Rethinking Technology and Its Role

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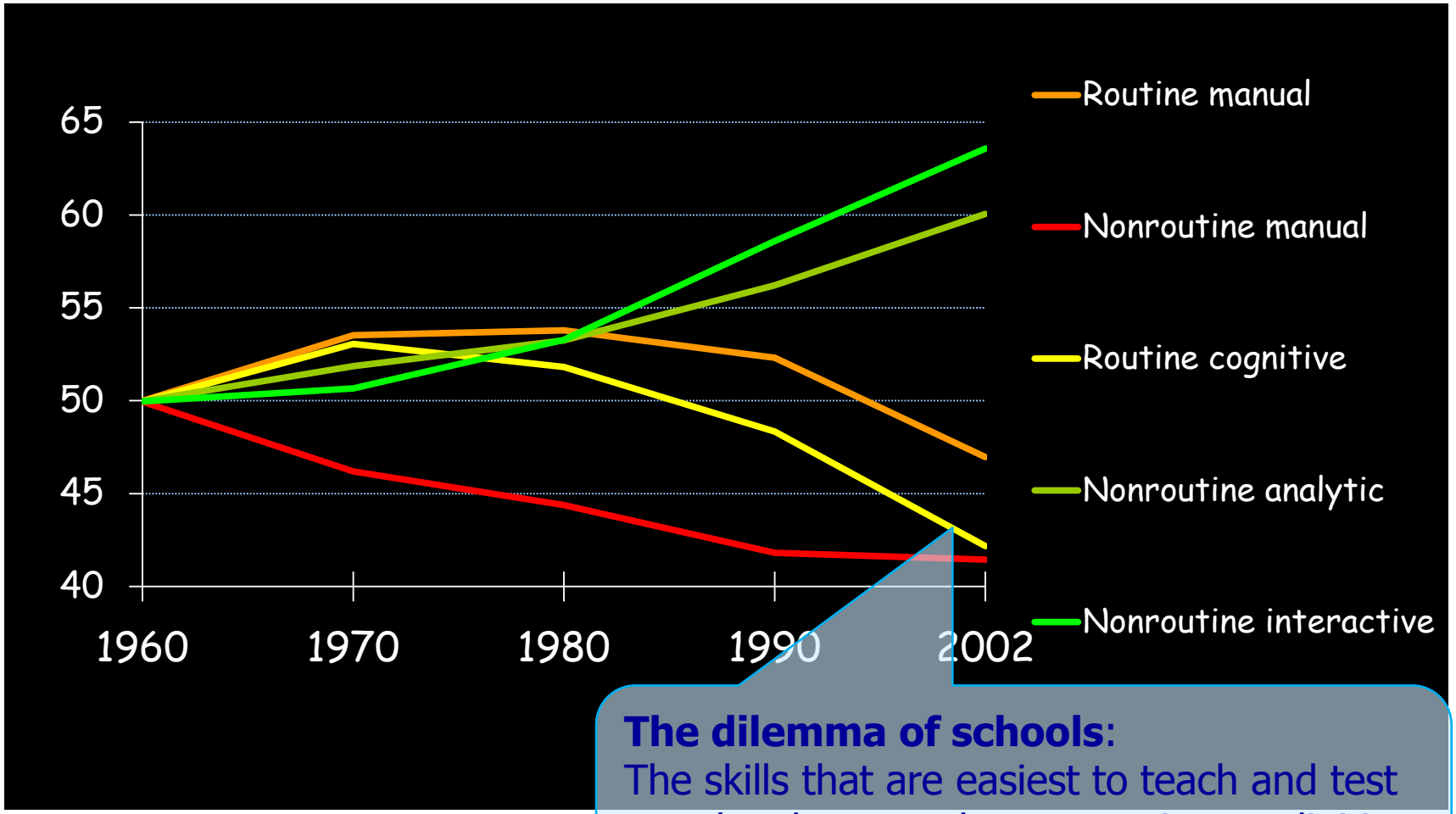
"Leading for educational excellence and equity. Every day for every one."

Why rethink technology?



The dilemma of schools:
The skills that are easiest to teach and test are also the ones that are easiest to digitise, automate and outsource

Key Takeaways

- **Rethink what is considered technology**
- **Don’t focus on the technology, but how is it being used.**
- **Technology doesn’t direct instruction, it supports instruction.**
- **Technology should change how we teach and learn, however.**
- **Effective uses of technology are active. engaging, and empowering; give the child control; and are used as one of many options to support children’s learning**

Group Discussion

- **What is your first memory of technology as a student?**
- **What is your first memory of technology as a teacher?**
- **What made it memorable?**

Technology

Example	Non-example
Definition	Characteristics

My 1st Technology Memories

What is technology?

- ***Technology*** **is anything that has been designed to solve a human want or need**
- **Technology includes products and processes**

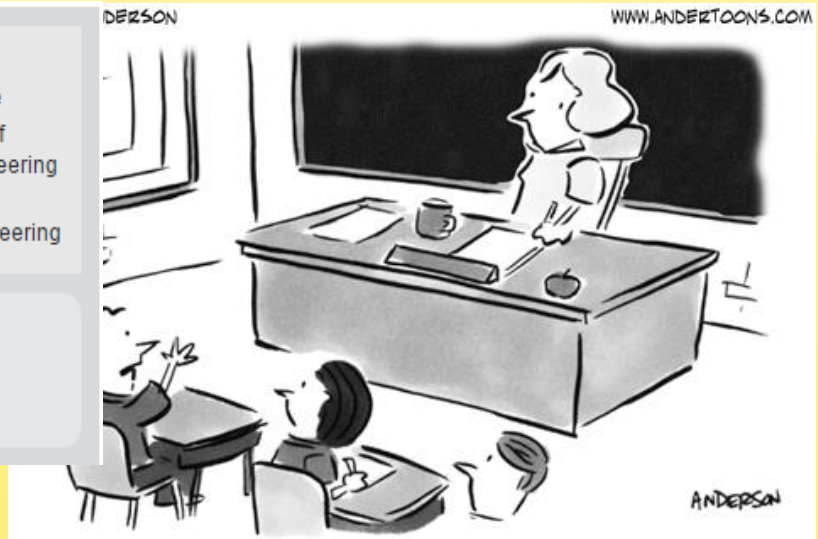
STANDARD K.1.2.1

Some objects occur in nature; others have been designed and processed by people.

Grade: K
Subject: Science
Strand: Nature of Science & Engineering
Substrand: The Practice of Engineering

BENCHMARK: K.1.2.1.1 Comparing Natural & Human Made
Sort objects into two groups: those that are found in nature and those that are human made.

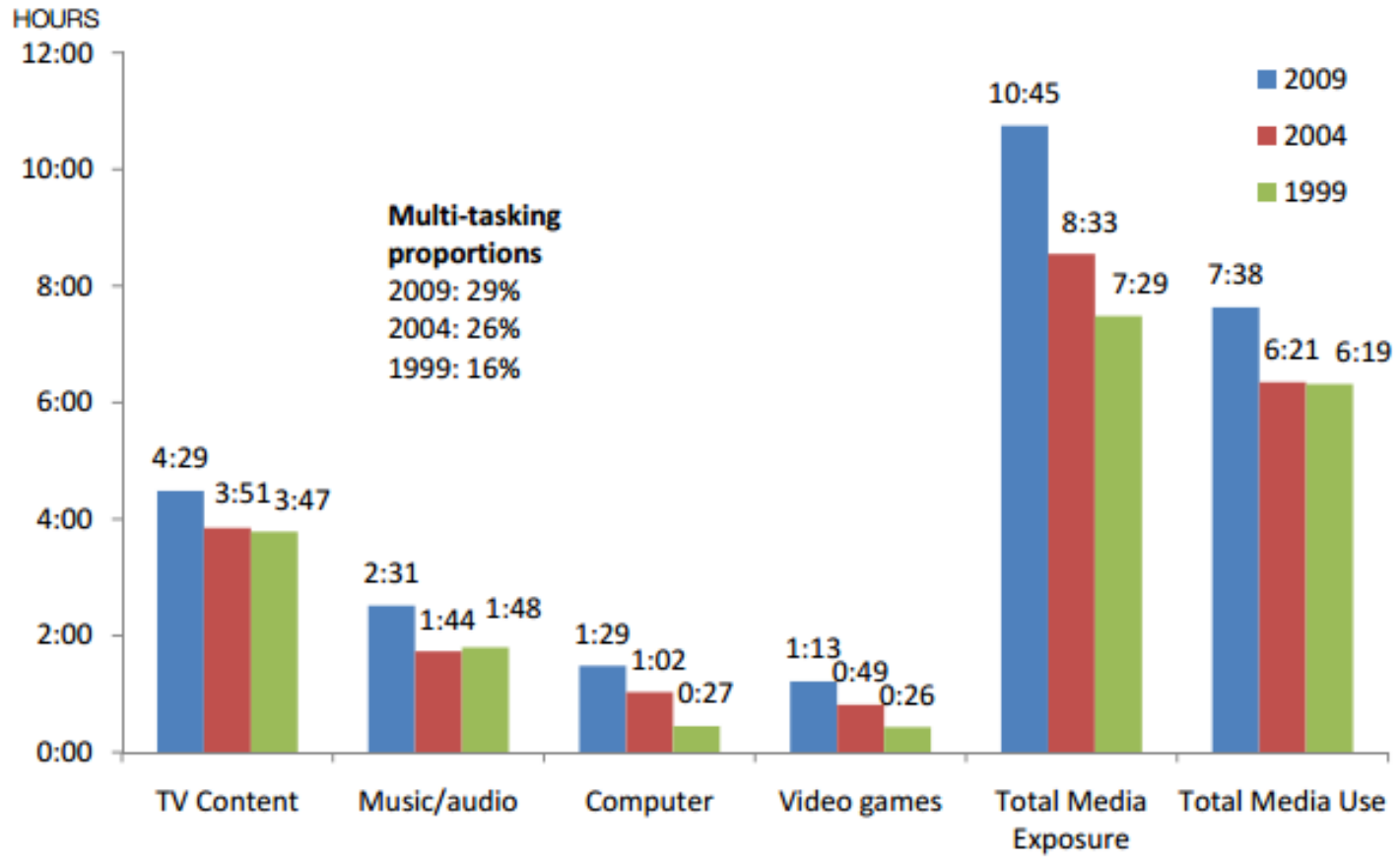
For example: Cars, pencils, trees, rocks.



"How come Lewis and Clark didn't just use MapQuest?"

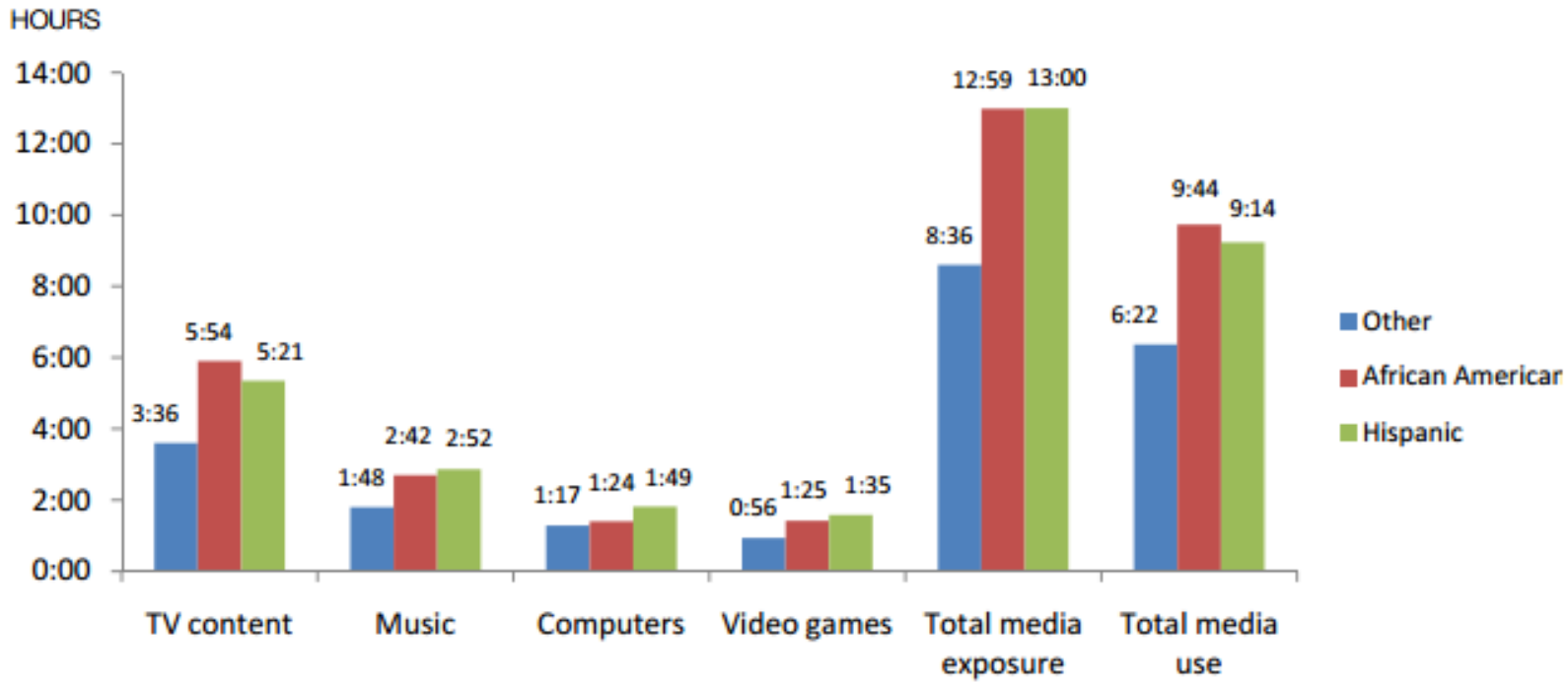
Generation M2 Media Usage

Figure 1: Generation M2—Media use over time; among all eight to 18-year-olds average amount of time spent with each medium per day in 2009, 2004 and 1999



Ethnicity gap

Figure 3: Generation M2—Media use by race/ethnicity; average amount of time spent with each medium per day (2009)



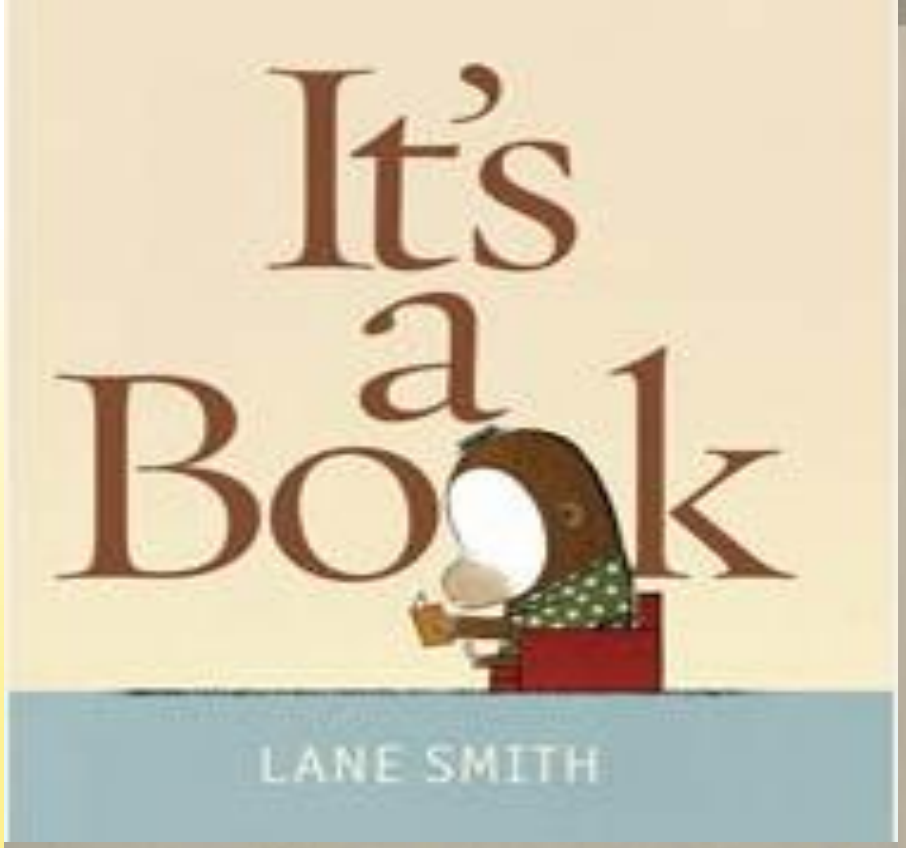
Findings

Media, Grades and Personal Contentment

Among all 8- to 18-year-olds, percent of heavy, moderate, and light media users who say they get mostly:†	Heavy Users	Moderate Users	Light Users
Good grades (A's and B's)	51%[a]	65%[b]	66%[b]
Fair/poor grades (C's or below)	47%[a]	35%[b]	23%[c]
Among all 8- to 18-year-olds, percent of heavy, moderate, and light media users who say th[illegible]			
Have a lot of friends	93%	91%	9[illegible]%
Get along well with the parents	8[illegible]%	[illegible]%	90%[ab]
Have been happy at school the [illegible]	2%[a]	81%[b]	82%[b]
Are often bored	60%[a]	53%[b]	48%[b]
Get in to trouble a lot	33%[a]	21%[b]	16%[b]
Are often sad or unhappy	32%[a]	23%[b]	22%[b]

Note: Statistical significance should be read across rows.
† Students whose schools don't use grades are not shown.
†† Percent who say each statement is "a lot" or "somewhat" like them.

Technology needs to be More than electronics!



- https://www.youtube.com/watch?v=x4BK_2VULCU

E-books compared with physical books

- Device can hold complete library of stories
- Words and sentences can be highlighted
- Can have a pre-recorded narrator
- Interactive features

- Interactive features can make it difficult for developing readers to follow a sequence of events
- Backlighting can interfere with amount of time spent sleeping

Key considerations

- **Understand passive vs. active use**
  - **Passive consuming content**
  - **Active engages student thinking and interactivity**
- **Interaction with adults**
- **Increases learning opportunities for all children**
  - **Culturally responsive**
  - **Disabilities**
- **Family engagement**

What shift are you focusing on with tech?

Transforming Learning Environments

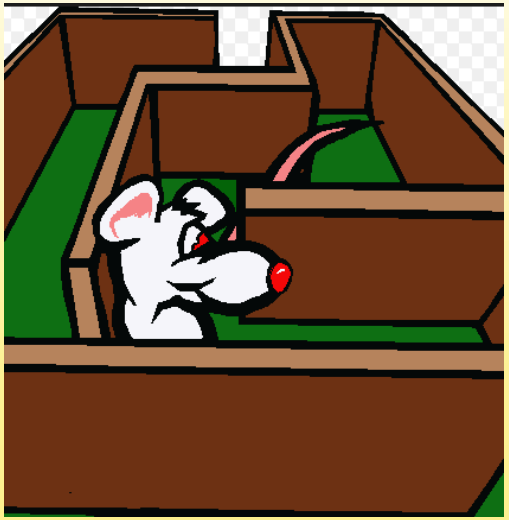
Traditional Environments		*Emerging Learning Landscape*
Teacher directed, memory-focused instruction	→	Student-centered, performance-focused learning
Isolated work on invented exercises	→	Collaborative work on authentic, real-work projects
Factual, literal thinking for competence	→	Creative thinking for innovation and original solutions
Primary focus on school and local community	→	Expanded focus including digital global citizenship
Isolated assessment of learning	→	Integrated assessment for learning
Knowledge from limited, authoritative sources	→	Learner-constructed knowledge from multiple information sources and experiences

Discuss

- **What are examples of technology (beyond electronic screens) that support engaging students in learning in primary levels?**
- **How does broadening understandings of technology to empower teachers?**

Technology Integration

- **Replacement**
- **Amplification**
- **Transformation**



Google Image

(Hughes, Thomas, Scharber, 2006)

Considerations with Technology Integrations

- **Be clear about the learning destination and does not change with technology (TARGETS)**
- **Know where students are in relation to the destination (FORMATIVE ASSESSMENTS)**
- **Adjust teaching to make sure that students arrive at the destination (and move beyond it) (DIFFERENTIATED INSTRUCTION)**

Replacement

- Can I use this technology to substitute what I've done before?
- **Often about giving students multiple pathways to the same outcome.**
- **What outcomes do students engage with that needs multiple activities?**
- **What new tools allow for students to engage in different ways?**

Amplification

- Can I use this technology to enhance what I am currently doing?
- **Often about making instruction more efficient.**
- **What activities do we do that could be enhanced with technology?**
- **What tools are available to maximize learning time?**

Transformation

- Does this technology allow for change of how teaching and learning is currently done?
- **Often about innovation and taking risks.**
- **What concepts are difficult for students to understand?**
- **What tools can be used to help student understanding of these difficult concepts?**

Connecting Technology and Instruction

Keys to Implement Technology Integration

- **Leadership, staff, and community with shared vision**
  - Vision should include:
    - Student outcomes and learning goals,
    - Technologies that strengthen learning,
    - Infrastructure needs, and
    - Underlying belief statements about the value of technology for learning.
- **Support mechanisms for teachers and students**
  - Ongoing, sustained professional development on technology, pedagogy, and integration
  - Coaching or job embedded supports
  - Differentiation for students
  - Parent communication

Changing Mindsets

- **New Attitudes: *"I Can't Turn Back Now"***

  "Now that I have new knowledge and awareness, I also carry the personal burden of determining how to use it in a meaningful way."

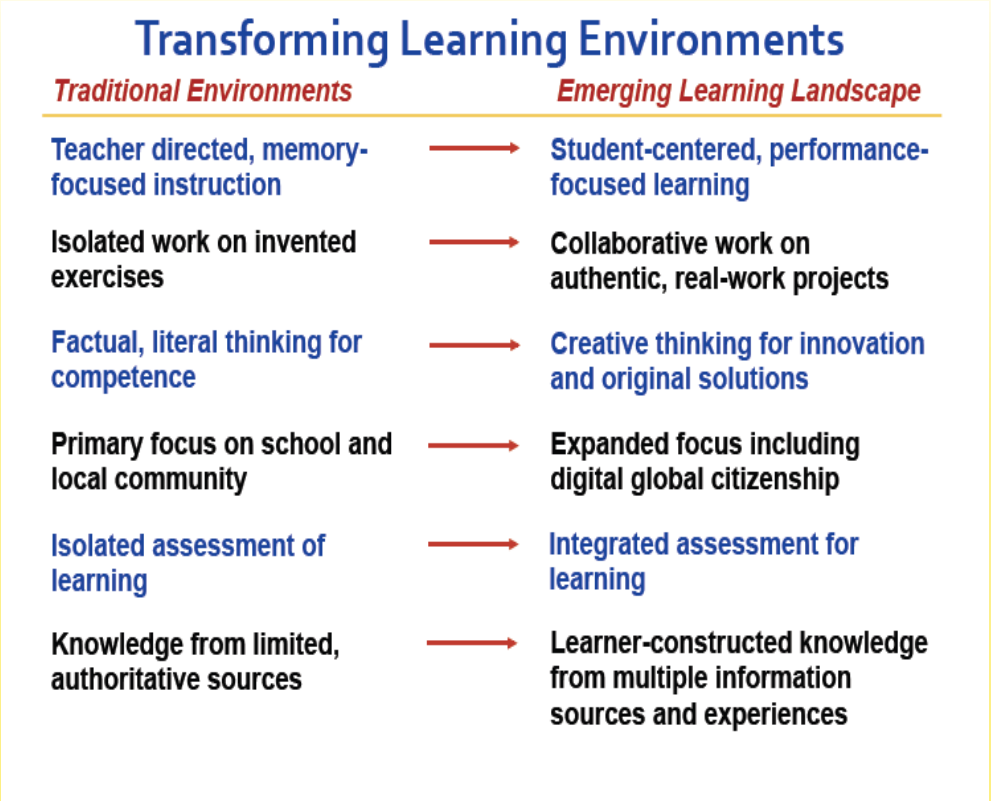
- **New Negotiations: *"It's OK Not to Know Everything"***

  "I was able to work with other teachers and professors who have experienced the tools, which privileged me with first-hand information about successes and challenges."

- **New Cognitions: *"I Can Actually Feel My Brain Changing"***

  "This pushes me to look at the curriculum and instruction in a different light."

- **RAT**
  - **Replace**
    - Is this technology a more effective replacement from what I've done before?
  - **Amplify**
    - Does this technology help to amplify what I am doing?
  - **Transform**
    - Does this technology transform the products or process of instruction or learning?



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