

# The Other Side: Are You Ready?

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Ruben R. Puentedura, Ph.D.

Learning: Nuts and Bolts

*Transformation*

## **Redefinition**

*Tech allows for the creation of new tasks,  
previously inconceivable*

## **Modification**

*Tech allows for significant task redesign*

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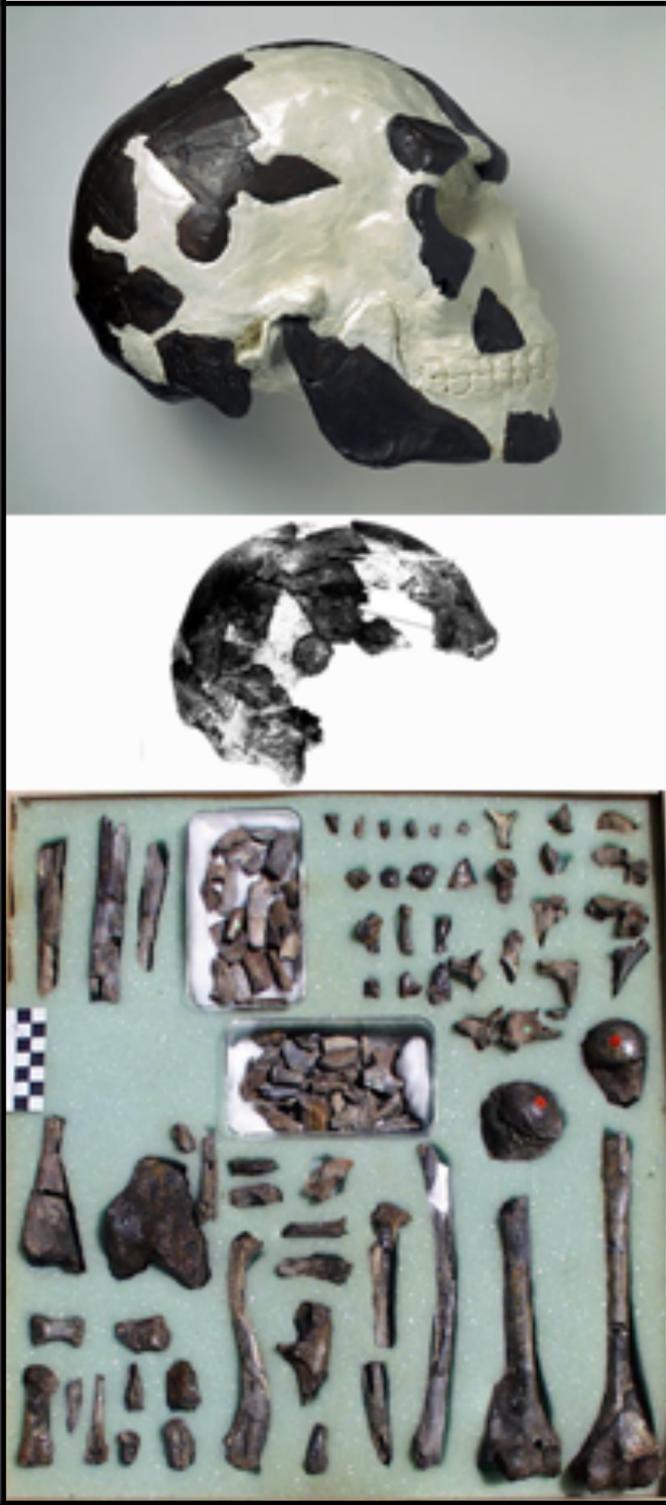
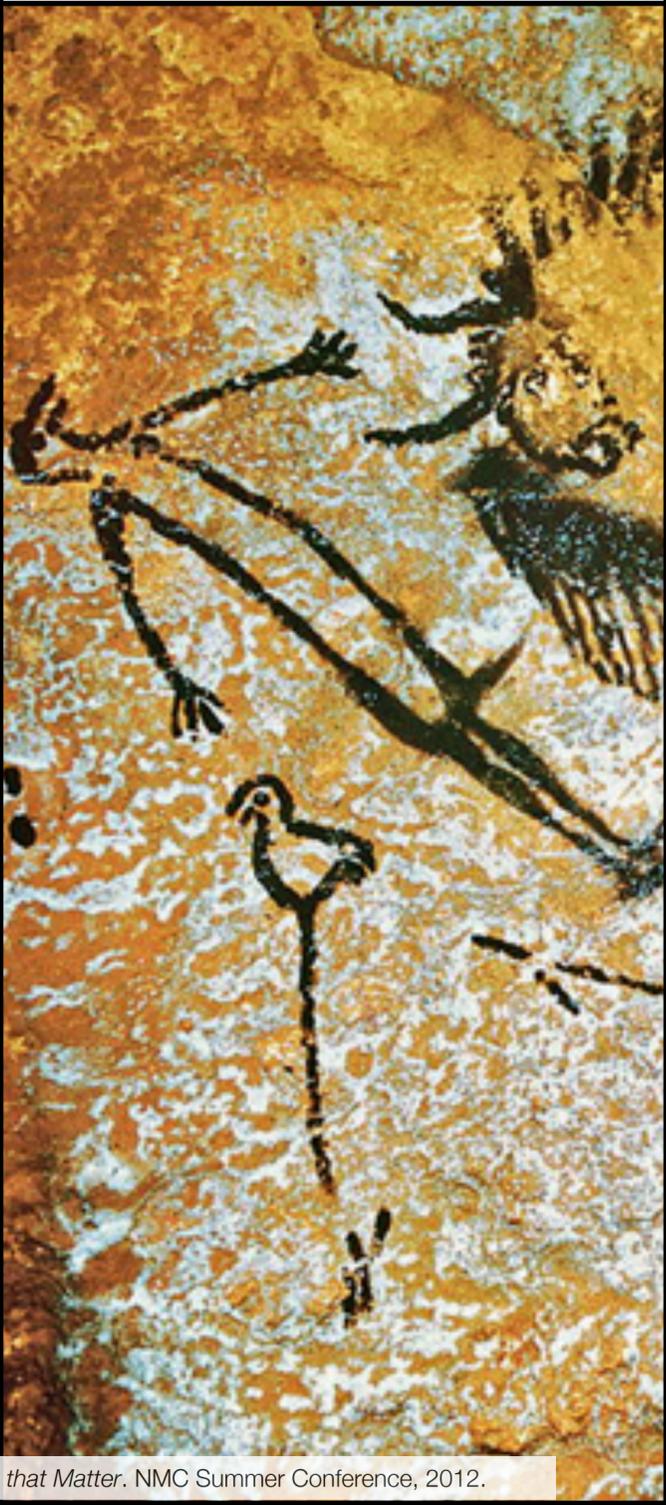
## **Augmentation**

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

## **Substitution**

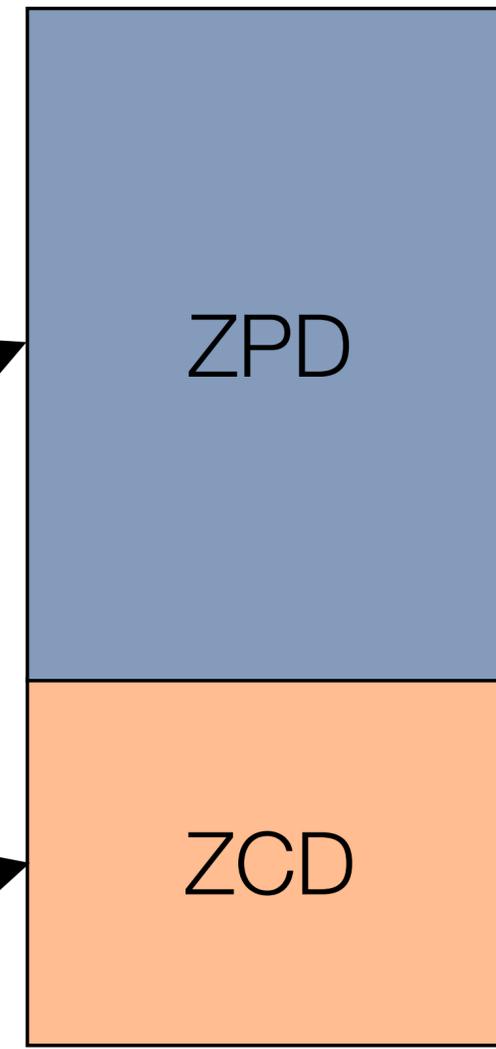
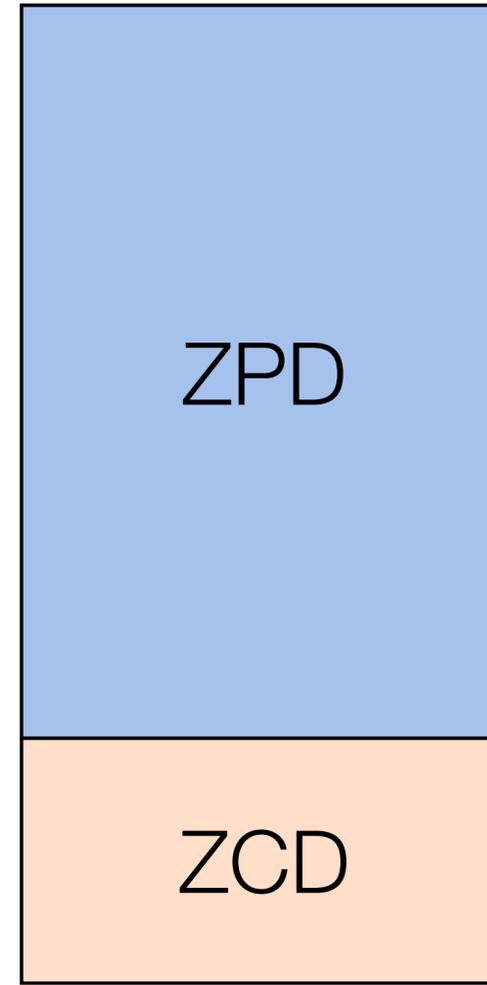
*Tech acts as a direct tool substitute, with no  
functional change*

*Enhancement*

Social	Mobility	Visualization	Storytelling	Gaming
200,000 years	70,000 years	40,000 years	17,000 years	8,000 years
				



Alone      With MKO

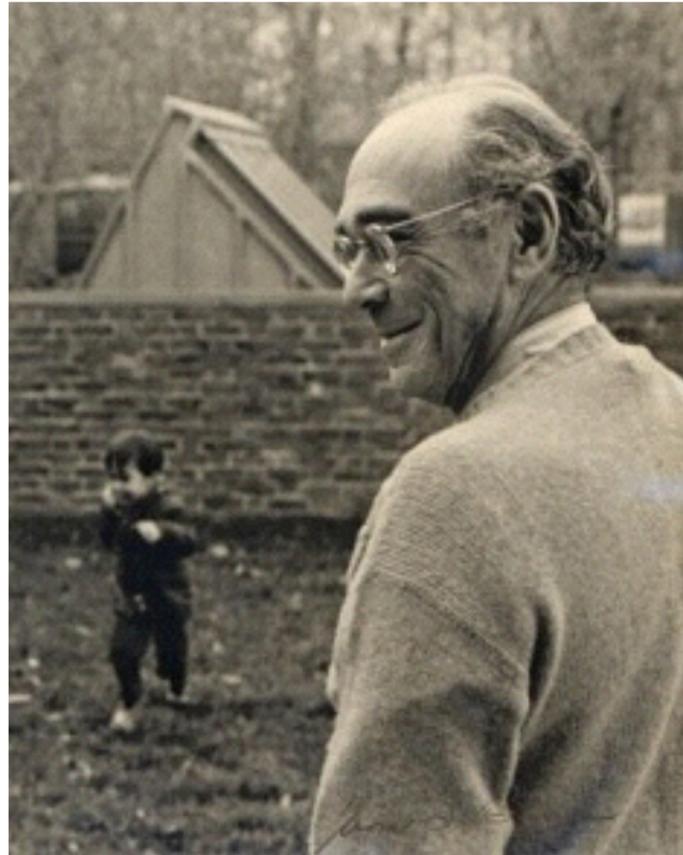


- Zone of Proximal Development (ZPD):
  - Region between:
    - what a learner can accomplish independently (the Zone of Current Development, ZCD)
    - what they can accomplish with assistance from a “more knowledgeable other” (MKO)
- “...what a child can do with assistance today she will be able to do by herself tomorrow.”
- This is an iterative process:
  - The ZCD and ZPD change over time;
  - Independent practice is required to close the loop.

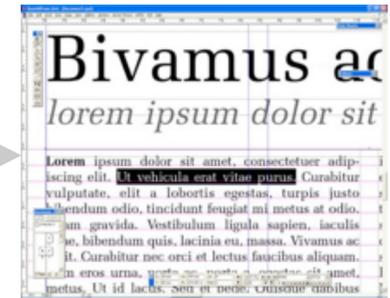
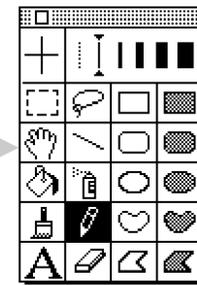
## Vygotsky on Play and Learning

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“...play creates a zone of proximal development of the child. In play a child always behaves beyond his average age, above his daily behavior; in play it is as though he were a head taller than himself.”



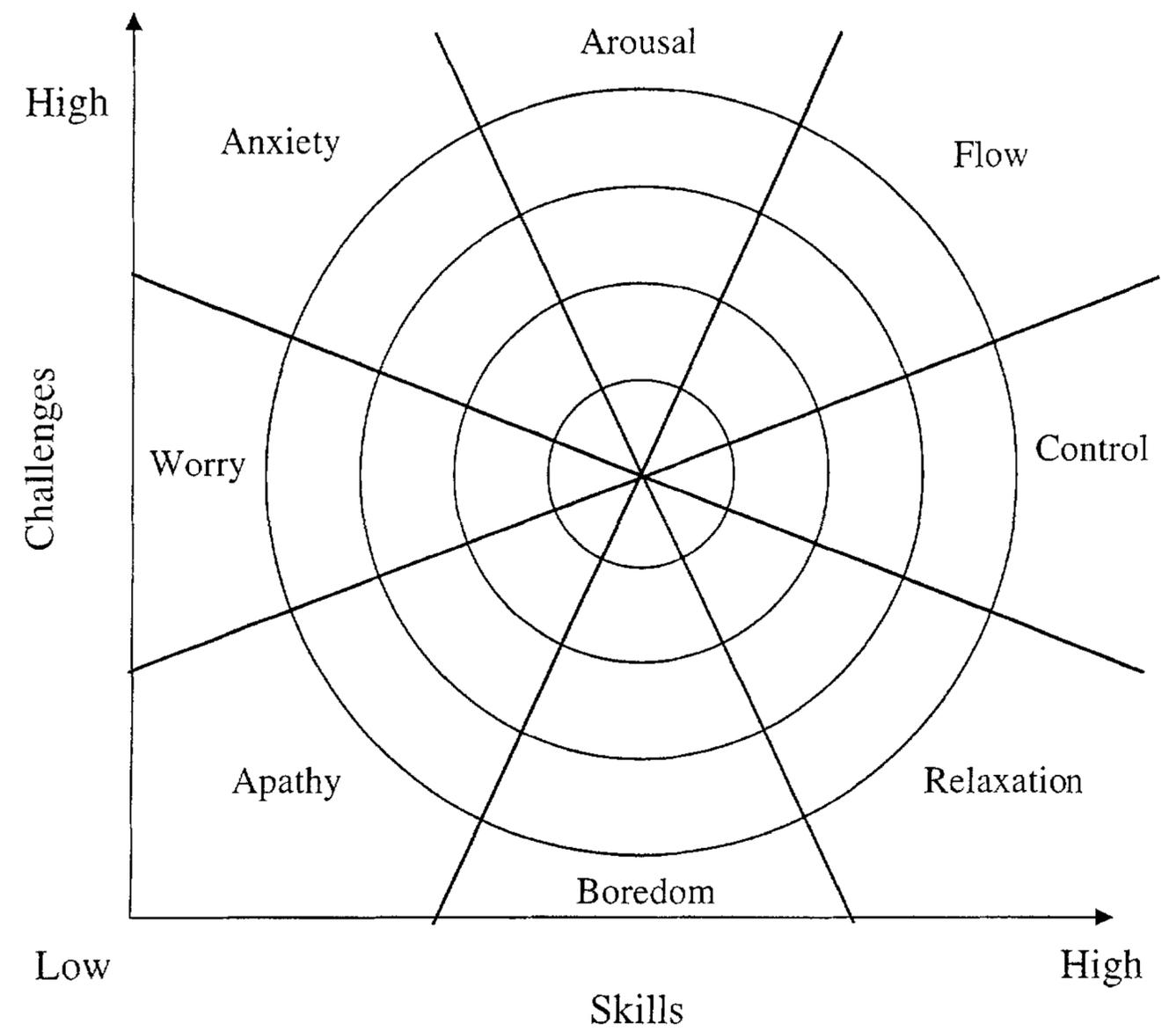
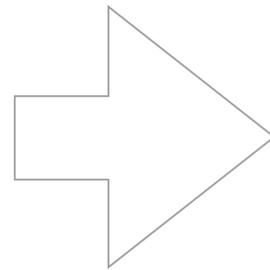
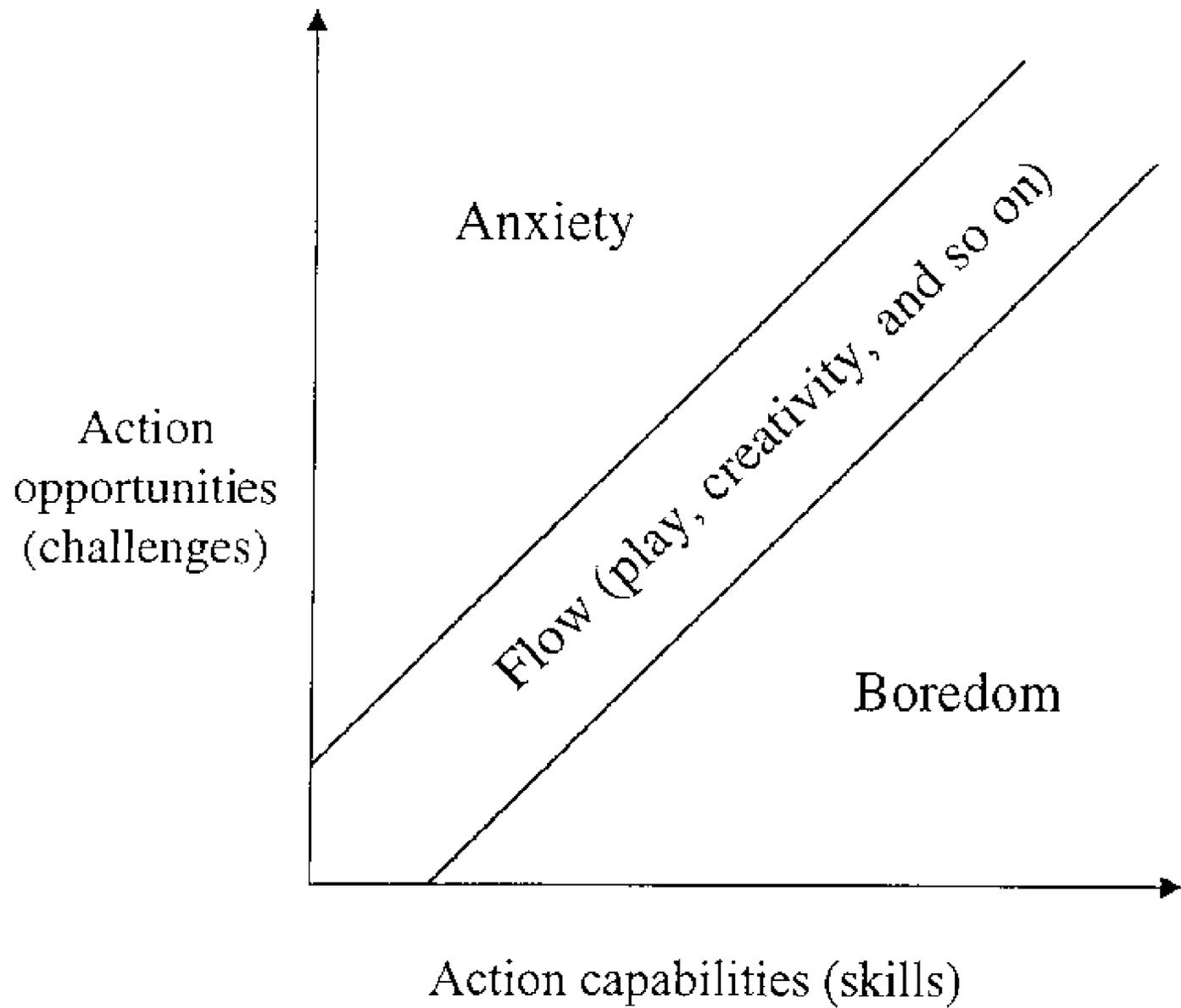
Enactive ·····> Iconic ·····> Symbolic



# Constructionism

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- Learning is a reconstruction, rather than a simple transmission of knowledge
- Learning is most effective when part of an activity the learner experiences as constructing a meaningful product
- The product need not be a simple physical object



<http://padlet.com/wall/bett14design>

# Surveying Seymour Papert's Four Expectations

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- **Expectation 1:** suitably designed formative/summative assessment rubrics will show improvement when compared to traditional instruction.
- **Expectation 2:** students will show more instances of work at progressively higher levels of Bloom's Taxonomy.
- **Expectation 3:** student work will demonstrate more – and more varied – critical thinking cognitive skills, particularly in areas related to the examination of their own thinking processes.
- **Expectation 4:** student daily life will reflect the introduction of the technology. This includes (but is not limited to) directly observable aspects such as reduction in student attrition, increase in engagement with civic processes in their community, and engagement with communities beyond their own.

# Black and Wiliam: Defining Formative Assessment

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“Practice in a classroom is formative to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited.”

# Wiliam: A Framework for Formative Assessment

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	Where the learner is going	Where the learner is right now	How to get there
Teacher	1 Clarifying learning intentions and criteria for success	2 Engineering effective classroom discussions and other learning tasks that elicit evidence of student understanding	3 Providing feedback that moves learners forward
Peer	Understanding and sharing learning intentions and criteria for success	4 Activating students as instructional resources for one another	
Learner	Understanding learning intentions and criteria for success	5 Activating students as the owners of their own learning	

# Bloom's Taxonomy: Cognitive Processes

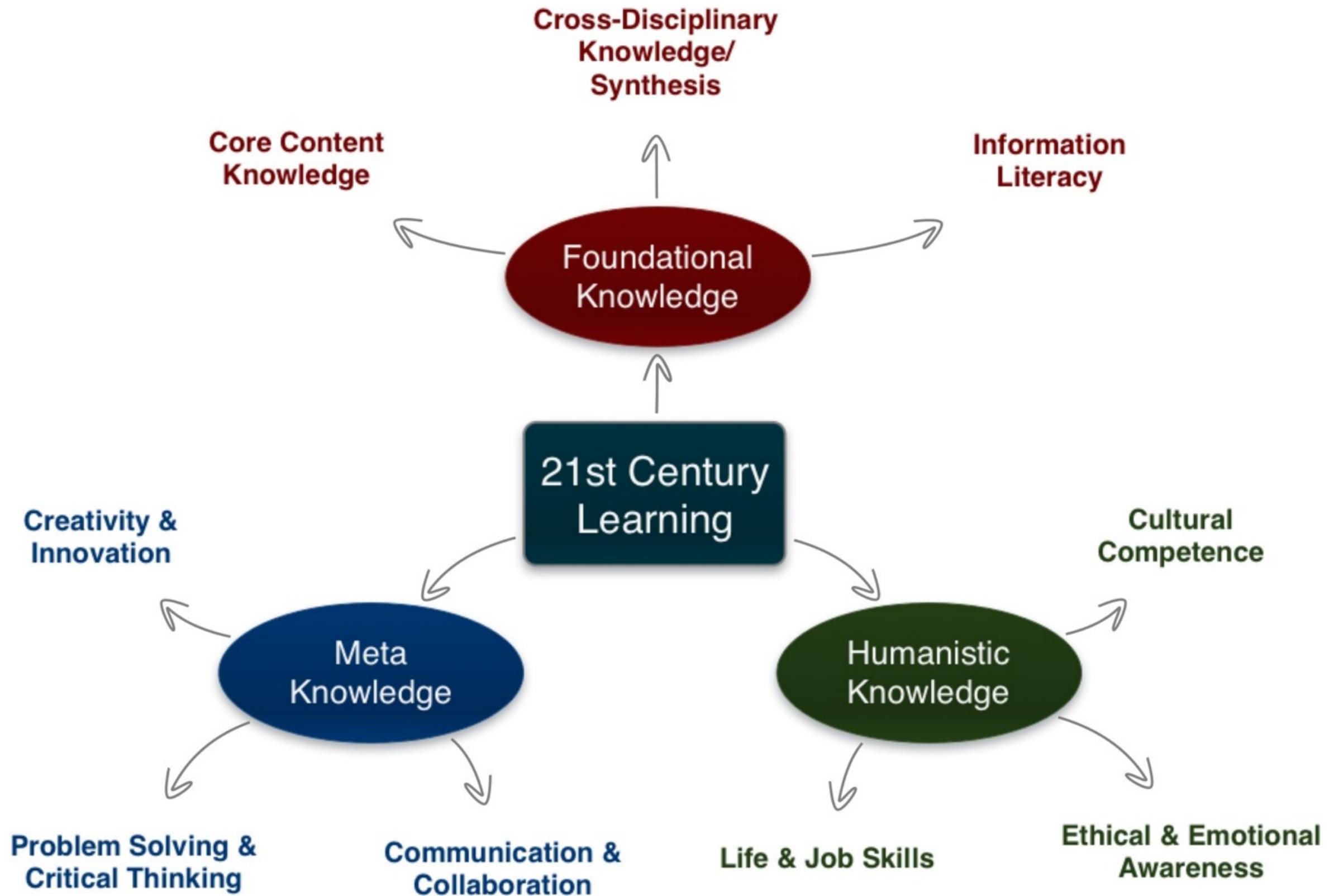
Anderson & Krathwohl (2001)	Characteristic Processes	
<b>Remember</b>	<ul style="list-style-type: none"> <li>• Recalling memorized knowledge</li> <li>• Recognizing correspondences between memorized knowledge and new material</li> </ul>	
<b>Understand</b>	<ul style="list-style-type: none"> <li>• Paraphrasing materials</li> <li>• Exemplifying concepts, principles</li> <li>• Classifying items</li> <li>• Summarizing materials</li> </ul>	<ul style="list-style-type: none"> <li>• Extrapolating principles</li> <li>• Comparing items</li> </ul>
<b>Apply</b>	<ul style="list-style-type: none"> <li>• Applying a procedure to a familiar task</li> <li>• Using a procedure to solve an unfamiliar, but typed task</li> </ul>	
<b>Analyze</b>	<ul style="list-style-type: none"> <li>• Distinguishing relevant/irrelevant or important/unimportant portions of material</li> <li>• Integrating heterogeneous elements into a structure</li> <li>• Attributing intent in materials</li> </ul>	
<b>Evaluate</b>	<ul style="list-style-type: none"> <li>• Testing for consistency, appropriateness, and effectiveness in principles and procedures</li> <li>• Critiquing the consistency, appropriateness, and effectiveness of principles and procedures, basing the critique upon appropriate tests</li> </ul>	
<b>Create</b>	<ul style="list-style-type: none"> <li>• Generating multiple hypotheses based on given criteria</li> <li>• Designing a procedure to accomplish an untyped task</li> <li>• Inventing a product to accomplish an untyped task</li> </ul>	

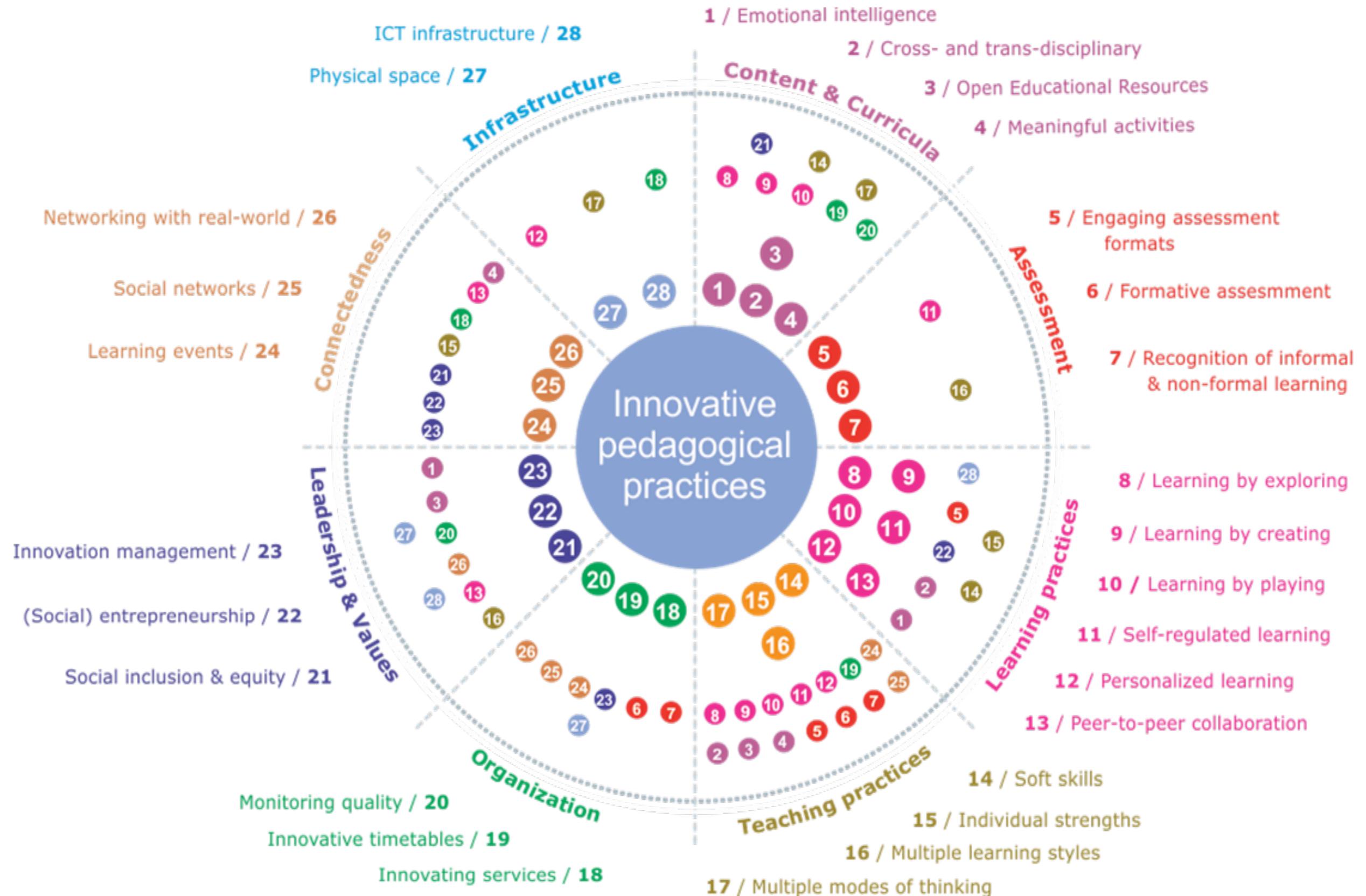
# Facione: Critical Thinking – Cognitive Skills and Subskills

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<b>Skill</b>	<b>Subskills</b>
<b>Interpretation</b>	Categorization Decoding Significance Clarifying Meaning
<b>Analysis</b>	Examining Ideas Identifying Arguments Analyzing Arguments
<b>Evaluation</b>	Assessing Claims Assessing Arguments
<b>Inference</b>	Querying Evidence Conjecturing Alternatives Drawing Conclusions
<b>Explanation</b>	Stating Results Justifying Procedures Presenting Arguments
<b>Self-Regulation</b>	Self-examination Self-correction

Where are we going?





<http://tinyurl.com/bett14cc>

# NMC Horizon EdTech Weekly



## HZ News

The ten hottest EdTech news items: 10 Unread/Week 107

Previous Week

Next Week

HIED

George Siemens Gets Connected



### George Siemens Gets Connected

HIED

### The Future of Libraries: Harvard Students Are Thinking Outside the Box

The Graduate School of Design's Librarians is pushing the boundaries of...

### The Future of Libraries: Harvard Students Are Thinking Outside the Box

TECH NEWS



### Google Glass used by Indian doctors for surgery

(A team of doctors under supervision of US based Dr. Pravek...)

FOOD FOR THOUGHT



### 11 Note-Taking Tips For The Digital Classroom

K12

JANUARY 8, 2014



### Building District

## NMC Horizon Library

Horizon Reports and Technology Outlooks



> View Complete Library

## Explore NMC Navigator

Search projects, news, and resources

### Search Navigator

Search Navigator

Search

> All Projects Map

### Reference

> Articles and Readings

> Reports and Research

> Technologies to Watch Lists

> Reflections on the Future

### News

> Emerging Technologies

> Challenges and Trends

> Stories and Examples

> Technology in Popular Culture

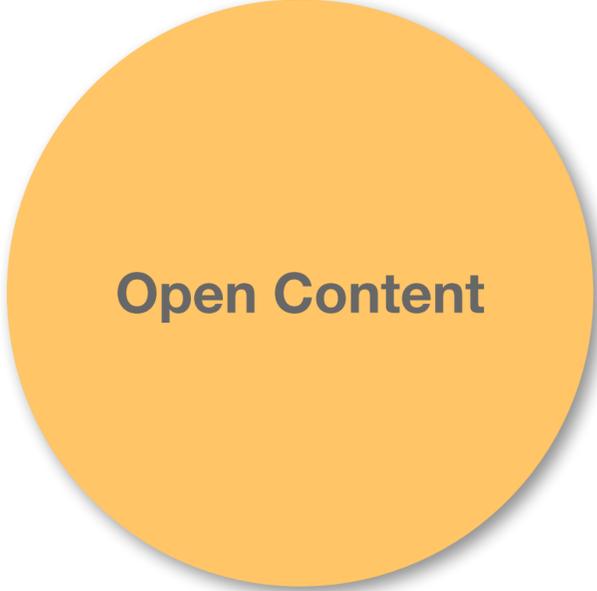
# The 2013 K12 Horizon Report

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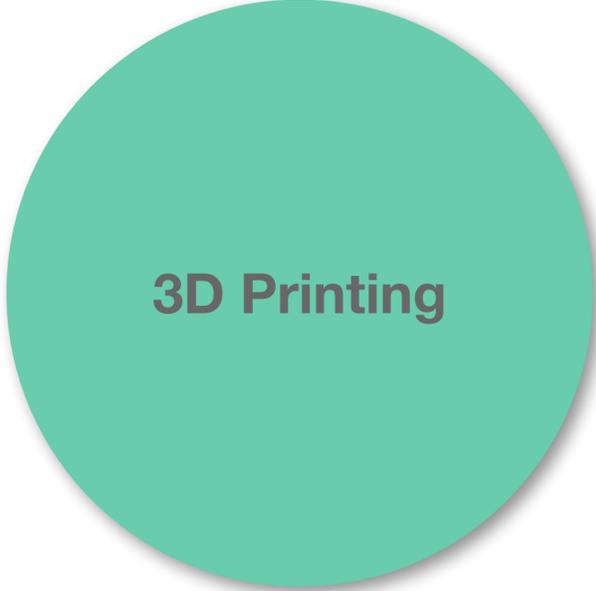
**Mobile Learning**

Time-to-Adoption:  
One Year or Less



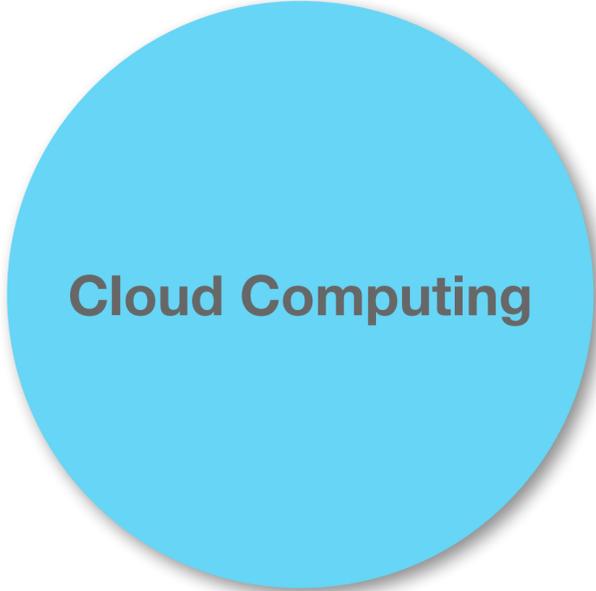
**Open Content**

Time-to-Adoption:  
Two to Three Years



**3D Printing**

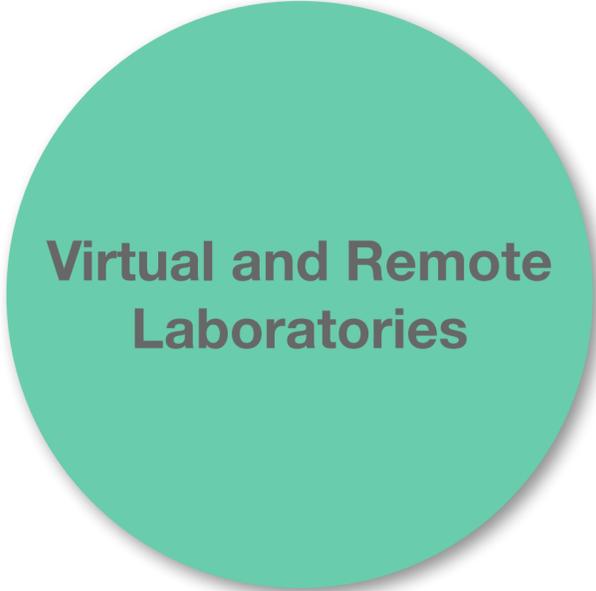
Time-to-Adoption:  
Four to Five Years



**Cloud Computing**



**Learning Analytics**



**Virtual and Remote  
Laboratories**

# The 2009 K12 Horizon Report

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**Collaborative  
Environments**

Time-to-Adoption:  
One Year or Less

**Mobiles**

Time-to-Adoption:  
Two to Three Years

**The Personal Web**

Time-to-Adoption:  
Four to Five Years

**Online  
Communication  
Tools**

**Cloud Computing**

**Smart Objects**

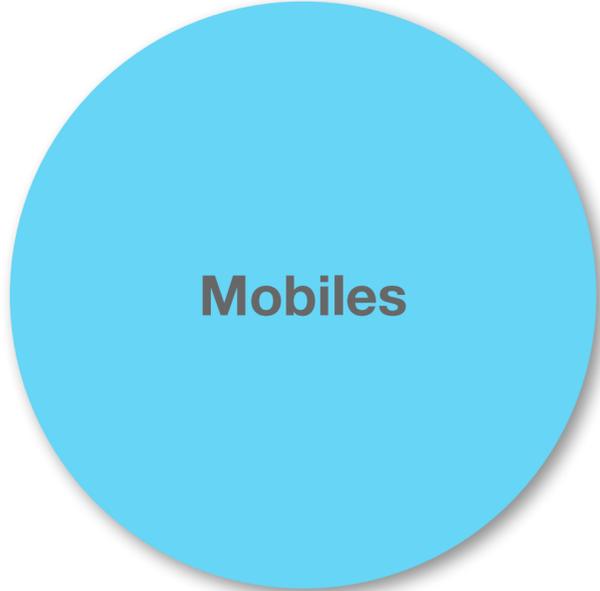
# The 2010 K12 Horizon Report

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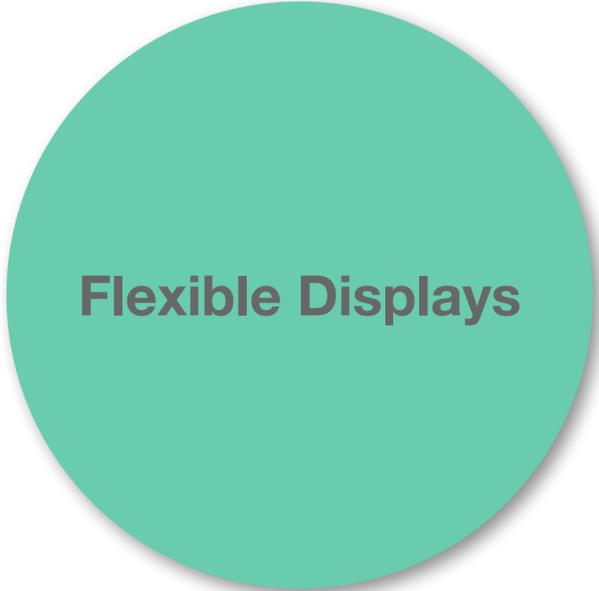
**Collaborative  
Environments**

Time-to-Adoption:  
One Year or Less



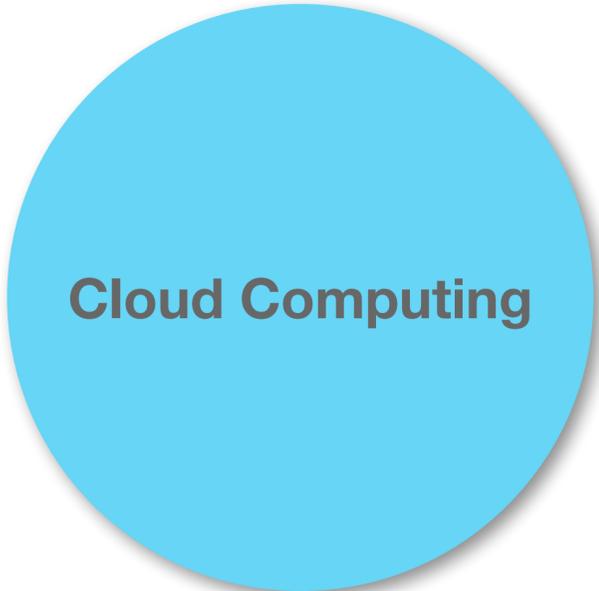
**Mobiles**

Time-to-Adoption:  
Two to Three Years



**Flexible Displays**

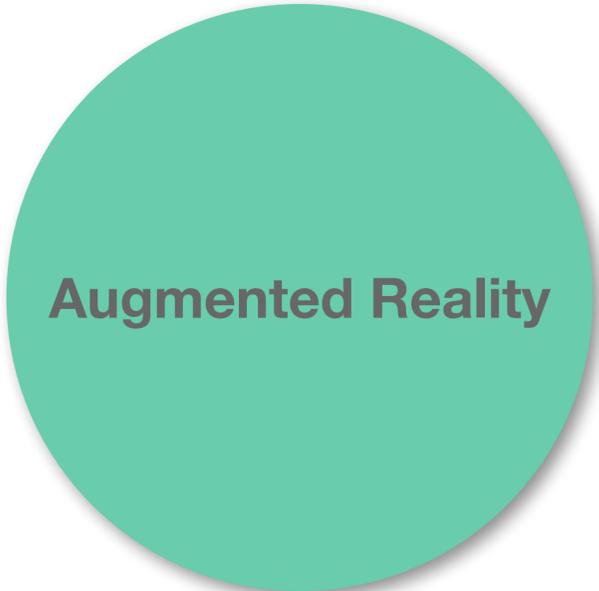
Time-to-Adoption:  
Four to Five Years



**Cloud Computing**



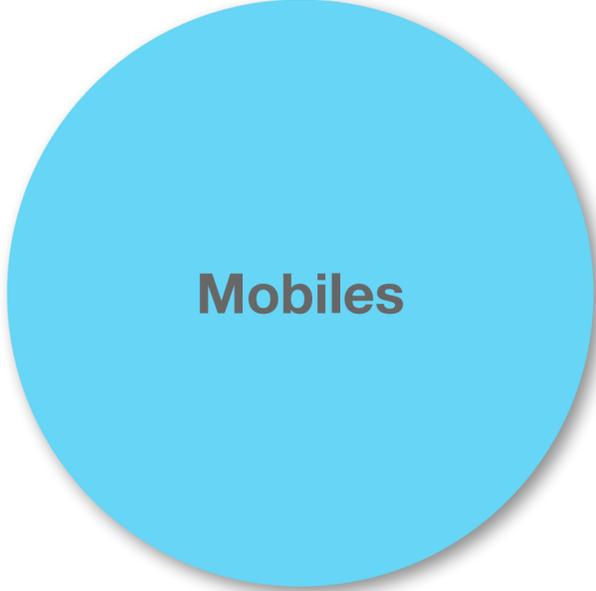
**Game-Based  
Learning**



**Augmented Reality**

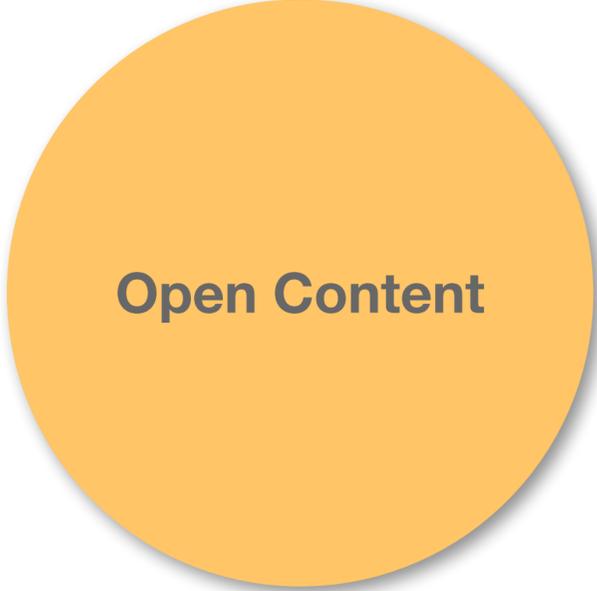
# The 2011 K12 Horizon Report

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**Mobiles**

Time-to-Adoption:  
One Year or Less



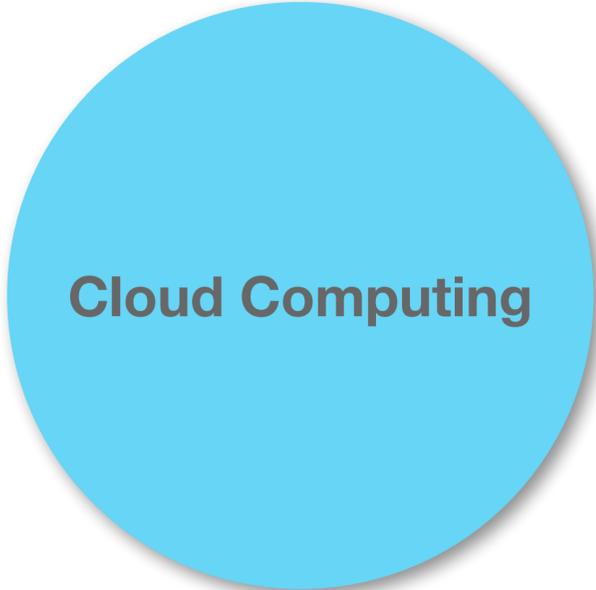
**Open Content**

Time-to-Adoption:  
Two to Three Years



**Personal Learning  
Environments**

Time-to-Adoption:  
Four to Five Years



**Cloud Computing**



**Game-Based  
Learning**



**Learning Analytics**

# The 2012 K12 Horizon Report

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**Mobile Devices  
and Apps**

Time-to-Adoption:  
One Year or Less

**Personal Learning  
Environments**

Time-to-Adoption:  
Two to Three Years

**Natural User  
Interfaces**

Time-to-Adoption:  
Four to Five Years

**Tablet Computing**

**Game-Based  
Learning**

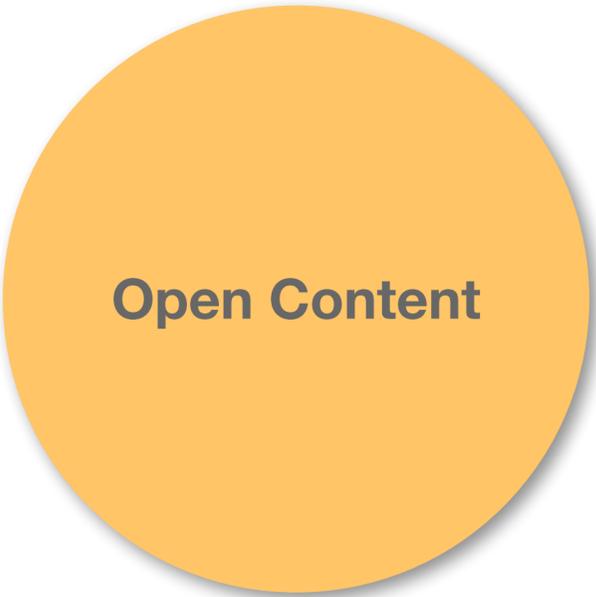
**Augmented Reality**

# The 2013 K12 Horizon Report

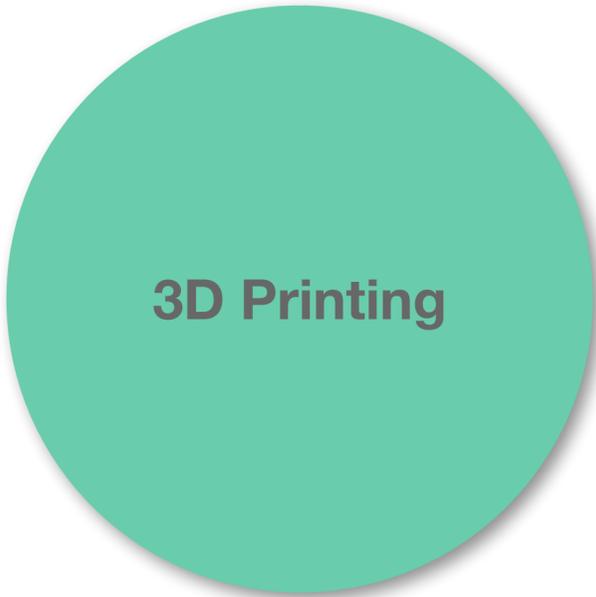
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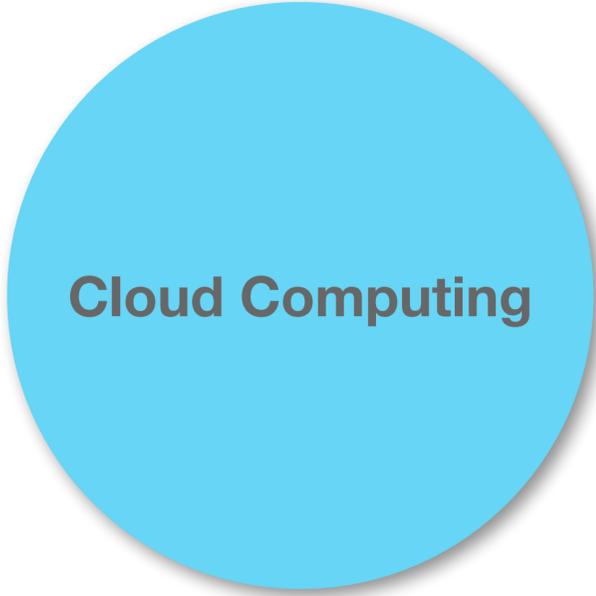
Time-to-Adoption:  
One Year or Less



Time-to-Adoption:  
Two to Three Years



Time-to-Adoption:  
Four to Five Years



# Hippasus

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