Learning Objectives

At the end of this program, participants will be able to:

1. Explore the ‘Sign of the Times’ in education that are leading us into the Learning Revolution.
2. Learn about key factors of the Learning Revolution
3. Understand A Pattern Language for creating Immersive Learning Environments
4. Case Studies:
   Sarasota’s TechActive Classroom of Tomorrow
   The Immersive LearningScape
QUESTIONS
Is our current education making us competitive in the global marketplace?

What skills will be needed to excel as we further move into the 3rd millennium?

8 JOBS THAT WILL EXIST IN THE FUTURE

1. Digital Death Manager ("Life-Logging" Expert)
2. Un-Schooling Counselor (Evolution of the Traditional School Counselor)
3. Armchair Explorer (Digital Travelers/Problem Solvers)
4. 3-D Printing Handyman (Future Mr. Fix-it)
5. Microbial Balancer (Feng Shui of the Future)
6. Corporate Disorganizer (Masters of Organized Chaos)
7. Digital Detox Specialist (Fighting the Digital Overload)
8. The Urban Shepherd (Sustainable Infrastructure Maintainers)

"8 New Jobs People will Have in 2025" Fast Company
10 JOBS THAT DID NOT EXIST 10 YEARS AGO

1. App Developers (Creative Tech)
2. Market research Data Miner (Library science – Info gathering/summarizing)
3. Millennial Generational Expert (Social Networks)
4. Social Media Manager (Social Networks)
5. Chief Listening Officer (Social Spy)
6. Cloud Computing Services (Data Storage and Sharing)
7. Elder Care (Health and Communication – Baby Boomers)
8. Sustainability Expert (Global Warming / Green Economy)
9. User Experience Design (Right Brain thinking)
10. Academic and Admissions Consultant (Education and Access)

“How do you create the ultimate inquisitive learning environment?”

As acquiring content becomes more automated, and teamwork across disciplines becomes critical to a creative, conceptual, and innovation society, what kinds of learning spaces promote trans-disciplinarily collaboration?

“10 jobs that did not exist 10 years ago” FORBES MAGAZINE

QUESTIONS

How do you create the ultimate inquisitive learning environment?

QUESTIONS

Why are we teaching in the same spaces as we did in the 19th Century?
QUESTIONS

Given the increasing introduction of technology in the classroom, what will be the role of the teacher?

LEARNING OBJECTIVE #1

SIGN OF THE TIMES

As the world flattens, education will heighten.

The Immersive LearningScape 1.0 Recap


19th COUNTRIES vs 20th COUNTRIES vs 21st COUNTRIES vs COUNTRIES
INDIVIDUALS vs CORPORATIONS vs INDIVIDUALS
As the world becomes increasingly flat, education is heightened.

Multi-disciplinary teams needed to solve complex challenges in a global world.

What are the skills they will need?
21st CENTURY SKILLS

Problem Solving
Critical Thinking
Technology-savviness
Leadership skills
Communication Skills
Collaboration Skills
Global Knowledge
Languages
Interdisciplinary skills
Creative Skills

STUDENT VOICES on engagement

I'M BORED 99 PERCENT OF THE TIME.
ENGAGE US MORE.

I'M ENGAGED IN TWO OUT OF MY SEVEN CLASSES.
POINTLESS.

21st CENTURY SKILLS (as per employers' needs)

Concepts in Science & Tech (82%)
Teamwork (76%)
Real world / hands on experience (73%)
Communication Skills (73%)
Critical Thinking / Analytical (72%)
Global Issues / Developments (72%)
Locate / Organize / Evaluate Info (70%)
Creative Thinking / Innovation (70%)
Solve Complex Problems (64%)
Work with Numbers / Statistics (60%)
Global Cultures / Languages (53%)

SOURCE - What Employers are looking for in college graduates Survey by Association of American Colleges & Universities - 2007
WHY AREN’T STUDENTS PREPARED FOR COLLEGE?

Overall, teachers ranked “Lack of motivation” as the #1 reason

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<td><strong>34%</strong></td>
<td><strong>25%</strong></td>
<td><strong>43%</strong></td>
<td><strong>49%</strong></td>
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We are entering a LEARNING REVOLUTION

FACTOR 1
Technology
“Scientists have learned more about the brain in the last 10 years than in all previous centuries because of the accelerating pace of research in neurological and behavioral science and the development of new research techniques.”

National Institute of Neurological Disorders and Stroke (NINDS)
20th Century
Linear Learning = 1 isolated discipline per hour

21st Century
Cross-Disciplinary Learning = Multiple disciplines simultaneously

"The problem-solving process cannot be taught; it has to be experienced"

Ben Johnson
“This approach would address students not as receivers of information, but as shapers of knowledge.”

Ormondale Elementary School

Technology
Augmented Reality Technology

Technology
Blended Learning
Technology
1-to-1 learning

Technology
Teacher 1-to-1 supervision

Technology
Flipped Classroom

**WHAT IS THE FLIPPED CLASSROOM?**

The flipped classroom inverts traditional teaching methods, delivering instruction online outside of class and moving “homework” into the classroom.

**THE INVERSION**

The Traditional Classroom
Teacher’s Role: Sage on the Stage
Lecture today
Homework: reading, homework due tomorrow

The Flipped Classroom
Teacher’s Role: Guide on the Side
Activity today
Homework: online research

SOURCE: The Third Wave, Alvin Toffler

Technology
Prosumer = Producing + Consumer

With the proliferation of digital networks the world over, the electronic marketplace has gone from empowering the consumer to supporting a global civic society. Power to the people.
INTERSECTIONAL IDEAS FOR AN INTERSECTIONAL WORLD

Diverse teams create far more ideas than homogenous teams.

Older management was demoted, younger management given new titles, and, most importantly, every research group was interdisciplinary: chemists mingled with physicists who chatted with metallurgists who lunched with engineers. Every building in the New Jersey campus was interconnected and no one was allowed to shut their door. This was the beginning of a newly innovative time.
Interdisciplinary thinking for solving challenges

Volvo and Locusts
3M

A CULTURE OF SHARING

55,000 Patents a 1-to-1 ratio to employees
Sharing Among Scientists core tenet of their culture, 15% rule pursue speculative new ideas and share with the group, Conceptual Blending, Employee Rotation, Horizontal Sharing investing new products by transplanting same concepts into different domains, Tech Forum Event each researcher shares findings with the company “Flexible Attention Policy” take a walk outside, sit by a sunny window, daydream
Spend 8% of gross revenue on research

HOW CAN WE CREATE A LEARNING ENVIRONMENT THAT SUPPORTS A CULTURE OF INNOVATION?

LEARNING OBJECTIVE #3

8 IMMERSIVE LEARNINGSCAPE PATTERNS
the learning revolution’s impact on educational environments

Pattern 1: Sketch-Scape
Sharing Knowledge
Pattern 2: Transparency
Cross-Pollination of Ideas

Pattern 3: Tinkering Space
Creative Space

Pattern 4: Immersive-Scape
Relevance of Knowledge

Pattern 5: Unifying Space
Collaboration
Pattern 6: Play-Scape
Fun-scape

Pattern 7: Adaptability
Flexibility

Pattern 8: Technology-infused Learning
Active & Engaging Tools

methodologies of TEACHING vs. typologies of LEARNING
methodologies of TEACHING vs. typologies of LEARNING

classROOM

vs. learning SCAPE

typologies of LEARNING – space
typologies of LEARNING SPACE

THINK CREATE IMPART EXCHANGE DISCOVER

Think-Scape
A Space that Supports a “Thinking Curriculum”

Think-Scape
A Space for Research
Think-Scape
A Space for Individual Distance Learning

CREATE
THINK
DISCOVER
IMPART
EXCHANGE

typologies of LEARNING-SPACE

Create-Scape
A Space for Teamwork

Create-Scape
A Space for Collaboration
Create-Scape
A Space that Supports Communication

Create-Scape
A Space that Records Collaborative Ideas

Create-Scape
A Space that Supports Cross-Cultural Distance Learning

Create-Scape
A Space that Supports STEM & STEAM Education
Case Study Sarasota’s Classroom of Tomorrow

A Space that Supports Project-Based Learning

Discover-Scape
A Space for Hands On Investigative Learning
Discover-Scape
A Space for **Tinkering**

Friday, September 6, 13

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Discover-Scape
A Space for **Production**

Friday, September 6, 13

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Discover-Scape
A Space for **Failure**

Friday, September 6, 13

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Discover-Scape
A Space for **Idea Application**

Friday, September 6, 13
Discover-Scape
A Space for Specificity

Impart-Scape
A Space for Sharing

Impart-Scape
A Space for Teaching

typologies of
LEARNING-SPACE

THINK

CREATE

DISCOVER

IMPART

EXCHANGE
Impart-Scape
A Space for Quick Lessons

Impart-Scape
A Space for Distance Learning

.typologies of
LEARNING-SPACE

Think
Create
Impart
Exchange

Exchange-Scape
A Space for Social Learning
CASE STUDIES

- Sarasota’s TechActive Classroom of Tomorrow
- Re-Thinking the Knowledge Community

CASE STUDY 1

Sarasota County, Florida
Presents

TechActive Classroom of Tomorrow
The STEM Challenge

1. How can middle schools deliver instruction to the current generation of digital learners that is in keeping with their incredible level of online connectivity?
2. How can classrooms be restructured to reflect the functional realities of the 21st century workplace?
3. How can math and science classes become a “magnet” for student learning?

Considerations we acknowledged...

1. Students born into the digital age think and learn differently from any generation before them.
3. All learning is based in language.
**Collaboration**

Middle School Executive Director  
Middle School Principals  
Science Department Chairs  
Science Teachers  
Science Students

**Prioritizing**

1. Lesson design and classroom space must allow for **flexible interactions** where **teams** of students can become **immersed** in innovative approaches to learning.

2. Equipment must include **state-of-the-art technology** appropriate for **collaborative** learning opportunities where students can **explore** and **manipulate**, **create**, and **interact** in a multi-sensory manner.

**Student Input**

- The teacher's desk would be in the back of the room.
- Have a mini-Activboard at every table. Sometimes learning from kids is easier than learning from adults. Just reading about doing things isn't the same as doing it.
- Have tables with built-in computers where you can keep & store assessments / papers.
- The chairs should be **comfy** and have **padding**.
- I would like colorful desks big enough for 4 students. I would like the class to be a hands-on style.
- The teacher wouldn't be in the front of the classroom.
- I think it would be cool to have an electronic device built into the desks for each student.
- Circular tables that seat 4 – 6 students.
Process

Collaboration of a small team committed to realizing the vision of middle school STEM learning spaces:

Director of Construction
Director of Facilities
Director of Technology
Executive Director of Middle Schools
Key Instructional Components

1. Latest teaching methods
2. State-of-the-art instructional technology
3. Student teams learn together over time
4. Lab environments specifically designed to involve students in meaningful and engaging inquiry through rigorous, collaborative tasks

Annual Teacher Agreement

Acknowledging willingness to participate in the TechActive Classroom of Tomorrow teacher cohort, per the responsibilities for:

1. Using the customized resources
2. Implementing inquiry-based learning
3. Engaging in teacher collaboration
4. Integrating learning from professional development

STEM
Teacher Professional Development

STEM
Branding Outside
STEM
Advanced Software

Friday, September 6, 13

STEM
Student Teams

Friday, September 6, 13

STEM
Teacher Coach

Friday, September 6, 13

STEM
Daily Learning Purpose

Friday, September 6, 13
**STEM Interactive Learning**

**STEM Engaging Tasks**

**STEM Flexible Space**

**STEM Movement**
Classroom Structural Renovation

$10,000 per classroom

1. Electric and data to six student tables
   Ceiling tile that allows flexibility
2. Electric box attached to table
3. Removal of teacher demonstration in front of room
4. New flooring
   Rubber in science classes; carpet in math classes
5. Paint in “branding” colors
6. Door wrap to identify classes
7. 16’ decal on wall about initiative

TechActive Classroom Budget

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<th>Item</th>
<th>Unit Cost</th>
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<td>Student chairs with wheels</td>
<td>$65.00</td>
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<td>Probes</td>
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Total Grades 6 – 7 Science          $26,505.00

Total Math and Grade 8 Science      $25,000.00

Professional Development

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Total Per Teacher For Professional Development $2,445

Project Managers

1. Technology
2. Construction and Renovation
3. Purchasing and Warranty
**EVALUATION RESULTS: YEAR 1**

**Teachers report ...**

- **Increased** use of inquiry-based practices
- Inquiry approaches **deepen** student understanding, **improve** problem solving, and **communication** skills
- Inquiry practices **increase** student motivation
- They’ve never **worked so hard** and had **so much fun!**

**EVALUATION RESULTS: YEAR 1**

**Students report ...**

- More **collaborative** learning in classes
- Increase in **team activities** and **experiments**
- Increased interest in **science**
- **Enjoying** STEM learning

**EVALUATION RESULTS: YEAR 1**

**FCAT Science Results**

- 19 Grade 8 TechActive Science teachers taught students who participated in the Grade 8 Science FCAT in 2012-2013.
- In more than half of these classes, **over 90%** of the students demonstrated proficiency on the Grade 8 Science FCAT as compared to an average of 59% for the District and 47% statewide.
- In four of these classrooms, **100%** of the students demonstrated proficiency.

**FCAT Mathematics Results**

- In SY 2012-2013, 68 percent of all middle school students were proficient in mathematics while **91 percent** of middle school students in TechActive classrooms were proficient in mathematics.
- In half of the TechActive classes, **100 percent** of the students were proficient on the FCAT in SY 2012-2013.
**EVALUATION RESULTS: YEAR 1**

**FCAT Algebra Results**

- 10 Algebra teachers instructed within TechActive Classrooms
- In 9 out of the 10 TechActive Algebra classrooms, **100 percent** of the students were **proficient** and passed the Algebra EOC in 2012-2013 as compared to a District average of **73%** and a statewide average of **64%**.

**CASE STUDY 2**

Re-thinking the knowledge community

IMMERSIVE – MEDIUM SCALE – LOW IMPACT – APPLICABILITY TO ALL SCHOOLS

PILOT MOUNTAIN MIDDLE SCHOOL, Pilot Mountain, NC
Integrated Curriculum Model

ITEEA Recommendations

“...the current mainstream school facility models restrict the teaching of science, math, technology and engineering subjects to individual rooms designed around isolated topics/disciplines. The National Governors Association report—"Innovation America: Building a Science, Technology, Engineering and Math Agenda", pg. 8 further describes it. "The existing core curriculum, which is divided into silos and focuses on traditional math and science, is often criticized as being irrelevant and boring to today’s students. Studies report that the interest levels of American students, especially girls, in science begin to drop around middle school. As factors in turning off high numbers of students to STEM disciplines and professions, researchers point to the artificial separation in the curriculum of natural phenomenon into subjects, the focus on natural sciences and lack of attention to the human-made world of engineering and technology, and the disconnect of coursework from the lives of students."
Think-Scape

21st CENTURY SKILLS IN THE IMMERSIVE LEARNINGSCAPE

THE IMMERSIVE LEARNINGSCAPE - THINK-SCAPE

Think-Scape
UPCOMING IMPLEMENTATIONS

Invest Collegiate Charter School, Charlotte, NC

Oakdale Elementary School, Rock Hill, SC
The dogmas of the quiet past are inadequate to the stormy present. The occasion is piled high with difficulty, and we must rise -- with the occasion.

As our case is new, so we must think anew, and act anew. We must disenthrall ourselves, and then we shall save our country.”

Abraham Lincoln

Click [here](#) for the Immersive LearningScape video
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