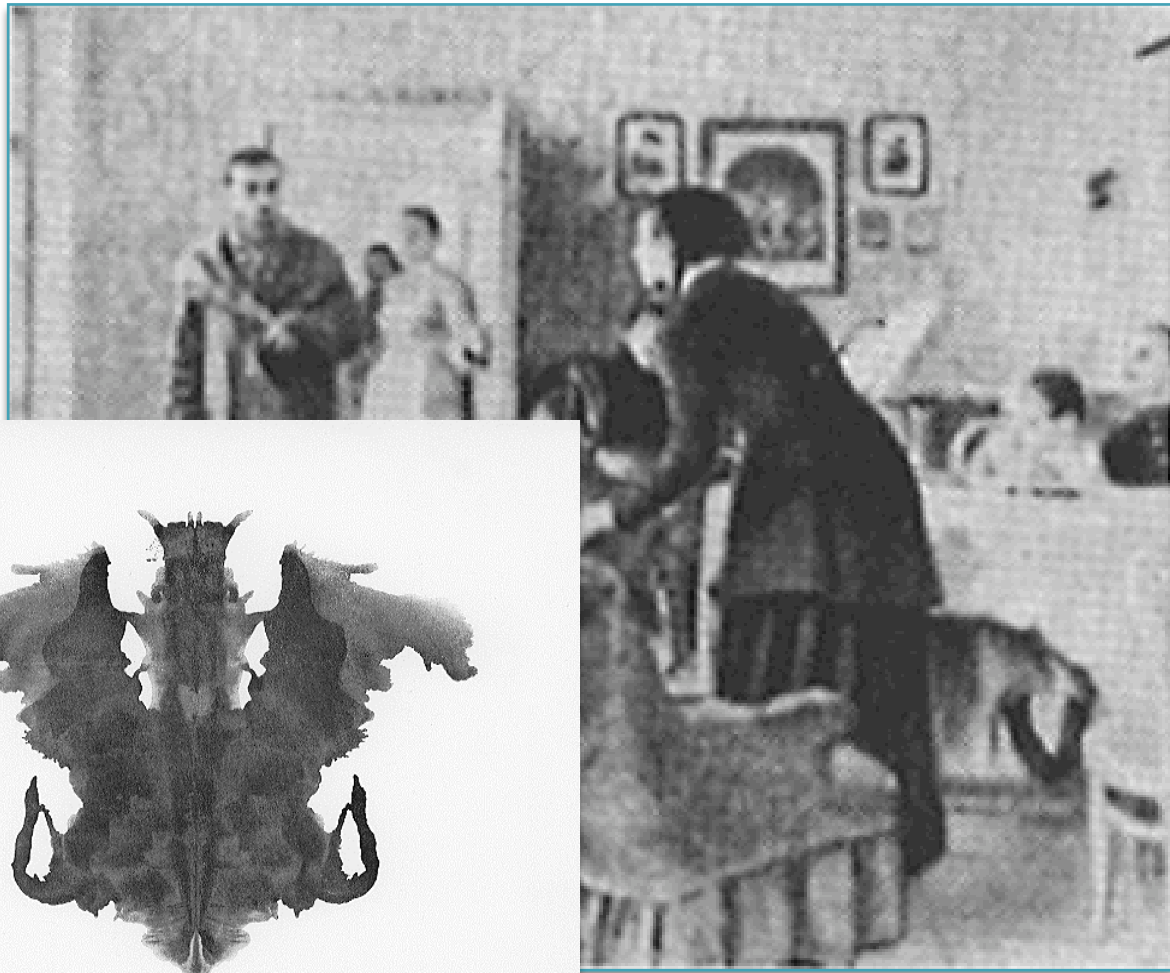
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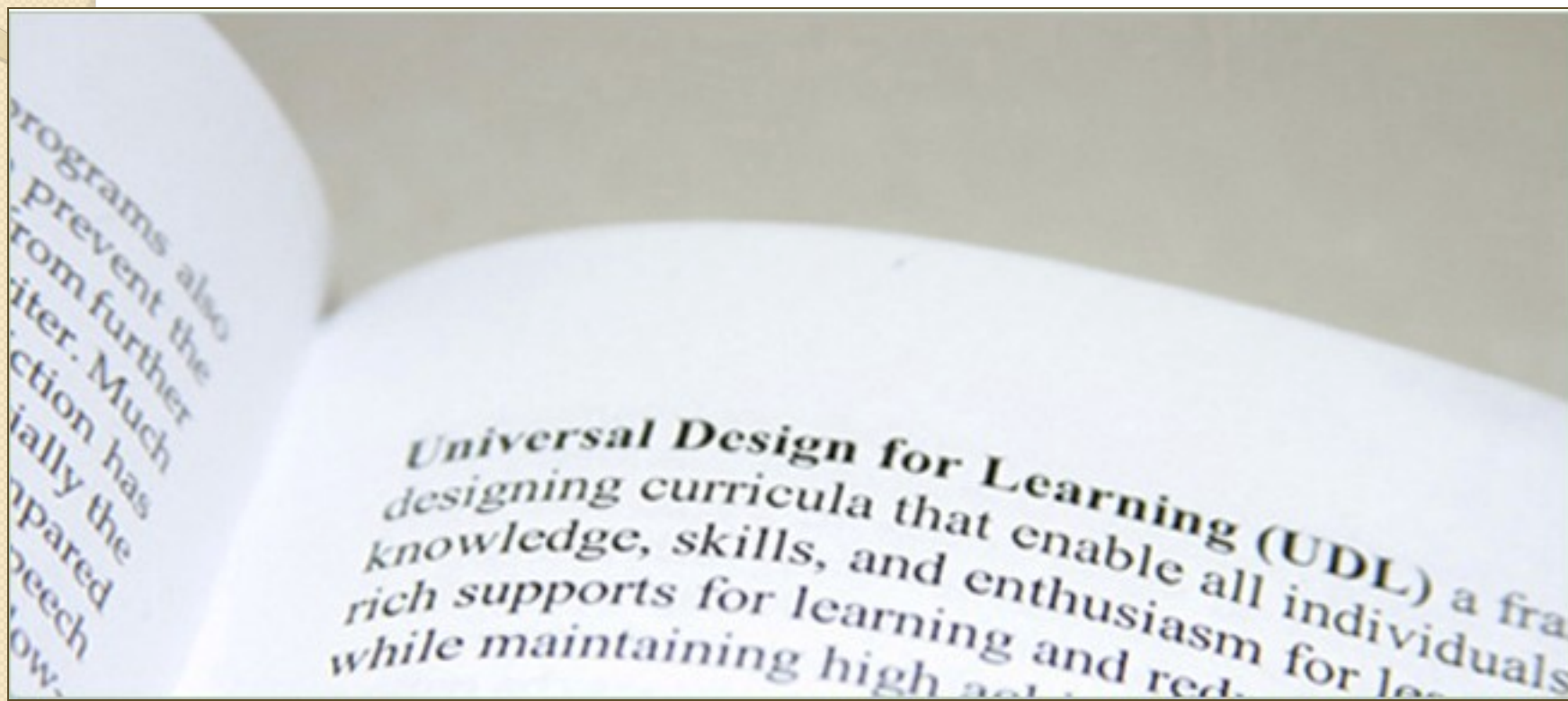
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The UDL Connection



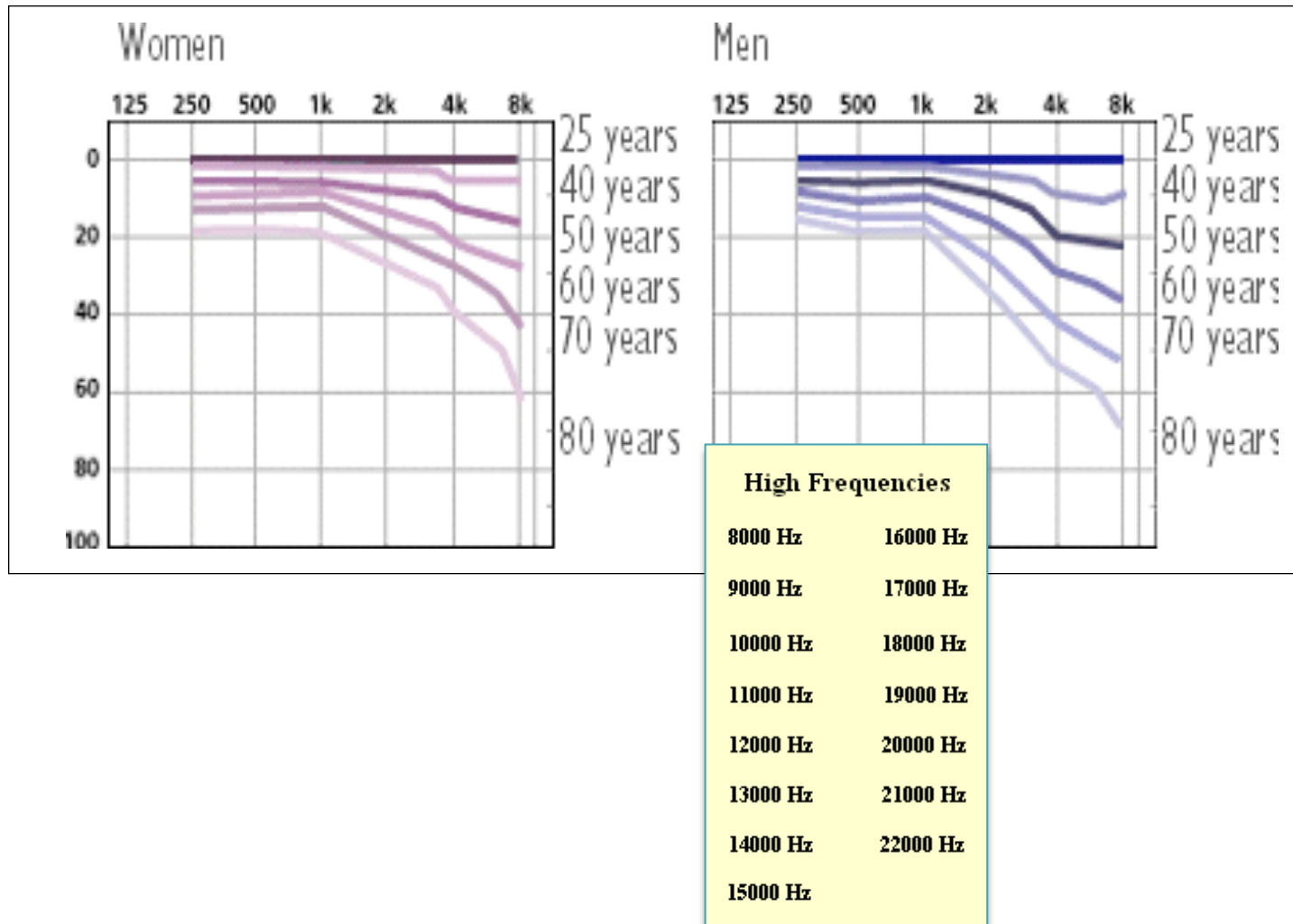
The UDL Principles

- Multiple Means of Representation
 - Recognition Networks
- Multiple Means of Expression
 - Strategic Networks
- Multiple Means of Engagement
 - Affective Networks

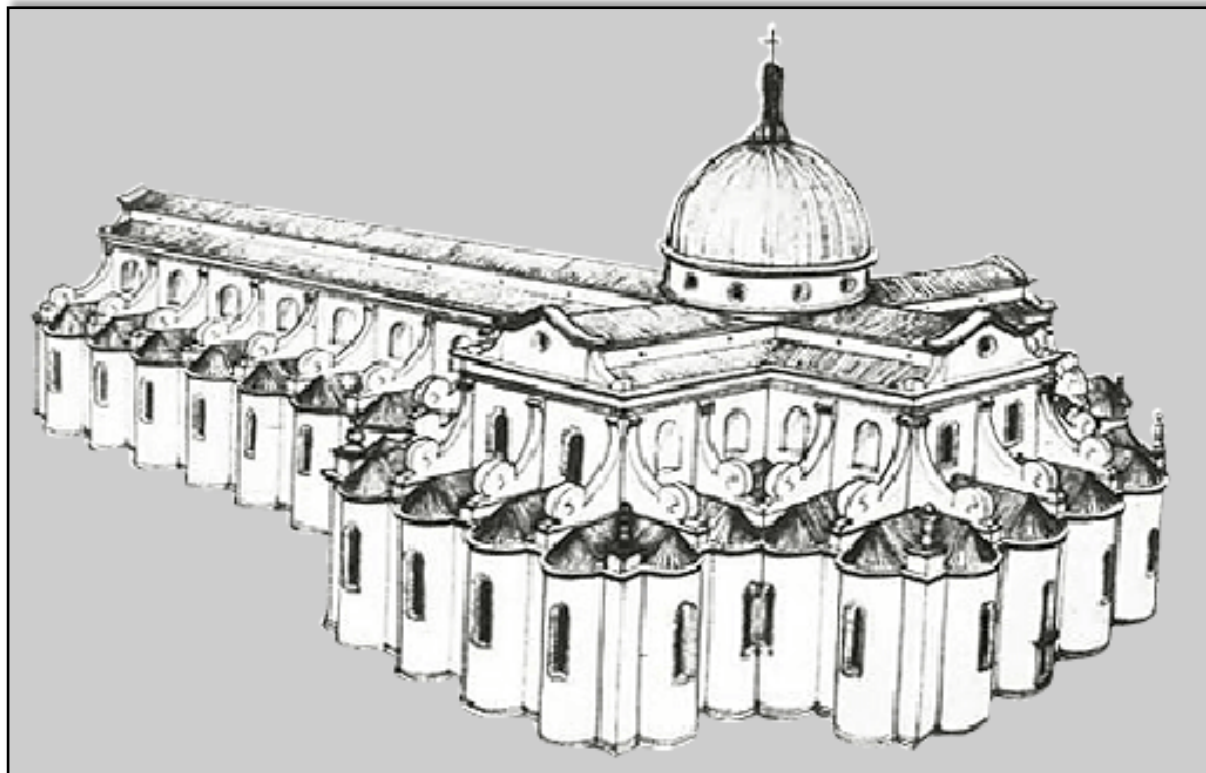


<http://www.cast.org/publications/UDLguidelines/version1.html>

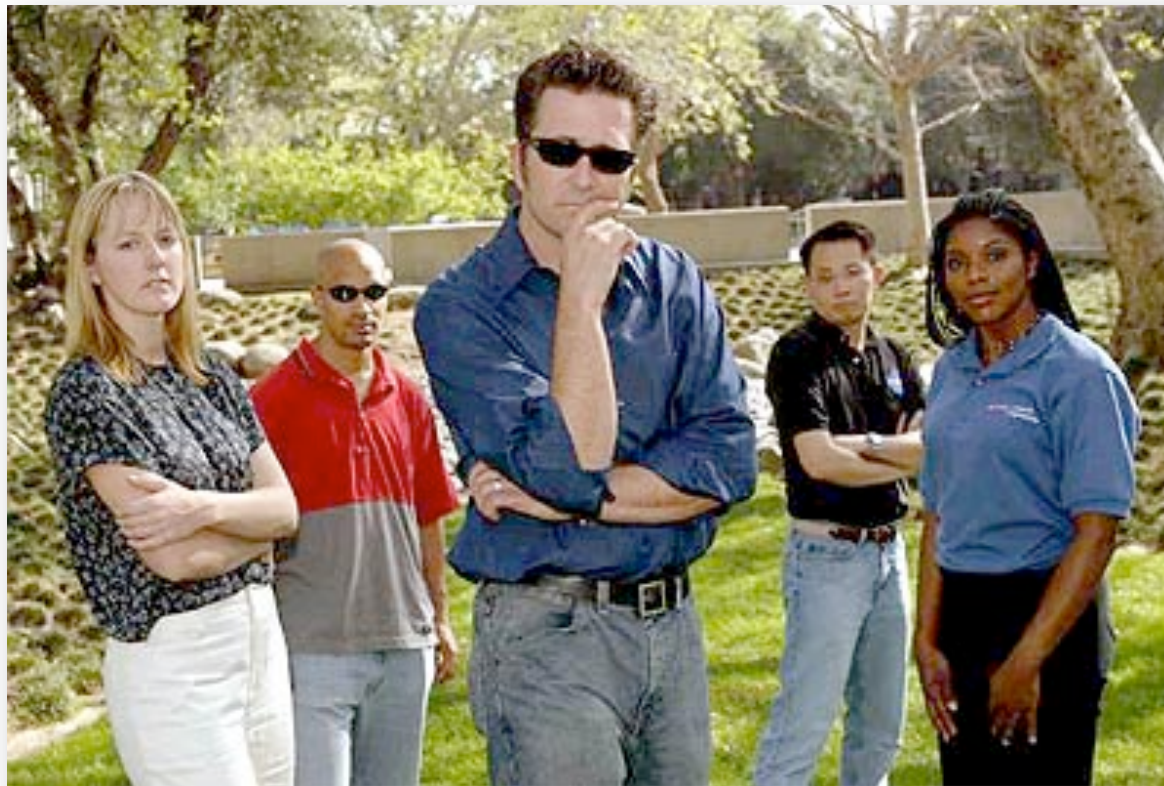
Why do we need multiple representations of Information?



Why do we need Multiple Means of Action & Expression?



Why do we need Multiple Means of Engagement ?



Why do we need Multiple Means of Engagement ?



Adam Steltzner got “a great education in high school. I learned how to meet girls, what drugs to take, where the best shows were.” Failed most of sophomore and junior years and earned a 460 combined score on his SATs. Following high school, played bass in various bands, supporting his various habits by working in a health food store

Why do we need Multiple Means of Engagement ?

Jamie Dyk tried out for the Laker Girls and "made it pretty far" before realizing that what with practice and appearances, she was going to have to choose between dancing and her day job



Why do we need Multiple Means of Engagement ?



Kobie Boykins rides his motorcycle through the canyons with friends. "I like speed," said Boykins,

Why do we need Multiple Means of Engagement ?



Shonte Wright wears her hair in long minibraids and plays basketball seven to nine hours a week. She describes her current work environment as "hilarious. You should see what people wear! We always look like we're going out to play."

Why do we need Multiple Means of Engagement ?

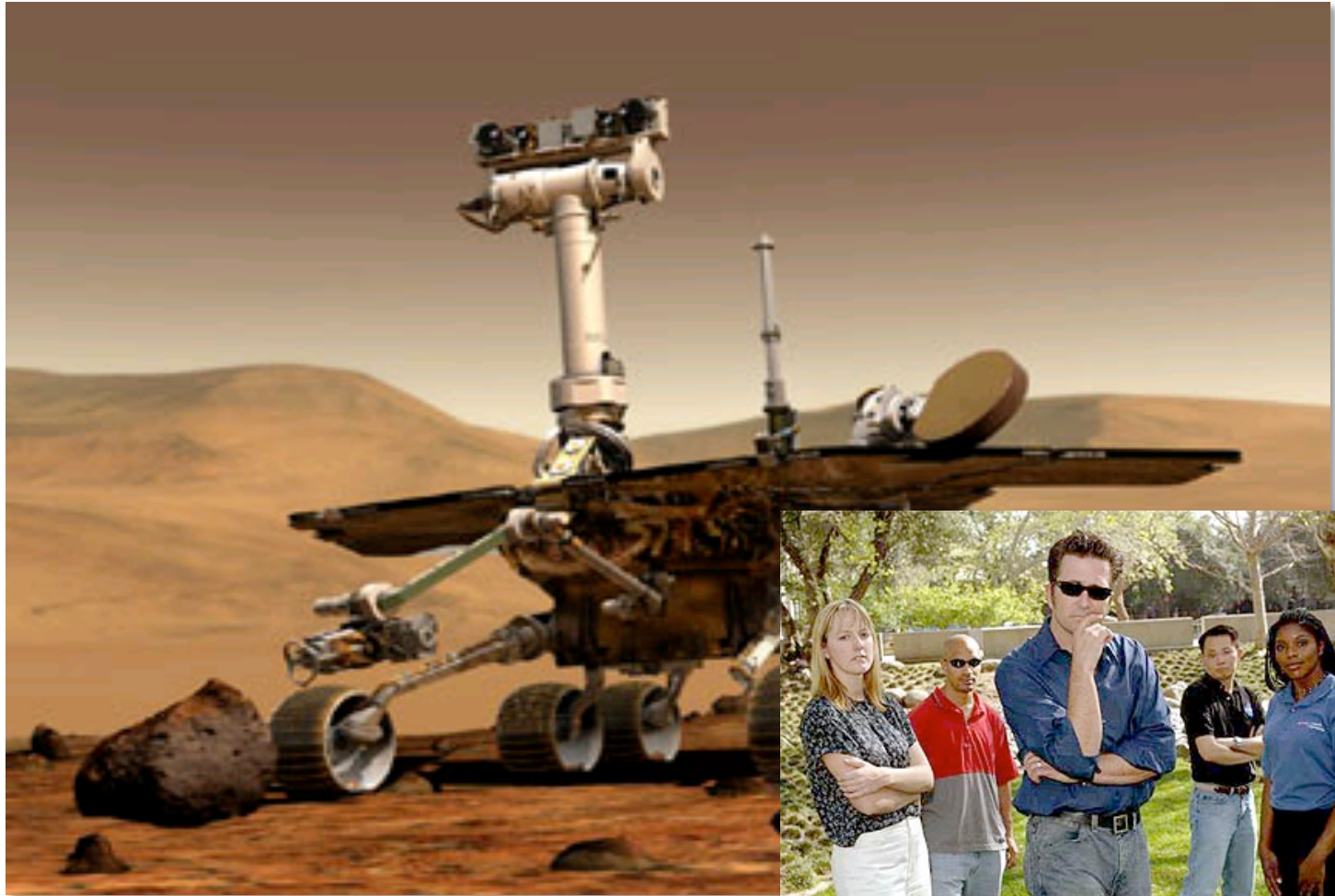


Wayne Lee considers himself lucky to have a wife who bought him "Grand Theft Auto:Vice City" for Valentine's Day. "On airplanes, I'm sitting there with my Game Boy, and these businessmen in their stuffy suits and their laptops, and they'll look at me like, 'So, are you going back to school?' And I say...



“No, I work for NASA”

Rocket Scientists



The Mars Rover Team from NASA's Jet Propulsion Laboratory

Rocket Scientists



Master of science degree from Caltech and a doctorate in engineering from the University of Wisconsin. Headed the team that designed the entry, descent and landing systems

Rocket Scientists



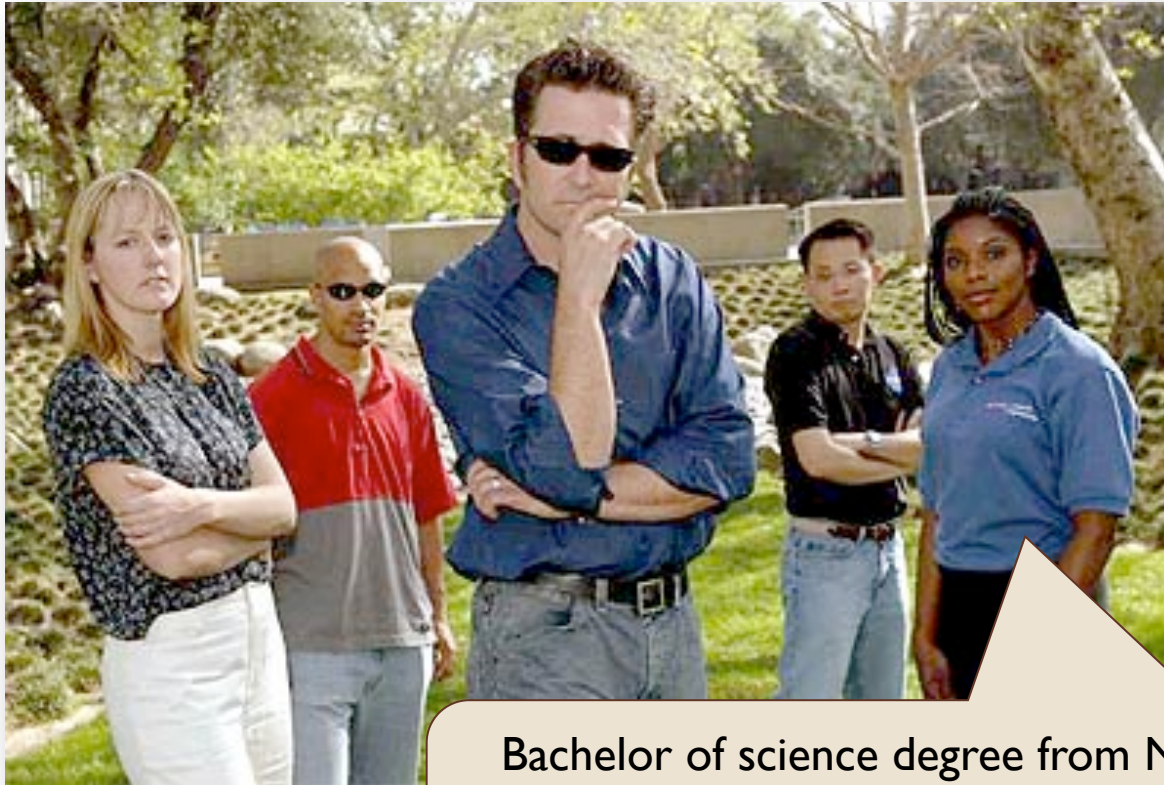
In charge of testing the landing systems during development.

Rocket Scientists



Led the team that designed the mechanism to operate the solar panels.

Rocket Scientists



Bachelor of science degree from North Carolina A&T Helped design the thermal systems that keep the rovers warm.

Rocket Scientists



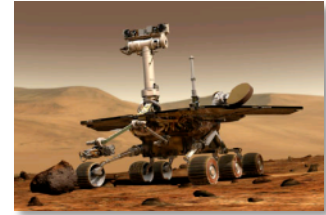
Lead entry, descent and landing engineer.
Wrote "To Rise from Earth," a guide to
space flight.

Rocket Scientists



Wayne Lee - When he told a faculty advisor that he might like to work on Mars missions someday, the message was clear: "Dream on, kid. People don't get to do that kind of work."

Much To Do



- The percentage of female PhDs in physical science still hovers around 10%; the percentage of blacks and Latinos ranges between 1% and 2%.
- Lee almost didn't go into engineering because of the images he saw of NASA's mission control in the 1960s. "It was a lot of nerdy-looking white guys with crew cuts. I grew up thinking the average person doesn't get to do that."
- On Dyk's first day at JPL, a female colleague told her she should learn to be one of the guys and never wear a dress.
- Good scientists tend to have a healthy disrespect for authority: Dyk wore a dress the next day. As for Lee, he still doesn't own a suit or know how to tie a tie.

Putting it all together

- Representation, Expression & Engagement

The screenshot shows the UDL Editions byCAST website interface. At the top, there's a header with the text "UDL Editions byCAST" and a logo showing three figures on a book. Below this is a navigation bar with links: "Sonnet XVIII", "Strategy Support", "Author's Craft", "Glossary", "Resources", and "Help". On the left side, there's a vertical "Table of Contents" button. The main content area is titled "Introduction" and features a portrait of Shakespeare on the left and a text box on the right stating: "This is the most famous of Shakespeare's 154 sonnets. A sonnet is a 14-line poem in which each line has ten syllables, and every second syllable is accented." Below the text box is a "Start Reading" button. On the right side of the main content area, there's a "Select a Level" section with two options: "1 Maximum Support" and "2 Moderate Support". Each option has a description of the support level. At the bottom of the page, there's a footer with links: "Powered by CAST", "UDL Editions Credits", and "Copyright Notice".

UDL Editions byCAST

textHELP

Sonnet XVIII Strategy Support Author's Craft Glossary Resources Help

Table of Contents

Introduction



This is the most famous of Shakespeare's 154 sonnets. A sonnet is a 14-line poem in which each line has ten syllables, and every second syllable is accented.

Start Reading

Select a Level

The animated coaches help students learn to read strategically. If in doubt, start with Level 1, where students get the most help. You may change levels at any time.

1 Maximum Support
"Stop and Think" prompts are multiple choice. Highlighting critical features, models, and hints available. Immediate feedback on responses.

2 Moderate Support
"Stop and Think" prompts elicit constructed responses and text revisions to explore author's craft. Highlighting critical features.

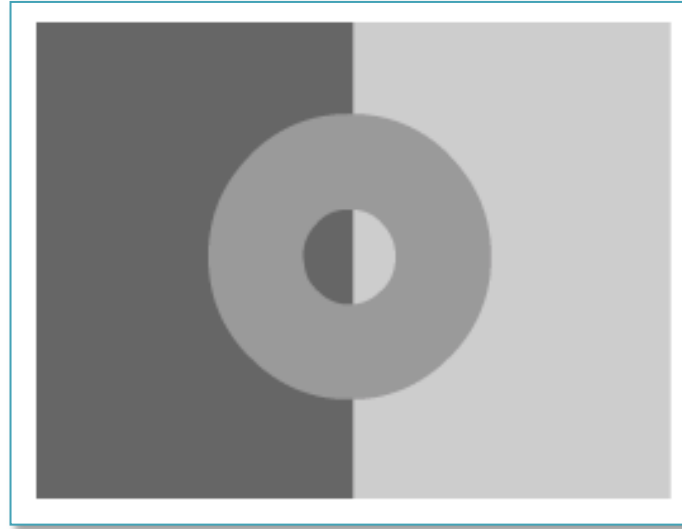
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Learning in the Brain

- differs according to the task
- differs according to prior learning
- differs according to the individual



Now you see it, now you don't



- Information captured by the retina takes about 100 milliseconds to reach the brain. To compensate for this lag, the brain predicts what the world will look like in the near future and acts on this prediction rather than the real information at its disposal.

C.C.Nuckols, 2006

Expectation & Experience

- The brain constitutes reality based on what it perceives reflected by the *mirror of past experience*
- Neurons running from our brains to our senses outnumber those running from our senses to our brains 10:1
- Perception is manipulated by expectation

• C.C.Nuckols, 2006



A Conceptual Shift

- Diversity is the norm
- First focus on the curriculum – goals, method, materials assessments; then on individual students



The UDL Principles

- Multiple Means of Representation
 - Recognition Networks
- Multiple Means of Expression
 - Strategic Networks
- Multiple Means of Engagement
 - Affective Networks



<http://www.cast.org/publications/UDLguidelines/version1.html>

How do we do it?

Home | Skip to Content | About the UDL Center | Resource Library | Screening Room | Search: 

Welcome: Guest [Register | Login]



**NATIONAL CENTER ON
UNIVERSAL DESIGN *for* LEARNING**

Transforming Education Through UDL

About UDL LEARN THE BASICS	Advocacy CALL FOR CHANGE	Implementation BE THE CHANGE	Research KNOW THE FACTS	Community CONNECT WITH OTHERS	News STAY INFORMED
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I. Provide Multiple Means of Representation

Perception

Language and symbols

Comprehension

II. Provide Multiple Means of Action and Expression

Physical action

Expressive skills and fluency

Executive function

III. Provide Multiple Means of Engagement

Recruiting interest

Sustaining effort and persistence

Self-regulation

UDL Guidelines

I. Provide Multiple Means of Representation

Perception

Language and symbols

Comprehension

➤ Checkpoint 1.1 Options that customize the display of information

➤ Checkpoint 1.2 Options that provide alternatives for auditory information

➤ Checkpoint 1.3 Options that provide alternatives for visual information

UDL Guidelines

II. Provide Multiple Means of Action and Expression

Physical action

Expressive skills and fluency

Executive function

➤ Checkpoint 5.1 Options in the media for communication

➤ Checkpoint 5.2 Options in the tools for composition and problem-solving

➤ Checkpoint 5.3 Options in the scaffolds for practice and performance

UDL Guidelines

III. Provide Multiple Means of Engagement

Recruiting interest

Sustaining effort and persistence

Self-regulation

➤ Checkpoint 7.1 Options that increase individual choice and autonomy

➤ Checkpoint 7.2 Options that enhance relevance, value, and authenticity

➤ Checkpoint 7.3 Options that reduce threats and distractions

The Future Today

FlickSchool Students

