

Arts & Education Forum 2011
May 11-13

Aesthetic Learningscapes
Exploring Elegant Environments

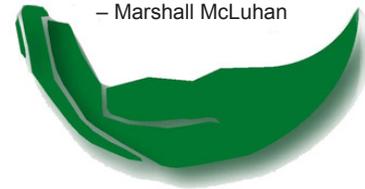


The University of Tennessee at Chattanooga



environments are not just containers
but are processes that change the content totally

– Marshall McLuhan



The one-room schools of the 19th century gave way to the Ford Model schools of the early 20th century, which have unfortunately persisted into the 21st century constricting education with a cells-and-bells paradigm. The social, cultural, affective, technological, and economic aspects of educational climates urge us to consider dynamic classrooms, a broader curriculum, and a more cohesive vision for learning.

The Southeast Center for Education in the Arts' 4th Arts & Education Forum convenes educators, artists, and other professionals from diverse backgrounds to actively explore the changing environments in which we teach and learn. Through transformative discussions, visual brainstorming, and artistic problem solving we will shift our thinking beyond the stereotypical and design elegant environments for education.

Our charrette features participatory interaction over passive listening; monologic presentations are out and collaborative explorations are in. You will initially engage in team building exercises at the Challenger Learning Center and experience the Voyage to Mars simulation. Modeling expeditionary learning, field trips around Chattanooga will broaden recognition of the diversity of learningscapes and community partnerships

Working in teams and drawing on our combined interdisciplinary knowledge and skills, we will envision and design learningscapes that elegantly embody physical, psychological, instructional, and aesthetic elements for effective teaching and learning.

We look forward to participating with you in a challenging but intellectually and artistically stimulating enterprise.



Kim Wheatley – executive director
Susanne Burgess – director of music education
Joel Baxley – director of visual art education
Laurie Melnik – director of theatre education
Mary LaBianca – director of music education
Redeitha Weiss – administrative assistant

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The term *learning environment* suggests place and space – a school, a classroom, a library. And indeed, much 21st century learning takes place in physical locations like these. But in today's interconnected and technology-driven world, a learning environment can be virtual, online, remote; in other words, it doesn't have to be a place at all. Perhaps a better way to think of 21st century learning environments is as the support systems that organize the condition in which humans learn best – systems that accommodate the unique learning needs of every learner and support the positive human relationships needed for effective learning. Learning environments are the structures, tools, and communities that inspire students and educators to attain the knowledge and skills the 21st century demands of us all.

– P21: Partnership for 21st Century Skills

The term *learning environment* encompasses learning resources and technology, means of teaching, modes of learning, and connections to societal and global contexts. The term also includes human behavioral and cultural dimensions, including the vital role of emotion in learning, and it requires us to examine and rethink the roles of teachers and students because the ways in which they make use of spaces and bring wider societal influences into play animates the educational enterprise.

Space becomes environment when it is stretched to include a broader sense of place, as well as the people who participate and the culture in which these elements are situated. As the model of teaching and learning evolves from the transmission of information to the creation of knowledge, students and instructors become equal partners in the learning enterprise. Effective learning environments promote active learning, critical thinking, collaborative learning, and knowledge creation. They break learning out of isolated courses or topics and expand it to include all areas of inquiry. Learning is art and science, physical and virtual, local and global. Conceiving and building intentional, thoughtful learning environments will contribute to a culture that puts learning into this context and improves education.

What, then, does an effective learning environment look like? To be sure, there isn't a single answer to that question. Environments – with their multiplicity of players, forces, and systems interacting – are dynamic, changing in response to the complexity of causes and effects arising from both inside and outside influences. The variables are many, and combinations that work well in one setting won't be ideal at other institutions, in different disciplines, or even in several sections of the same course taught by different faculty. Moreover, the fact that technologies and teaching methods will continue to evolve means that the job of creating effective learning environments is a journey, not a destination. What is clear is that we must begin to think in environmental terms about the factors that influence learning and strive to understand, test, measure, and evaluate how they work together as an interrelated system – an ecology of learning.

– Tom Warger and Gregory Dobbin. *Learning Environments: Where Space, Technology, and Culture Converge*

6:00 pm	Tennessee Room	everyone	Registration & Reception
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6:30 pm	Tennessee Room	everyone	ORIENTATION
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Whole Building Design Methodology

The typical architectural planning and design process relies on the expertise of specialists who work in their respective specialties somewhat isolated from each other. For this Forum, we will employ the *Whole Building Design** approach which engages integrated teams to look at design challenges from many different perspectives. Team members will draw from their unique knowledge pools to envision aesthetic and elegant learningscapes that embody affective atmospheres, social environments, learner-centered pedagogy, physical settings, and virtual space.

During our research, decision-making, and design process we will:

- Identify the challenge (cells-and-bells paradigm)
- Identify constraints (the box) and opportunities (imagination)
- Establish goals and objectives (design an aesthetic learningscape)
- Consider relevant information (excerpted readings)
- Document the design and the creative process
- Share and assess the resulting designs

* Edith Cherry and John Petronis. *Whole Building Design Guide*

- **Welcome and Forum Overview**

- **Cell and Bells** – see pages 15 - 16
-

- **Honoring the Learner** – see pages 17 - 18
-

- **Designing Learningscapes** – see pages 22 - 24
-

- **Affective Atmospheres** – see pages 27 - 28
 - learners' self reflection
-

- **Social Environments** – see pages 33 - 34
 - learner's association with others
-

- **Pedagogy** – see pages 29 - 32
 - learner's engagement with teachers
-

break

- **Physical Settings** – see pages 35 - 36
 - learner's interaction with place
-

- **Virtual Space** – see pages 37 - 38
 - learner's interface with the internet
-

- **Student Perspectives**
-

- **Reflection**
-

- **Team Assignments**
-

8:00 am	Tennessee Room	everyone	Registration & Breakfast
8:50 am	<i>walk to Challenger Center</i>		
9:00 am	Challenger Center	everyone	TEAM BUILDING Bill Floyd & Shane Berry
	<i>break</i>		
	Challenger Center	everyone	MISSION SIMULATION April King & Dana Smith
2:30 pm	Tennessee Room	everyone	Lunch
1:15 pm	Tennessee Room Chattanooga A Chattanooga B Chattanooga C Auditorium	Silver Team Red Team Blue Team Green Team Gold Team	DESIGN SESSION 1 
3:00 pm	<i>break</i>		
3:15 pm			VIEWPOINTS
	Tennessee Room Chattanooga A Chattanooga B Chattanooga C Auditorium	Well-being Libraries Online Learning Cognitive Psychology Interior Design	 Polly Curtis Theresa Liedtka Leslie Jensen-Inman John M. Haworth Sandy Hausler
4:15 pm	<i>break</i>		
4:30 pm	Tennessee Room Chattanooga A Chattanooga B Chattanooga C Auditorium	Silver Team Red Team Blue Team Green Team Gold Team	DESIGN SESSION 2 
7:00 pm	dinner on your own		

– see page 44

- Team Building Challenges
 - Team building exercises address shared leadership and working within limitations



- Voyage to Mars
 - Teams work both in Mission Control and the Mars transport vehicle

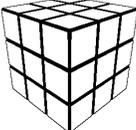


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- Determine target learners
 - Determine purpose and type of learning environment
 - Discuss planning strategies
 - Discuss design strategies
 - Explore characteristics of learning environments

In the perspective of every person lies a lens through which we may better understand ourselves. – Ellen J. Langer

- see pages 45 - 46
- see pages 47 - 48
- see pages 49 - 50
- see pages 51 - 52
- see pages 53 - 54

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- Discuss ideas from Viewpoints sessions
 - Explore characteristics of learning environments
 - Discuss expeditionary learning and who will visit each community site on Friday
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8:00 am	Tennessee Room	everyone	Breakfast
8:45 am	travel		
9:00 am	1601 South Market Street 1800 Rossville Avenue 55 East Main Street 321 Chestnut Street 109 North Germantown Road		FIELD TRIPS 
11:45 pm	travel		
12:00 pm	Tennessee Room	everyone	Lunch
12:30 pm	Tennessee Room Chattanooga A Chattanooga B Chattanooga C Auditorium	Silver Team Red Team Blue Team Green Team Gold Team	DESIGN SESSION 3 
3:45 pm	break		
4:00 pm	Auditorium	everyone	PRESENTATIONS INTERSECTIONS REFLECTIONS
7:00 pm			dinner on your own

Battle Academy	– see pages 57 - 58
Chenoweth.Halligan Studios	– see pages 59 - 60
CreateHere	– see pages 61 - 62
Creative Discovery Museum	– see pages 63 - 64
Signal Centers	– see pages 65 - 66

- Discuss ideas from community field trips
 - Refine and finalize learningscape designs
 - Document the design process
 - Prepare presentations
-
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- Share learningscape designs
 - Discuss commonalities and differences among learningscape designs
 - Reflect on ideas and lessons learned
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**THURSDAY 1:15 - 3:00**

- Determine Target Learners see pages 17 - 18
- Determine Purpose of Learning Environment
- Determine Type of Learning Environment

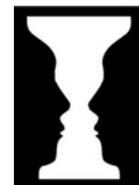
- Discuss Planning Strategies see pages 19 - 20
 - Visual Brainstorming
 - Transformative Discussions
 - Teamwork
 - Project-Based Learning

- Discuss Design Strategies see pages 21 - 22
 - Design Thinking
 - Conceptual Design

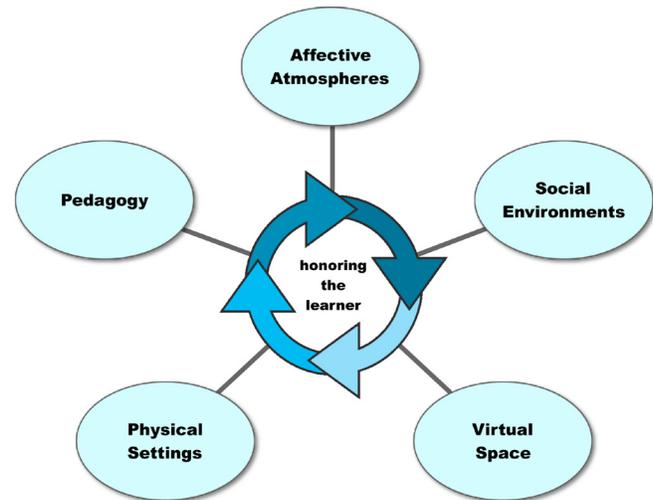
- Discuss
 - Learning Environments see page 2
 - Learningscapes see pages 23 - 24
 - Studio-Based Learning see pages 25 - 26

- Explore Affective Atmospheres see pages 27 - 28
 - What do you want to include in your design?

- Determine Who Will Attend Viewpoint Sessions
 - **Well-being** see pages 45 - 46
 - **Libraries** see pages 47 - 48
 - **Online Learning** see pages 49 - 50
 - **Cognitive Psychology** see pages 51 - 52
 - **Interior Design** see pages 53 - 54

**3:15 - 4:15****VIEWPOINT SESSIONS**

- Take notes and photos



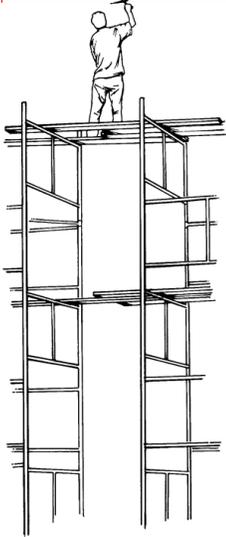
THURSDAY 4:30 - 7:00

- Discuss Relevant Ideas from Viewpoints Sessions
 - What do you want to include in your design?
-

- Explore Pedagogy see pages 29 - 32
 - What do you want to include in your design?
 - Explore Social Environments see pages 33 - 34
 - What do you want to include in your design?
 - Explore Physical Settings see pages 35 - 36
 - What do you want to include in your design?
 - Explore Virtual Space see pages 37 - 38
 - What do you want to include in your design?
-

- Discuss
 - Expeditionary Learning see page 43
 - Community Outreach see pages 55 - 56
 - Determine Who Will Attend Each Site on Friday Morning
 - **Battle Academy** see pages 57 - 58
 - **Chenoweth.Halligan Studios** see pages 59 - 60
 - **CreateHere** see pages 61 - 62
 - **Creative Discovery Museum** see pages 63 - 64
 - **Signal Centers** see pages 65 - 66
-

- Reflect on the Design Process
 - What is working? What is problematic?
 - What changes need to be made?
-



FRIDAY 12:30 - 3:45

-
- Discuss Field Trip Experiences
 - What were commonalities and differences?
 - What concepts should be integrated into the learningscape design?
-
- Explore Qualities of Learningscapes
 - Aesthetics see pages 39 - 40
 - Elegance see pages 41 - 42
 - What are the aesthetic features of the design?
 - What makes the design elegant?
-
- Refine the Learningscape Design see page 14
 - Have all relevant considerations for learningscapes been addressed?
-
- Reflect on Your Design Process
 - What was effective? What was problematic?
 - How could the process be improved?
-
- Prepare Documentation of the Design that Describes and Illustrates:
 - The target learner
 - The type and purpose of the learning environment
 - How the solution is an approach to creating a “learningscape”
 - The aesthetic qualities of the design
 - The elegance of the design
 - How the solution will lead to better teaching and learning
 - The working process of the team
-
- Determine the Format and Prepare Your Presentation
 - There is a 10-minute time limit.
 - . What are the exemplary aspects of your design and lessons learned during the process that you want to share to stimulate group discussion in the Intersections Session?
 - How will you present your design to the Forum participants?
 - . narrative story, metaphors see page 13
 - . powerpoint, charts, pictures, video, etc.
 - Who will make the presentation?
 - If time allows, practice your presentation.
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FRIDAY 4:00 - 7:00

PRESENTATIONS

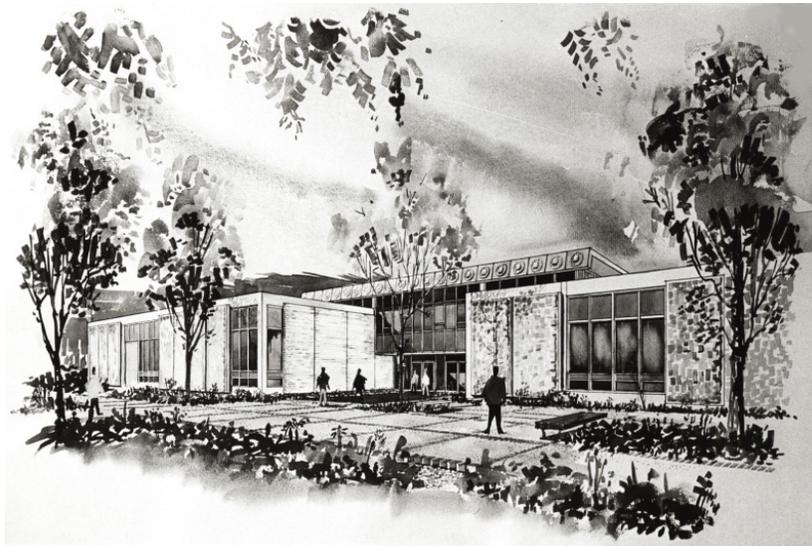
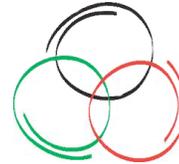
- Share 10-minute reports on each team's learningscape design and lessons learned during the process.
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INTERSECTIONS

- Discuss commonalities and differences among learningscape designs.

REFLECTIONS

- Reflect on ideas and lessons learned.
-



Communicating

Oral, written, symbolic, and nonverbal communications are processes by which we assign and convey meaning in an attempt to create shared understanding. Communicating requires a vast repertoire of skills in intrapersonal and interpersonal processing, coding and decoding, listening, observing, speaking, questioning, analyzing, and evaluating.

Story

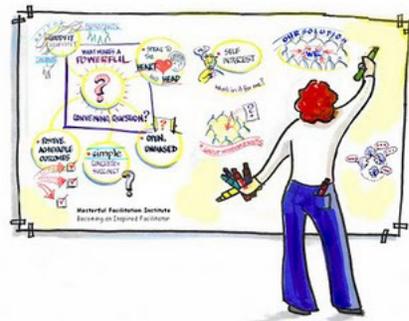
Narrative imagining – story – is a fundamental instrument of thought. Rational capacities depend on it. It is our chief means of looking into the future, of predicting, of planning, and of explaining. Most of our experience, our knowledge, and our thinking are organized as stories.

– Mark Turner. *The Literary Mind: The Origins of Thought and Language*

Metaphor

Understanding one thing in terms of something else – is an important element of synthesis. Metaphorical thinking is also important because it helps us understand others. Today, thanks to astonishing improvements in telecommunications, wider access to travel, and increasing life spans, we come into contact with a larger and more diverse set of people than any humans in history. Metaphorical imagination is essential in forging empathic connections and communicating experiences that others do not share.

– Daniel Pink. *A Whole New Mind: Why Right-Brainers Will Rule the Future*



Aesthetic Learningscape Considerations

Below are some ways in which learner-centered schools are being configured. Are any of these strategies reflected in your team's learningscape design? Should they be?

- *Learning Studios Instead of Traditional Classrooms*
Classrooms give way to multipurpose learning studios – places where different students are engaged with different tasks in various activity zones. Daylight is abundant, fixed furniture is eliminated, and there is adequate room for both individual space and group gatherings.
- *Kivas, Atriums, and 'Learning Streets' Replace Corridors*
Beyond the learning studio, new learning environments have fewer corridors where students run past one another and more open areas – both within and outside the building – where social interaction is encouraged.
- *Project Rooms for Project-Based Learning*
These rooms are high-ceilinged areas with ample power, work tables, and specialized equipment. They are places where students can work on long-term projects – usually building something. Such rooms are distinguished from the traditional science labs and art rooms in that they are not specialty-oriented. That means one student can be building an architectural model next to another who is painting a large canvas next to a student building a robot. As with the world outside school, projects don't start and end with bells, and students work on them at their own pace.
- *From Programmed Spaces to Resource Areas*
The school library or media center, cafeteria, and fitness center are resource areas that students can use as they see fit – not on some predetermined schedule.
- *Multi-age Groupings*
As a reflection of the real world, most student groups are based on aptitudes and interests and represent a range of ages.
- *Learning Outside School*
Older students spend a significant part of their time outside the school building, involved in community service and school-to-work programs, and all students share the wealth of the community's learning resources like libraries, parks, and museums.
- *Teacher Workrooms*
Places are provided for teacher research, collaborative work, and student meetings that treat teachers like the professionals they are.
- *A Place to Think*
Students have places to enjoy a moment of solitude, where they are allowed both the time and space to think or not think. Given the frenetic pace of modern daily life, the need for places that nourish the spirit and provide peace has never been greater.
- *Technology as Liberator*
With wireless laptops and other digital communications devices proliferating, and with the Internet readily accessible, there is less reason for students to be situated in a classroom to learn. The school day does not end when students leave the building. Learning continues at home, as students and teachers talk to one another via e-mail, or perhaps audio and video chat sessions. With more online course offerings, many classes have no connection with the school building at all. Classmates include those who share the same interests – in town, in another town, or even in another country.
- *Living, Not Static, Architecture*
The building is designed as a 'living' space for maximum flexibility and change, so the mix of learning areas – individual, team, small-group, and large-group – can be adjusted easily as needs vary.

– DesignShare. *30 Strategies for Education Innovation*

Little boxes made of ticky-tacky, and they all look just the same. – Pete Seeger

Being able to “think outside the box” presupposes you were able to think in it. – Bob Lutz

I don't think inside the box.
I don't think outside the box.
I don't even know where the box is!
– Scott Douglas Chase

Space as a Change Agent

Spaces are themselves agents for change. Changed spaces will change practice. Learning is the central activity of schools. Sometimes that learning occurs in classrooms (formal learning); other times it results from serendipitous interactions among individuals (informal learning). Space – whether physical or virtual – can have an impact on learning. It can carry an unspoken message of silence and disconnectedness. Or it can bring people together and encourage exploration, collaboration, and discussion. More and more we see the power of built pedagogy – the ability of space to define how one teaches. Spaces shape and change practice. Engaging, adaptable spaces energize students, teachers, and the community. Well-designed learning spaces inspire creative, productive, and efficient learning.

– Diana G. Oblinger. EDUCAUSE

Creativity is flight in restriction. – Francis Hodge



Leverage the Limits

Restraining forces rule. All artists work within the confines of their chosen media, and it's the limits that spur their creativity. The canvas edge, the marble block, the eight musical notes – the resources are finite. It's how you view and manage them that makes all the difference. Innovation demands exploiting limits, not ignoring them. Constraints can either hinder or spur ingenuity.

– Matthew E. May. *The Elegant Solution: Toyota's Formula for Mastering Innovation*

Think Inside the Box

In our culture today, everyone is told to think outside the box. Put aside the question of how much original thinking can be going on if everyone is rushing outside the box. The real question that arises when we hear this advice is, What's wrong with the box? It turns out that boxes – that is, limitations – can be incredible prompts to imagination. Limits beget inventiveness. Limits force open the imagination.

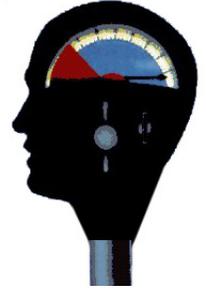
The architect David Rockwell noticed that his own children enjoyed playing more with the cardboard box that a new art table came in than with the table itself. The stunted, risk-averse plastic playgrounds of our era no longer capture the imagination of children. They'd rather just have a box. Rockwell began to conceive of a new kind of playground: unstructured, free, child-centered, and consisting almost entirely of raw ingredients. Loose parts made of wood and metal, sand, some water, multiple levels of platform and ground. “Playing with sticks,” Rockwell observes, “reminds us that in the best play there are no permanent artifacts.” There's just some stuff, and imagination.

The critical factor is intention. Our lives are boxed in by limitations, material and attitudinal, that we inherit or create. It takes intentional practice to see those limitations not merely as something to tolerate but as the source of new invention. When we can convert scarcity into an asset, we are not just playing well. We are living well.

– Eric Liu and Scott Noppe-Brandon. *Imagination First: Unlocking the Power of Possibility*

Time for Learning

21st century learning cannot fully flower when embedded in a rigid 19th century calendar. More malleable units of time than the typical 45-55 minute class period are required for project-based work or interdisciplinary concepts. Many schools are turning to block scheduling to create longer, more adjustable time slots for student learning, and for teaching planning and professional development. Schools must also move away from the antiquated notion of “seat time” – that is, measuring academic accomplishment by the amount of time spent on the topic, rather than a demonstration of what was learned. One marker whose time is up is the Carnegie unit, used by high schools to calculate how much time students should spend on a given subject. Establishing time during the day for teacher collaboration and planning is another way to advance 21st century teaching practice.



What seems certain is that learning does not happen on the clock. What is needed is a seamless approach to integrating all the forms of learning that occur in a student’s typical day. Powerful learning can happen outside of schools through internships, online learning, and community service. What counts is not the time spent in the school building, but the learning that the student masters.

– P21: Partnership for 21st Century Skills

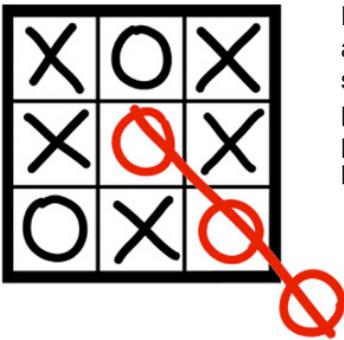
The Need for Timeless Schools

Time is a critical component that shapes educational systems and school buildings. However, it is an element whose impact is rarely considered in the design of schools because time-bound learning is a time-honored tradition that remains largely unchallenged despite enormous evidence that it precludes a great number of students from learning effectively.

Children are organized by chronological grouping, each attending school for one academic “year” per grade level, which is in turn broken down into quarters or grading periods. There is a long break in the summer and shorter breaks in the fall, winter, and spring. School itself is broken up into five time-bound sessions called pre-kindergarten, kindergarten, elementary school, middle school, and high school. And of course subjects are taught in clearly defined 45-55 minute periods.

Research shows how the idea of teaching students the same thing at the same time at the same pace is unworkable. We also know that learning doesn’t start or end with school. Learning is life-long. Schools need to reflect current educational wisdom which places far less emphasis on time and more emphasis on developing each student’s full potential at his or her own pace. Collaboration and teamwork and extending learning beyond school and into the outside community are all features of the timeless school.

– Prakash Nair. *Urban Educational Facilities for the 21st Century*



Teacher-Centered vs. Student-Centered

Who seriously believes that locking 25 students in a small room with one adult for several hours each day is the best way for them to be “educated”? In the 21st century, education is about project-based learning, connections with peers around the world, service learning, independent research, design and creativity, and, more than anything else, critical thinking and challenges to old assumptions. So, what can we do to begin changing our current practices and modernize schooling? It’s really quite simple. Change the educational paradigm from the largely teacher-centered model now practiced everywhere to a 21st-century, student-centered approach.

– Prakash Nair. *Don’t Just Rebuild Schools – Reinvent Them*



The industrial era had a long run, both gritty and great, but it’s over. The problem is, someone forgot to tell the education establishment. In schools across America, the factory model is still alive, and nowhere is it more readily apparent than in the classroom.

In these little factories, every day we can find teachers encouraged (and often compelled) to mass produce learning and marginalize the differences in aptitudes, interests, and abilities. The industrial-age classroom was not all bad in its time; after all, America did all right in its heyday. But this model is no place to prepare students for the fast-changing global society they will inherit.

As school planners and architects, we challenge communities and clients to explain why a regimental row of desks facing a chalkboard needs to remain as a school’s primary building block. We ask them to review the eighteen modes of learning below that educators accept as essential for success in today’s world, so they can recognize how a traditional classroom can accommodate only two or three of them.

20 Learning Modalities A School Must Support

arts-based learning	performance-based learning
design-based learning	play-based learning
distance learning	project-based learning
independent study	seminar-style instruction
inter-disciplinary learning	social/emotional/spiritual learning
internet-based research	storytelling
lecture format	student presentation
naturalist learning	team collaboration
one-on-one learning	team teaching/learning
peer tutoring	technology with mobile devices

– Prakash Nair, Randall Fielding, Jeffery Lackney
The Language of School Design: Design Patterns for 21st Century Schools

Using Design to Transform Teaching and Learning

A learning environment should support a child's natural instinct to learn through creation and discovery. Most of today's classrooms are designed with the teacher at the center. But if the classroom is focused on the learner instead, then learning becomes paramount.

- *Form follows function.* Teaching and learning should shape the building, not vice versa.
- *Imagine like a child.* Visualize an environment from a student's perspective. Survey students about what they would like to study, then design spaces that let them learn what they want to learn.
- *Think hands-on.* Children of all ages need places where they can learn by touching, manipulating, and making things with their hands.
- *Put theory into practice.* Give students space – studios, workshops, and laboratories – where they can test ideas for practical applications.
- *Expand virtually.* Make sure a classroom has the capacity to link into learning opportunities beyond its four walls.
- *Shuffle the deck.* Change up the locations of regular activities so students can explore new surroundings with their bodies and their minds.
- *Multiply intelligences.* Allow students time and space to choose what they want to do. Their choices will illuminate their individual strengths. Howard Gardner's multiple intelligences theory cries out for a variety of learning spaces – spaces in diverse sizes, materials, and colors with different transparency, connectivity, and agility.
- *Make classrooms agile.* A learning space that can be reconfigured in three minutes will engage different kinds of learners and teachers.
- *Display learning.* Posting student work, both current and past, upon the walls tracks progress in a visible way. Kids are producing aren't just two-dimensional and static anymore. The new generation is creating films and multimedia productions. With technology getting less and less expensive, multimedia presentation display is affordable – and essential.
- *Unite the disciplines.* Art and science need each other. Discoveries – great and small – happen when the two come together; so give students places for cross-disciplinary work, and who knows what creative genius will flourish.
- *Trigger the senses.* Our environments orchestrate our senses. There are myriad opportunities to integrate light, color, and material into the learning landscape and create teaching moments that will resonate with students on a visceral level. Sound, smell, taste, touch, and movement power memory. An environment rich in sensory experiences helps students retain and retrieve what they learn.
- *Put the fun in fundamentals.* Injecting a learning space with playfulness and humor creates a warm and welcoming atmosphere.

– *The Third Teacher: 79 Ways You Can Use Design To Transform Teaching & Learning*

Create Personalized Learning Communities

Break down the anonymity of the larger school by creating small, personalized learning communities of between 100 and 125 students and from four to six teachers. These communities would replace classrooms with multifaceted learning studios and common areas for various collaborative and hands-on activities. The idea is for each student to be known, respected, and educated at a very personal level. Positive relationships with adult mentors and older peers are keys to academic success and critical to the development of good social and emotional skills. This can only happen if students belong to a community that is small enough not to exceed its members' ability as human beings to relate on a personal level with other human beings.



– Prakash Nair. *Don't Just Rebuild Schools – Reinvent Them*

To tell a story now means grasping a new kind of language, which includes understanding how graphics, color, lines, music, and words combine to convey meaning.

– George Lucas, Edutopia

Visual Brainstorming



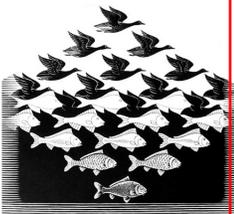
Think in pictures. Make your intentions visual and you'll surprise yourself with the image. There's a reason everyone talks about "the big picture." Pictures and images connect people to thoughts and goals and help turn valuable ideas into action. So get graphic. Start building a visual element into your thinking. Storyboard it, diagram it, mindmap it, whiteboard it, butcher-paper the walls and go crazy. Show progress against your goals in an appealing, unborning way. Show people the gripping picture of the future by telling the story in a powerful way, using imagery to describe the goal.

– Matthew E. May. *The Elegant Solution: Toyota's Formula for Mastering Innovation*

The Net Gen are more visually literate than previous generations; many express themselves using images. They are able to weave together images, text, and sound in a natural way. Their ability to move between the real and the virtual is instantaneous, expanding their literacy well beyond text. Because of the availability of visual media, their text literacy may be less well developed than previous generations.

– Diana G. Oblinger and James L. Oblinger. *Educating the Net Generation*

Transformative Discussions



Transformative learning is a process of examining, questioning, validating and revisiting our perspectives. It leads to re-evaluating past beliefs and experiences which have previously been understood within assumptions derived from others. In cooperative group learning, individuals share information and expertise in order to work together on a task. The emphasis is on the task rather than the process, and the experience is fairly structured.

In collaborative group learning, individuals work together to construct their own understanding of each other and their social world. The emphasis is on the process and the interactions among the people involved – listening to and respecting others, understanding alternative perspectives, challenging and questioning others, negotiating points of view, and caring for both the individuals and the group as a whole..

In transformative group learning, members engage in critical reflection in order to examine their expectations, assumptions, and perspectives about the world around them. The goal is increased self-awareness and empowerment through consciousness raising.

– Patricia Cranton. *Types of Group Learning*

Teamwork

A team is an interdependent collection of individuals who work together towards a common goal and who share responsibility for specific outcomes.

Teams need to leverage the potential benefits of various personal problem-solving styles establishing group relationships that balance varying perspectives on three dimensions:



- What's your orientation to change? Some people are explorers and some are developers. Explorers love new, radical and wild ideas. Developers prefer gradual, incremental change that is carefully orchestrated.
- How do you process change? Is it internal and reflective or external?
- How do you make decisions? Do you look for interpersonal harmony or are you task oriented?

– Karlyn Adams. *The Sources of Innovation and Creativity*

The Net Gen often prefers to learn and work in teams. A peer-to-peer approach is common, as well, where students help each other. In fact, Net Generations find peers more credible than teachers when it comes to determining what is worth paying attention to.

– Diana G. Oblinger and James L. Oblinger. *Educating the Net Generation*

Project-Based Learning

Project-based learning is a dynamic approach to teaching in which students explore real-world problems and challenges, simultaneously developing cross-curriculum skills while working in small collaborative groups.



Because project-based learning is filled with active and engaged learning, it inspires students to obtain a deeper knowledge of the subjects they're studying. Research also indicates that students are more likely to retain the knowledge gained through this approach far more readily than through traditional textbook-centered learning. In addition, students develop confidence and self-direction as they move through both team-based and independent work.

In the process of completing their projects, students also hone their organizational and research skills, develop better communication with their peers and adults, and often work within their community while seeing the positive effect of their work.

Because students are evaluated on the basis of their projects, rather than on the comparatively narrow rubrics defined by exams, essays, and written reports, assessment of project-based work is often more meaningful to them. They quickly see how academic work can connect to real-life issues – and may even be inspired to pursue a career or engage in activism that relates to the project they developed.

Adopting a project-learning approach can invigorate the learning environment, energizing the curriculum with a real-world relevance and sparking students' desire to explore, investigate, and understand their world.

– Edutopia. *Why Teach with Project-Based Learning? Providing Students With a Well-Rounded Classroom Experience*

Design thinking is a process combining empathy, creativity, and rationality for solving problems and discovering new opportunities. Unlike critical thinking, which is a process of analysis and is associated with the 'breaking down' of ideas, design thinking is a creative process based around the 'building up' of ideas. There are no judgments in design thinking. This eliminates the fear of failure and encourages maximum input and participation. Wild out-of-the-box ideas are welcome, since these often lead to the most creative solutions. Design thinkers discover patterns where others see complexity and confusion; they synthesize new ideas from seemingly disparate fragments; and they convert problems into opportunities.

Design thinking basically consists of four key elements:

- *Define the problem*

Another way to say it is defining the right problem to solve. Design thinking requires a team or person to always question the problem to be solved before embarking on its creation and execution. It also requires cross functional insight into each problem from varied perspectives as well as constant and relentless questioning, like that of a small child: Why? Why? Why? Until finally the simple answers are behind you and the true issues are revealed.

Defining the problem via design thinking also requires the suspension of judgment in defining the problem statement. What we say can be very different to what we mean. The right words are important. It's not "design a chair;" it's "create a way to suspend a person." The goal of the definition stage is to target the right problem to solve, and then to frame the problem in a way that invites creative solutions. Question: How many designers will it take to screw in a light bulb? Answer: Why a light bulb?

- *Create and consider many options*

Even the most talented teams sometimes fall into the trap of solving a problem the same way every time. Design thinking requires that no matter how obvious the solution may seem, many solutions should be created for consideration. And created in a way that allows them to be judged equally as possible answers. Looking at a problem from more than one perspective always yields richer results.

- *Refine selected directions*

A handful of promising results need to be embrace and nurtured, given a chance to grow protected from the evil idea-killers of previous experience. Even the strongest of new ideas can be fragile in their infancy. Design thinking allows their potential to be realized by creating an environment conducive to growth and experimentation, and the making of mistakes in order to achieve out of the ordinary results. At this stage many times options will need to be combined and smaller ideas integrated into the selected schemes that make it through.

- *Pick the winner and execute*

At this point enough road has been traveled to insure success. It's the time to commit resources to achieve the early objectives. The byproduct of the process is often other unique ideas and strategies that are tangential to the initial objective as defined. Prototypes of solutions are created in earnest, and testing becomes more critical and intense.

– Mark Dziersk. *Design Thinking ... What is That?*





Conceptual Design

Conceptual design is the creation, exploration, and presentation of ideas. Many different ideas are explored and evaluated before a final concept design is chosen. Conceptual design is about possibilities

Scenarios are stories describing a set of circumstances that may occur when the product being designed is in use. Most scenarios revolve around your user's accomplishing a particular task, so describe the interactions between that person and the product from beginning to end. Your collection of scenarios should ideally include an example of each major interaction you believe your users will have or should have with your product. A scenario can consist of just a few written paragraphs, but don't be afraid to add sketches, photos, or diagrams to bring the scenario to life.

While scenarios are imaginary, they're ideal to get you thinking about how you would like your product to work. Scenarios will help you both evaluate your product ideas and empathize with your personas as you imagine how they'll interact with your product.

As you continue to develop the product and determine how things will actually work, certain scenarios may no longer make sense, but that's OK. The point of scenarios is to challenge each new idea or feature with the questions whose answers will matter most for your users: 'How would that work?' and 'Why should my users care?'

The goal of conceptual design is to synthesize your goals, your initial ideas, and the information gathered from your research into a firm and viable product idea. It's up to you how long this takes, how many scenarios you create, and how much time you spend sketching out ideas. When you think you're done, ask yourself these questions:

- Do the scenarios make sense? Would a real person behave that way?
- Are we confident we've clearly defined who our product is for and why they will use it?
- How will our product differ from that of the competition?
- Do we have a general understanding of how we'll market this product?

– Forum. Nokia

Three Definitions of Learningscapes

- The full set of tools and services available to support and enhance learning
- A flexible and extensible learner-centric environment that provides resource and service supports using face-to-face, online and television models
- An environment which provides learners with access to a rich set of resources that they can use to construct new knowledge pathways and easily share their learning experiences with others

Who utilizes learningscapes? Learning communities, which are cohesive groups of students and others who participate in a learning opportunity, whether it be a class, project, or informal gathering of people with like interests. Learning communities can also be imagined as studios or ateliers, places where learners interact with each other and the tools at hand, with guidance from a teacher as a co-learner. A learning community can be defined as a peer-based group of learners who share a common goal in knowledge acquisition, creation and distribution, as well as a common landscape of resources and services, leading to learning as enculturation into this common goal.

John Seely Brown suggested a number of options that academic institutions could consider in order to “Rethink Learning in a Flat World”:

- Rethink how today’s digital students learn.
- Tap the natural curiosities and passions of students.
- Leverage peer-based learning communities.
- Leverage the open resources of the net.

While learning theories and models continue to develop, there are a number of well established best practices, such as the following Seven Principles for Good Practice in Undergraduate Education:

- *Encourage Contact Between Students and Faculty*
Frequent student-teacher contact in and out of classes is the most important factor in student motivation and involvement. Teacher concern helps students get through rough times and keep on working.
- *Develop Reciprocity and Cooperation Among Students*
Learning is enhanced when it is more like a team effort than a solo race. Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others increases involvement in learning. Sharing one’s own ideas and responding to others’ reactions sharpens thinking and deepens understanding.
- *Encourage Active Learning*
Learning is not a spectator sport. Students do not learn much just by sitting in class or in front of a TV listening to teachers, memorizing pre-packaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives. They must make what they learn part of themselves.
- *Give Prompt Feedback*
Knowing what you know and don’t know focuses learning. Students need appropriate feedback on performance to benefit from instruction. When getting started, students need help in assessing existing knowledge and competence. In classes, students need frequent opportunities to perform and receive suggestions for improvement. At various points during and at the end of educational sequences, students need chances to reflect on what they have learned, what they still need to know, and how to assess themselves.

- *Emphasize Time on Task*

Time plus energy equals learning. There is no substitute for time on task. Learning to use one's time well is critical for students and professionals alike. Students need help in learning effective time management. Allocating realistic amounts of time means effective learning for students and effective teaching for faculty. How an institution defines time expectations for students, faculty, administrators, and other professional staff can establish the basis of high performance for all.

- *Communicate High Expectations*

Expect more and you will get more. High expectations are important for everyone – for the poorly prepared, for those unwilling to exert themselves, and for the bright and well motivated. Expecting students to perform well becomes a self-fulfilling prophecy when teachers and schools hold high expectations for themselves and make extra efforts.

- *Respect Diverse Talents and Ways of Learning*

There are many roads to learning. People have different talents and styles of learning to school. Brilliant students in a seminar room may be all thumbs in the lab or art studio. Students rich in hands-on experience may not do so well with theory. Students need the opportunity to show their talents and learn in ways that work for them. Then they can be pushed to learn in new ways that do not come so easily.

With the wealth of online resources and tools it is sometimes easy to forget that physical place is necessary to the development of strong and vibrant learning communities. Learningscapes need to have additional physical spaces that encourage exploration, tinkering and creativity, as well as group work. They also need to provide online community spaces that facilitate the creation and sharing of new knowledge pathways by building cohesive groups.

Especially important is the presence of creative and collaborative spaces. A learningscapes “sandbox” would be a place where teachers, students and members of the community can go to experiment with new learning resources, tools, and techniques. It would focus on tinkering and ensure that the freedom to play was paramount. A learningscapes “collaboratory” would be a place where learners could meet to work together on coursework and interact not just with their class cohort, but also members of the wider community. The opportunities for mentoring, coaching, and training as well as collaborative approaches to learning would be exciting outcomes of an increase in physical learningscapes.

– University of Winnipeg. *LearningScapes*

Learningscapes



- Are flexible and extendable learner-centric environments that provide resources and service supports using face-to-face, online, and television model.
- A full set of tools and services available to support and enhance learning.
- Provide access to a rich set of resources students can use to construct new knowledge pathways and easily share their learning experiences with others
- Promote interaction and a sense of community that enable formal and informal learning
- Tap the natural curiosities and passions of students turning them loose to do more learning on their own
- Address the multiple and interconnected learning needs of the whole child

Walk into a studio art class, and you may feel you have left school. The students look relaxed; sometimes they sit on the floor or music plays softly. After materials are set up students dig in, not concerned about getting clay on their hands or paint on their jeans. You see the teacher introducing concepts and demonstrating, and then you watch as students become engrossed in the day's project. Often their work is part of a much longer project, already begun, extending for weeks. Sometimes a work of art by an established artist is displayed and discussed because something the artist did relates to the day's work. Students talk among themselves quietly as they begin to work, and the teacher circles around, watching for teachable moments and zeroing in on individual students with a comment, suggestion, question, or critique. At the end of class there is often a critique in which students gather to share and discuss their work, a session in which critical judgment and metacognition are nurtured. A studio classroom is much more complicated than it looks at first impression. The students who originally appeared so casual are actually working hard – they are thinking visually, analytically, critically, creatively.

Studio Social Climate

Studio teachers design informal and formal ways for students to interact with one another creating a social climate that nurtures learning.

Teacher-Student Interactions

As students make artworks, teachers observe and intervene. Such observation and responsive teaching is critical to student learning. Teachers are also aware and thoughtful of students' needs for privacy at times to develop a relationship with materials, tools, and their own work. By stepping back, teachers set an atmosphere of unobserved independence for the students, while remaining close enough to see what is going on and being ready to intervene with questions, suggestions, or demonstrations as the need and opportunity arise. Studio teachers' use of language models artful talk for students that helps them think about their work in more sophisticated ways. The language also conveys important messages about what is valued and possible in the classroom. Students internalize the vocabularies for thinking about art that teachers model.

Peer Interactions

Teachers also need to ensure that students feel safe and respected by each other. They create a climate where students are engaged with each other, collaborating and learning to participate in a community of artists.

Studio Teaching Formats

Studio teachers organize space, time, and interactions in their classes by using variations on just three studio structures: Demonstration-Lectures, Students-at-Work, and Critiques. These structures foster an apprentice-master-craftsman relationship between student and teacher creating an atmosphere in which student artists work as artists with other artists (teachers and peers). Demonstration-Lectures convey information, so they forecast whatever the assignment is meant to teach. The Students-at-Work structure emphasizes the growth and development of individual students, because it keeps the making of art at the center of the learning experience and allows teachers to shift attention flexibly from student to student and to carefully observe students and evidence of their learning as they work. Critiques support a dynamic flow of thinking among teachers and students that connects the intended learning in particular assignments with the ongoing enacted learning of individual students.

– Lois Hetland, Ellen, Winner, Shirley Veenema, Kimberly Sheridan.
Studio Thinking: The Real Benefits of Visual Arts Education

Classroom Designs Inspired by Creative Minds

In the coming years, no educational paradigm shift will be more forcefully felt than the enrichment of disciplines through cross-pollination. Context and connection are fundamentally changing the way teachers teach and students learn. Not only are we hurtling at breakneck speed into an era in which traditional hard lines between the arts and the sciences are blurring, but we are also doing so with one eye firmly fixed on the way design can help the left brain and the right brain work in harmony. How should the old-style classroom model evolve? Consider two illustrious thinkers who shaped the ideas of their times: Leonardo da Vinci and Albert Einstein. Destroying the traditional learning environment and creating something entirely new was a major challenge for these maestros, but here's what they came up with.

The Da Vinci Studio: Action Through Synthesis of Knowledge

In Leonardo da Vinci's world, the lines between the disciplines, pervasive in today's schools, were absent; the works he did as a scientist, mathematician, and artist all informed the other efforts. No wonder one can look at his scientific drawings and wonder whether they were meant to be works of art and at his artwork and marvel at its scientific rigor. This kind of free-flowing interchange was accomplished in a workplace that was part artist's studio, part science lab, and part model-building shop.

So, what would a modern-day da Vinci studio look like as a classroom? Imagine a place with lots of daylight and directed artificial light, connection to an outdoor deck through wide or rolling doors, access to water, power supplied from a floor or ceiling grid, a wireless computer network, lots of storage, a floor finish that is hard to damage, high ceilings, places to display finished projects, reasonable acoustic separation, and transparency to the inside and outside with the potential for good views and vistas.

To take full advantage of today's da Vinci studio, teachers would need to collaborate more, offer students the opportunity to work on real projects, and encourage cross-disciplinary thinking in a way rarely seen within the four walls of traditional, unrevised schools.



The Einstein Studio: Creative Reflection and Inspired Collaboration

Albert Einstein's workplace was more study than studio. Preferring solitude and connections to nature, Einstein gave himself lots of time to stay in his own head. Because so much of what he did was cerebral, his inspiration could have come during quiet walks and in places other than his primary workplace. His official workplace may simply have let him develop ideas he had generated elsewhere. And so, when we talk about the Einstein studio today, we do so more in a metaphorical sense than as a way to actually duplicate Einstein's workplace in the modern school.

We can imagine that today's Einstein studio might include a place that encourages creative reflection, an inspiring setting not sealed off from the world outside or from those real problems and issues that must always have some place in abstract theorizing. To imagine an Einsteinian classroom, conjure the various ways the main lobby of a five-star hotel is furnished: It welcomes people alone or in small groups, it offers comfortable furnishings, it may nurture aspiration and inspiration with high ceilings, lots of glass, and easy connection to natural elements and water features, and it creates zones of privacy that remain firmly connected to the activity throughout the larger space. The Einstein studio can also be a movable feast, a portable state of mind to be re-created around a shade tree in the spring or on a class nature walk.



Think also about connecting the Einstein and da Vinci studios – one a venue for inspiration,
the other a place for inspired action.

– Randall Fielding, Jeffery Lackney, Prakash Nair. *Master Classroom: Designs Inspired by Creative Minds*

When dealing with people
remember you are not dealing with creatures of logic, but creatures of emotion.

– Dale Carnegie

Social and emotional learning is the process of developing and supporting the affective competencies of students – self-awareness, social or other-awareness, relationship skills, self-management, and decision-making – through nurturing and caring learning environments and experiences. Affective education seeks to enhance students' growth in attitudes, interests, character, values, motivation, and other areas within the social-emotional domain. It is evident in programs focused on moral education, character education, conflict resolution, social skills development, and self-awareness. Environmental design should consider learning physiology. Learning spaces should be welcoming, comfortable, physically and emotionally safe, imaginative, and stimulating.

Communities for Learning

John Dewey long ago conceived of schools as “miniature communities” that mirrored the social relations and activities of the larger society in which they were set. Yet, too often, schools have been silos of isolation – classrooms isolated from other classrooms, teachers isolated from other teachers, schools isolated from the outside world.

One common element, though, unites all effective school communities: a commitment on the part of every member to the learning of everyone, children and adults alike. A climate of respect and trust among children and adults is essential to an effective and equitable school. Trust and respect also connote a commitment to the notion that every child deserves and wants to learn, and that every member of the school community is dedicated to every child's success – their whole success – as measured in their academic, social, emotional, and physical well being.

– P21: Partnership for 21st Century Skills



School Climate

What is school climate and why is it important? We can all remember childhood moments when we felt particularly safe or unsafe in school, when we felt particularly connected to a caring adult or frighteningly alone, when we felt particularly engaged in meaningful learning or not. These are the school memories that we all tend to vividly remember: good and/or bad. It is not surprising that these kinds of experiences shape learning and development.

However, school climate is larger than any one person's experience. When people work together, a group process emerges that is bigger than any one person's actions. A comprehensive assessment of school climate includes major spheres of school life such as safety, relationships, teaching and learning, and the environment. How we feel about being in school and these larger group trends shape learning and student development.

School climate is based on patterns of students', parents' and school personnel's experience of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures. Students, families and educators need to work together to develop, live, and contribute to a shared school vision of an environment where students are engaged and respected and feel socially, emotionally, intellectually, and physically safe. Educators must model and nurture attitudes that emphasize the benefits and satisfaction gained from learning. Everyone should contribute to the operations of the school and the care of the physical environment. A positive climate fosters youth development and learning necessary for a productive, contributing and satisfying life.

– National School Climate Center. *What is School Climate and Why is it Important?*



Affective Resonance

What is the “affective resonance” of your school? We hear about school climate and school culture but affective resonance? Human neurology is set up to respond to the emotional atmosphere of the social environment, its “affective resonance.” Have you ever noticed that when you are in an emotionally neutral state and you enter a roomful of people who are cheerful and laughing, your own affect changes and you become more upbeat? That is the effect of affective resonance.

What does this have to do with school climate? Everything! School climate is the affective resonance of your school. It is how an individual feels walking in the door of your school. Each individual has their own experience of a school's climate. Is this school a safe place for me? Am I treated with respect and acceptance here? Will I be treated fairly? Do I have close relationships here? These are big issues for each student and are key factors in developing feelings of connection to school. Each student's emotional experience at school each day produces for them an emotional response to walking in the door of school, a personal response to the affective resonance that they perceive. It will either increase or decrease their feelings of connection to school.

We must consistently model the behaviors and attitudes we want from our students, proactively, on a daily basis. This includes teaching students to think critically about their attitudes and beliefs, and to examine the origins and validity of these ideas. It is up to us to intentionally create a positive school climate and culture every day, in order to foster an “affective resonance” that is safe, welcoming and relational, and that promotes academic achievement, personal growth and connection to school.

– Chuck Sauffer. *Affective Resonance and Connection to School*



Our environment, the world in which we live and work,
is a mirror of our attitudes and expectations.

– Earl Nightingale

Changing the culture of schooling involves consideration of extending education, currently restricted by antiquated traditions of time and space, beyond the boundaries of the school building and the conventional school day, re-examining learning goals, and employing pedagogies that facilitate collaborative multidisciplinary experimentation, innovation, and knowledge creation. A shift from teacher-directed instruction to active problem-based exploration can develop skills needed in the 21st Century. Synchronous and asynchronous learning can connect students, teachers, families, and communities locally and globally.

– *Instructional Rounds: First Principle*

Education is about movement, metaphorically speaking, not about standing still. Students seem to learn best under circumstances that are not static, but fluid; in classrooms that are not stagnant, but energized; facilitated by leaders who know when to step back and let the learners show the way.

Kathleen Moylan, a history teacher, is particularly interested in how to make “what my students think are dusty old history documents come alive.” She finds she can do this best by infusing each of her content units with choice. She explains, “I give my students an opportunity to choose the types of assignments and projects they do when we tackle the content – most often they take on a project that keys into their learning style.”

Though thoughtful planning is central to creating dynamic learning environments, Moylan strives to capture the teachable moments in her classroom, no matter whether the student are working as a whole class, in small groups, or individually over the course of a lesson, a day, or a unit of study. The key is seizing the unplanned opportunities for learning that present themselves, changing tactics if necessary, and incorporating student feedback into every aspect of the lesson.

Creating a fluid learning environment in which teachers and learners work together creates the alchemic mix that makes a classroom a place of fluidity, energy and movement. The craft of teaching is one that involves continual exploration and experimentation – not standing still.

– Heather Ellwood. *Enriched Learning Environments*

CHANGE
THE culture
CHANGE
THE game

Reggio Emilia, Montessori, and Waldorf Schools

The values that are promoted for 21st century learning environments are neither innovative nor unique; the core elements are grounded in the pedagogical approaches of the Reggio Emilia, Montessori, and Waldorf schools that evolved during the 20th century. While each of these approaches is somewhat different, the tenets guiding 21st century indicate and support a learner who participates in an active learning environment. Furthermore, each of these approaches recognizes how the physical setting can influence teaching and learning. Unlike Reggio Emilia, Montessori, and Waldorf schools, contemporary learning environments are being envisioned as multiple environments with a variety of open and closed spaces where students with different learning styles will be encouraged to become engaged in learning activities.

The Reggio Emilia approach to preschool education was developed by Loris Malaguzzi (1920-1994) for the schools of the city of Reggio Emilia in northern Italy after World War II. Teachers are viewed as learners, the physical environment is understood as an integral component of the learning process, and the children's development occurs through the use of symbolic languages as they work through specific projects. The learning environment is nested within the surrounding community, the instructional spaces are nested within the school, and within these places the activity settings for large-group, small-group, and individual transactions are nested. The physical environment is designed with unobstructed site lines so students are afforded visual access from one space to another as well as outside the building. There are also flexible common spaces and the walls, ceilings, and floors are display areas.

Maria Montessori (1870 – 1952) was Italy's first woman to obtain a medical degree. But she is best known for her work in education where she developed pedagogy for teaching disadvantaged children. She understood that people acquire knowledge through their transactions with their social and physical environments. A Montessori school generally groups children into multiage classes spanning three-year periods. The Montessori teacher may be described as an unobtrusive facilitator who guides and observes children working individually or in small groups as they engage in self-directed activities. The teacher's goal is to encourage the children by allowing them to extend their problem-solving skills, develop confidence, and become responsible for their actions. Designed for independent work, classrooms are equipped with a full array of hands-on materials and equipment. Classrooms are not confined by interior walls, but instead allow activities to flow between learning spaces as well as from the inside to the outside environment.

Waldorf education was founded by Rudolf Steiner (1861-1925), an Austrian scientist and philosopher. His central belief was that each person must find a balance among body, soul, and spirit. A Waldorf school is coeducational, open to children from any background, comprehensive from preschool through high school, and independent of external control. While Reggio Emilia and Montessori school teachers are primarily nurturers, partners, and guides to children, Waldorf teachers play a performance role in the classroom, more restrained at the early childhood levels and more didactic in the elementary and secondary settings. Color, as well as the use of natural materials and carefully chosen props, are intrinsic to the uncluttered, warm and homelike aesthetically pleasing Waldorf environments. Learning is not confined to the classroom. Instead, students are encouraged to acquire knowledge through participation in the world outside the school setting while on nature walks, working in the garden, or constructing play shelters with found materials.

– Peter Lippman. *Evidence-Based Design of Elementary and Secondary Schools*

Interdisciplinarity

We live in a society that prizes depth in a single discipline over breadth in multiple areas. Innovation, however, demands that we see the world through multiple lenses at the same time, and draw meaning from seemingly disparate information.

Interdisciplinarity engages teachers and students in connecting and integrating several academic schools of thought, professions, or technologies in the pursuit of a common task. An interdisciplinary community or project is made up of people from multiple disciplines and professions who are engaged in creating and applying new knowledge as they work together as equal stakeholders in addressing a common challenge. They approach a problem from various angles and methods, considering diverse and even contradictory points of view, eventually cutting across disciplines and forming a new method for understanding the subject.

Cultivating interdisciplinarity as a habit of mind is essential to the education of informed and engaged citizens and leaders capable of analyzing, evaluating, and synthesizing information from multiple sources in order to render reasoned decisions. Interdisciplinarity requires that those involved have interactional expertise to improve their efficiency working across multiple disciplines as well as within the new interdisciplinary area.

Integrative education cuts across subject-matter lines, bringing together various aspects of the curriculum into meaningful association to focus upon broad areas of study. It reflects the interdependent real world, and involves the learner's body, thoughts, feelings, senses, and intuition in learning experiences that unify knowledge and provide a greater understanding than that which could be obtained by examining the parts separately.

– Betty Shoemaker and Jean Eklund. *Integrative Education. A Curriculum for the Twenty-First Century*



Celebrate Art, Dance, Music, and Theatre

The goal of arts integration is bringing the arts wholly and multidimensionality into the service of the learning mind. It leads toward interdisciplinarity, not via an inflexible commitment to cross-subject teaching, but because of the growing recognition that exposure to the arts enhances a student's prospect of learning and achieving in general. Not only do the arts foster a set of transferable academic competencies such as creativity, intellectual risk-taking, and the ability to see multiple solutions to a problem, but arts-rich curricula also enhance a student's likelihood to self-identify as a "learner." Within this frame, the arts are not only learned, they help constitute the process of learning itself.

– Michael Wakeford. *Putting the Arts in the Picture: Reframing Education in the 21st Century*

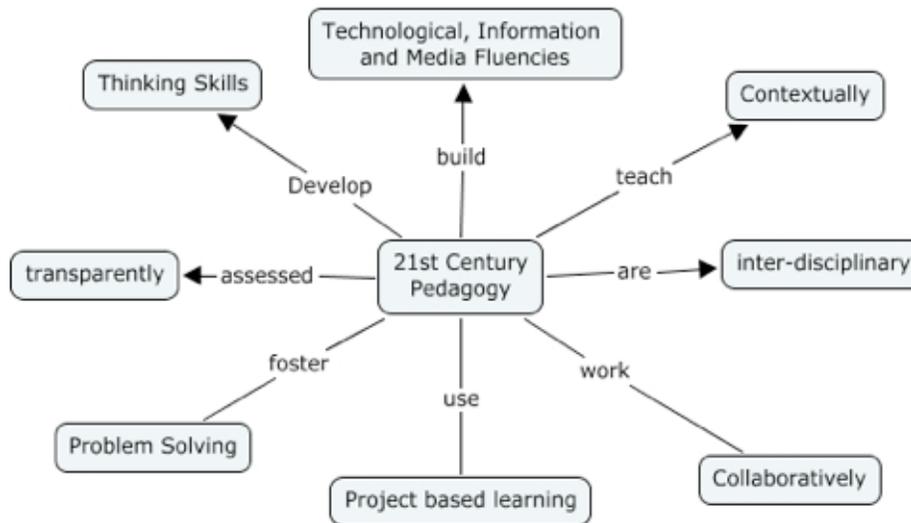
As Leonardo da Vinci proved, there is no inherent conflict between the sciences and the arts, but this understanding has been slow to seep into the educational mind-set. In fact, the sciences and the arts are much more closely aligned in the 21st century than at any other time in human history. In this creative age, artistic enterprises that have existed on the fringes of our education system need to assume their rightful place as the centerpiece of each student's educational experience. Schools should be encouraged to direct their facilities dollars toward changes that help improve their offerings in art, music, and performance.

– Prakash Nair. *Don't Just Rebuild Schools – Reinvent Them*

21st Century Pedagogy

Even if you have a 21st Century classroom – flexible and adaptable; even if you are a 21st Century teacher – an adaptor, a communicator, a leader and a learner, a visionary and a model, a collaborator and risk taker; even if your curriculum reflects the new paradigm and you have the facilities and resources that could enable 21st century learning – you will only be a 21st century teacher if how we teach changes as well. Our pedagogy must also change.

How we teach must reflect how our students learn, it must also reflect the world they will emerge into. This is a world that is rapidly changing, connected, adapting and evolving. Our style and approach to teaching must emphasize the learning in the 21st century.



We need to teach knowledge or content in context with the tasks and activities the students are undertaking. Our students respond well to real world problems and our delivery of knowledge should scaffold the learning process and provide a foundation for activities.

21st Century students, our digital natives, are collaborative, so our teaching should also model collaboration. A vast array of collaborative tools are available to – wikis, classroom blogs, collaborative document tools, social networks, learning management systems. These tools are enablers of collaboration, and therefore enablers of 21st century teaching and learning.

Today's students do not want abstract examples; rather they focus on real world problems firmly set in a basis of understanding. They also want what they learn in one subject to be relevant and applicable in another curriculum area. As teachers we need to extend beyond our areas of expertise, collaborating with our peers in other subjects to link and bind the learning in one area to the other. Projects should be encompassing, bringing together and reinforcing the learning in the disciplines. The sum of their learning will be greater than the individual aspects taught in isolation. This is a holistic overview of the education process, building and valuing each and every aspect of the 21st Century students' education.

We must be student centric. Our curricula and assessments are inclusive, interdisciplinary and contextual; based on real world examples. Our students are key elements in the assessment process, intimate in it from the start to finish, from establishing purpose and criteria to assessing and moderating. We must establish a safe environment for our students to not only collaborate in but also to discuss, reflect, and feedback in. We make use of collaborative and project based learning, using enabling tools and technologies to facilitate this. We develop key fluencies and make use of higher order thinking skills. Our tasks, curricula, assessments and learning activities are designed to build on the lower order thinking skills and develop higher order thinking skills. Our teaching must also be inclusive of the different learning styles our learners have.

– M. Wesch. Educational Origami

The creative individual has the capacity to free himself from the web of social pressures in which the rest of us are caught. He is capable of questioning the assumptions that the rest of us accept.

– John Gardner

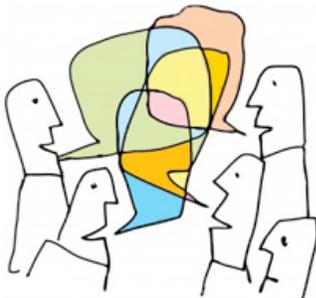
It's not enough to simply fill students' brains with facts. A successful education demands that their character be developed as well. That's where social and emotional learning comes in helping students develop the skills to manage their emotions, resolve conflict nonviolently, and make responsible decisions.

Although family, community, and society are significant factors in fostering emotional intelligence and character development, educators must create a safe, supportive learning environment and integrate SEL into the curriculum.

Research shows that promoting social and emotional skills leads to reduced violence and aggression among children, higher academic achievement, and an improved ability to function in schools and in the workplace. Students who demonstrate respect for others and practice positive interactions, and whose respectful attitudes and productive communication skills are acknowledged and rewarded, are more likely to continue to demonstrate such behavior. Students who feel secure and respected can better apply themselves to learning. Students who are encouraged to practice the Golden Rule find it easier to thrive in educational environments and in the wider world.

Teachers must establish an environment of trust and respect in the classroom. Empathy is key. Before students can be expected to unite to achieve academic goals, they must be taught how to work together with strategies and tools for cooperative learning. A productive classroom environment where students feel they can learn without concern for their emotional welfare.

– Edutopia. *Why Champion Social and Emotional Learning?: Because It Helps Students Build Character*



The Net Generation displays a striking openness to diversity, differences, and sharing; they are at ease meeting strangers on the Net. Many of their exchanges on the Internet are emotionally open, sharing very personal information about themselves. The Net Gen has developed a mechanism of inclusiveness that does not necessarily involve personally knowing someone admitted to their group. Being a friend of a friend is acceptable. They seek to interact with others, whether in their personal lives, their online presence, or in class. Sometimes the interaction is through an alternative identity. Significant numbers of teens assume an online identity that is different from their own.

– Diana G. Oblinger and James L. Oblinger. *Educating the Net Generation*



Communities for Learning

John Dewey long ago conceived of schools as “miniature communities” that mirrored the social relations and activities of the larger society in which they were set. Yet, too often, schools have been silos of isolation – classrooms isolated from other classrooms, teachers isolated from other teachers, schools isolated from the outside world.

One common element, though, unites all effective school communities: a commitment on the part of every member to the learning of everyone, children and adults alike. A climate of respect and trust among children and adults is essential to an effective and equitable school. Trust and respect also connote a commitment to the notion that every child deserves and wants to learn, and that every member of the school community is dedicated to every child’s success – their whole success – as measured in their academic, social, emotional, and physical well being.

Greater community and parental participation yields important educational advantages. The George Lucas Foundation cites numerous studies showing that strong home-school connections result in the following outcomes:

- Children do better in school when their parents are involved in their education
- After-school learning opportunities promote student achievement
- Community youth development programs spur academic performance
- Schools that integrate community services reduce risk and promote resilience in children

– P21: Partnership for 21st Century Skills

A learning environment, which extends from the school into the community and beyond, has cultural practices and social norms. The situational context of education includes linguistic, economic, social, cultural, and political factors, as well as conditions such as students’ personal characteristics, family support, and quality of instruction. All of these factors influence the lives of students and their academic performance. Greater attention inclusivity, interactive engagement, and social networking can develop the sense of community and trusting relationships needed for collaborative learning.

Professional Learning Communities

Leading experts are advocates for learning teams in which school members collectively pursue professional knowledge and skills and take on shared responsibility for the success of all students. Learning teams, also known as professional learning communities, engage in the reflective practice, collegial inquiry, collaborative work, and continuous innovation on which learning environments thrive. Schools need to foster new forms of professional relationships that build organizational capacity and enhance personal growth.

– P21: Partnership for 21st Century Skills



The aesthetic of architecture has to be rooted in a broader idea about human activities like walking, relaxing and communicating. Architecture thinks about how these activities can be given added value.

– Thom Mayne

Architectural design, operating with given constraints, focuses on the components of a structure or system and unifies them into a coherent and functional whole. Architect Louis Sullivan believed that “form follows function,” while Frank Lloyd Wright argued that “form and function are one.” Teachers and learners need flexible space and access to multiple resources for personal study and collaboration, instruction and exploration, and discussion and presentation. Adapting or designing buildings and natural learning environments incorporate structural and aesthetic choices that impact teachers’ and students’ intellectual stimulation, social interaction, and psychological well-being.

Since no one can predict how educational technologies and teaching modalities will evolve, learning spaces must adapt to whatever changes the future may hold. To achieve this flexibility, architects are designing classrooms, or “learning studios,” with moveable furniture and walls that can easily be reconfigured for different class sizes and subjects. The school building itself should inspire intellectual curiosity and promote social interactions. What goes for kids, goes for adults, too. Educators need tools and spaces that enable collaborative planning and information sharing.

– P21: Partnership for 21st Century Skills



To foster students’ sense of community and individuality:

- Cluster classrooms around common areas.
- Connect spaces visually with colors and patterns, particularly for primary school children.
- Provide platform spaces for gathering, sitting, and presenting and alcoves for quiet play, reflection, and reading.
- Decentralize administrative spaces to encourage active leadership and maximize interaction with students.
- Provide a “home base” for each student and teacher.

To ensure flexibility and adaptability for changing programs and enrollments:

- Use operable walls to increase the efficiency of large, multi-purpose spaces, such as the cafeteria and gymnasium.
- Accommodate technology upgrades.
- Allow classrooms to change with the activity and group size. This is particularly important in primary schools, where students typically stay in one room with one teacher throughout much of the day.

Studio Classroom: Designing Collaborative Learning Spaces

A new type of classroom design is becoming popular in K-12 and college environments. It's based on the desire to move away from the traditional lecture-based pedagogy toward what is referred to as "studio teaching." In this model, the instructor serves as a project facilitator, answering questions, providing resources, and moving around the room as necessary. Students work in groups and activities are structured to emphasize collaborative, active, student-based learning.

While the pedagogy is not new, the need to create learning spaces to meet the very specific needs of studio teaching has caused a dramatic re-thinking about how to design new classrooms. The most startling characteristic of these classrooms is that they don't have a recognizable "front" either visually or from the perspective of the place where you expect the teacher to be. And this has several implications for design and technology integration. Here is what you need to know about studio classrooms.

- Rooms are sized to allow for comfortable circulation and a certain messiness, even chaos, during classroom project activities.
- A good portion of the perimeter walls are made up of whiteboard writing surfaces, along with magnetic or corkboard tack surfaces for the display of paper-based materials created during class sessions.
- They have multiple electronic display surfaces oriented on different walls. Some are large projected images, using dedicated ceiling mounted projectors. The images projected onto these screens are used to engage larger groups of students or the entire class. Other displays are wall-mounted flat panels to display computer-based materials within smaller workgroups. Ideally there is also an interactive Smart Board.
- Furniture is lightweight, movable, and reconfigurable to accommodate workgroups of various sizes. The carpeted floor contains a grid of power and data outlets or connectivity is integrated within table surfaces.
- There is a small, possibly mobile, formal instructor's workstation. However, most of the time the instructor is a wanderer, listening in on discussions, answering questions, and furnishing resource materials.
- The room should have a dedicated computer and DVD player and be able to receive cable or satellite, as well as Internet based video
- Dedicated video origination capabilities, consisting of cameras located at the front and rear of the room would be used to capture classroom activities. These activities could be recorded, digitally, for later viewing, distributed anywhere in the building, or used for distance learning activities. Also video conferencing would allow collaboration with field teams and other remotely located groups. Guest lecturers would also participate this way as well.

These new kinds of spaces will not and should not replace all traditional classrooms as both configurations are necessary to meet the wide range of learning activities.

– Michael David Leiboff

Studio Classroom: Designing Collaborative Learning Spaces





We all live every day in virtual environments defined by our ideas.

– Michael Crichton

A virtual learning environment integrates a variety of connected digital devices and interactive online technologies to find, analyze, manipulate, create, and communicate information. Online communities can enable students to work in teams with peers, teachers, and experts both locally and internationally.

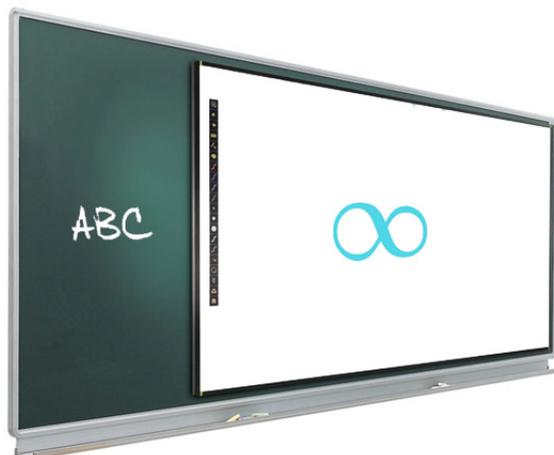
The term learning environment suggests place and space – a school, a classroom, a library. And indeed, much 21st century learning takes place in physical locations like these. But in today's interconnected and technology-driven world, a learning environment can be virtual, online, remote; in other words, it doesn't have to be a place at all. Perhaps a better way to think of 21st century learning environments is as the support systems that organize the condition in which humans learn best – systems that accommodate the unique learning needs of every learner and support the positive human relationships needed for effective learning. Learning environments are the structures, tools, and communities that inspire students and educators to attain the knowledge and skills the 21st century demands of us all.

– P21: Partnership for 21st Century Skills

When I think about what schools will be like in the decades to come, I imagine classrooms that are technology caves where, for example, children in Lincolnshire are virtually in a room with children in Korphe. The two groups see each other, they converse and interact, even though they are thousands of miles apart. What I am imagining is not a place but a relationship, a relationship between cultures.

As the world gets smaller, there is a growing urgency that we teach our children both to embrace identity and to navigate difference, not only with children down the block but also with children on the other side of the world. Our role as designers of schools is to understand what environmental characteristics support a collaborative approach to schooling. That is where learning occurs, and where communities – local and global – are built.

– John Syvertsen, OWP/P Architects

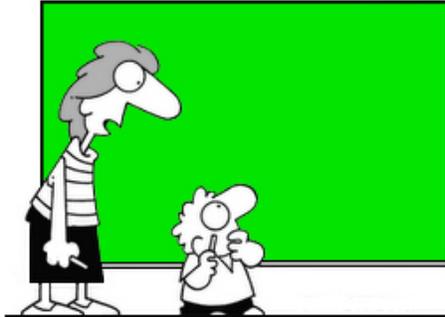


The Net Generation has grown up with information technology. The aptitudes, attitudes, expectations, and learning styles of Net Gen students reflect the environment in which they were raised – one that is decidedly different from that which existed when faculty and administrators were growing up. Individuals raised with the computer deal with information differently compared to previous cohorts. They develop hypertext minds and leap around. A linear thought process is much less common than bricolage, or the ability to piece information together from multiple sources.

Among other differences are Net Gen's:

- *Ability to read visual images*
they are intuitive visual communicators
- *Visual-spatial skills*
because of their expertise with games they can integrate the virtual and physical
- *Inductive discovery*
they learn better through discovery than by being told
- *Attentional deployment*
they are able to shift their attention rapidly from one task to another, and may choose not to pay attention to things that don't interest them
- *Fast response time*
they are able to respond quickly and expect rapid responses in return

– Diana G. Oblinger and James L. Oblinger. *Educating the Net Generation*



"There aren't any icons to click. It's a chalk board."

Make Technology Ubiquitous

Redress the imbalance between students' technology readiness and the schools' willingness to let them use it for learning at all levels. Students should have anytime, anywhere access to the Internet via high-speed wireless laptop computers, smartphones, and hand-held computing devices. Experts from all over the world should be able to pop in on demand via distance-learning programs accommodated by two-way videoconferencing facilities. Schools should be the coolest places in the community when it comes to high-end equipment and for testing new and experimental software.

– Prakash Nair. *Don't Just Rebuild Schools – Reinvent Them*

Virtual learning environments are a way to integrate the curriculum with information technology. Students of every ability level are motivated to create technology-enhanced projects using the Internet, online databases, scanned pictures and drawings, video clips, and hyperlinks. Virtual learning environment may be used to develop cultural experiences in the visual, creative, and performing arts; visit all types of museums, industries, governmental agencies, and institutions; expose students to different ideas through prominent and/or controversial persons; and provide advanced study in the content areas that include research activities. They can be an exciting learning approach for students because of the unlimited amount of information that is available online. Instant information is as close as a search engine away.

– C.F. Mulrine. *Creating A Virtual Learning Environment For Gifted And Talented Learners*

Things are pretty, graceful, rich, elegant, handsome,
but until they speak to the imagination, not yet beautiful.

– Ralph Waldo Emerson



Aesthetic Education

The term *aesthetics* was a term first used by the German philosopher Alexander Baumgarten in 1744 to mean “the science of the beautiful”. Aesthetic education involves all aspects of education that foster the creation of beauty and creativity in each individual student.

Maxine Greene defines *aesthetic education* as “an intentional undertaking designed to nurture appreciative, reflective, cultural, participatory engagements with the arts by enabling learners to notice what is there to be noticed. When this happens, new connections are made in experience: new patterns are formed and new vistas are opened. Persons see differently and resonate differently.

The importance of the physical appearance of a school should not be minimized. A building that is attractive and responds to and is consistent with the design and context of the neighborhood, builds a sense of pride and ownership among students, teachers, and the community. The exterior should complement the neighborhood and reflect the community’s values. The interior should enhance the learning process providing an environment that is visually comfortable and stimulating.

– *Whole Building Design Guide*

Aesthetics of Architecture

In *The Ten Books of Architecture* the ancient Roman architect Vitruvius stated that a building should meet obligations of commodity, firmness, and delight. Commodity addresses how a building serves its function and can be made more useful to the occupants. Firmness means endurance, or a building’s ability to stand up to natural forces over time. Delight refers to aesthetics.

Aesthetics is a branch of philosophy devoted to beauty. It dissects the visual compositional elements like proportion and line, as well as other formal qualities – auditory, tactile, olfactory, thermal, and even kinesthetic – that achieve beauty. Moreover, aesthetics involves studying concepts that may underlie the stamp of beauty, such as political context or expression of status. In the case of architecture, underlying concepts may also a sense of place and interpretation of available technology.

Specific values comprise style. Phrased another way, just as theories of beauty change according to generation or culture, so do the ways that beauty is manifested. The early 21st century is a remarkable period in architecture because it permits both pre-modern historical styles in great variety (Classicism and its many iterations, including Romanesque, Gothic, Victorian, Craftsman, Art Deco, Postmodern) as well as Modernist forms, which now have their own traditions.

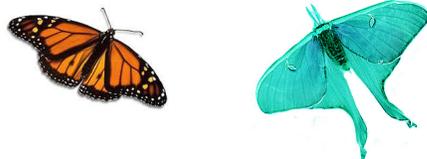
Aesthetically successful architecture comes from an integrated approach. By correctly formulating a project’s purpose and seeking inspiration in its programmatic requirements, an architect strives to arrive at a solution that is as delightful to the senses and to the intellect as it is cost-effective, safe, sustainable, accessible, and functional.

– *Understanding the Language and Elements of Design*
by the WBDG Aesthetics Subcommittee

Ten Principles for Good Design

Back in the early 1980s, Dieter Rams (associated with the Braun company and the functionalist school of industrial design) was becoming increasingly concerned by the state of the world around him – “an impenetrable confusion of forms, colors and noises.” Aware that he was a significant contributor to that world, he asked himself an important question: is my design good design? As good design cannot be measured in a finite way he set about expressing the ten most important principles for what he considered was good design. Here they are.

- *Good design is innovative*
The possibilities for innovation are not, by any means, exhausted. Technological development is always offering new opportunities for innovative design. But innovative design always develops in tandem with innovative technology, and can never be an end in itself.
- *Good design makes a product useful*
A product is bought to be used. It has to satisfy certain criteria, not only functional, but also psychological and aesthetic. Good design emphasizes the usefulness of a product while disregarding anything that could possibly detract from it.
- *Good design is aesthetic*
The aesthetic quality of a product is integral to its usefulness because products we use every day affect our person and our well-being. But only well-executed objects can be beautiful.
- *Good design makes a product understandable*
It clarifies the product's structure. Better still, it can make the product talk. At best, it is self-explanatory.
- *Good design is unobtrusive*
Products fulfilling a purpose are like tools. They are neither decorative objects nor works of art. Their design should therefore be both neutral and restrained, to leave room for the user's self-expression.
- *Good design is honest*
It does not make a product more innovative, powerful or valuable than it really is. It does not attempt to manipulate the consumer with promises that cannot be kept.
- *Good design is long-lasting*
It avoids being fashionable and therefore never appears antiquated. Unlike fashionable design, it lasts many years – even in today's throwaway society.
- *Good design is thorough, down to the last detail*
Nothing must be arbitrary or left to chance. Care and accuracy in the design process show respect towards the consumer.
- *Good design is environmentally-friendly*
Design makes an important contribution to the preservation of the environment. It conserves resources and minimizes physical and visual pollution throughout the lifecycle of the product.
- *Good design is as little design as possible*
Less, but better – because it concentrates on the essential aspects, and the products are not burdened with non-essentials. Back to purity, back to simplicity.



– Dieter Rams. VITSOE

$$E=mc^2$$

Simplicity is the ultimate sophistication.

– Leonardo da Vinci

Everything should be made as simple as possible, but not simpler.

– Albert Einstein

“Think simple” as my old master used to say – meaning reduce the whole of its parts into the simplest terms, getting back to first principles.

– Frank Lloyd Wright

An elegant solution to a math problem is one that requires less time and work.

– Russ Rowlett

Seven Tips on Elegant Design

I’ve been on quest to understand a special breed of ideas: *elegant solutions*. Scientists, engineers, mathematicians have long embraced the elegant solution, devoting their careers to explaining and expressing vastly complex concepts in the simplest possible terms, theories, and equations. But to the everyman, an elegant solution is difficult to define. The dictionary doesn’t define it. It defines elegance, though, this way: “marked by concision, incisiveness and ingenuity; cleverly apt and simple, as an elegant solution to a problem.” That doesn’t really define elegance as much as it describes it. And it doesn’t really help us craft an elegant solution in useful, practical way.

I knew what elegance isn’t: confusing, wasteful, excessive, unnatural, hazardous, hard-to-use, and ugly. Those are the “seven dirty words” any one of which will qualify something as *inelegant*.

I happened to read an essay by Jim Collins, the last paragraph of which grabbed me and completely changed how I viewed the world. It was one of those moments of epiphany, of clarity. It read:

“A great piece of art is composed not just of what is in the final piece, but equally what is not. It is the discipline to discard what does not fit – to cut out what might have already cost days or even years of effort – that distinguishes the truly exceptional artist and marks the ideal piece of work, be it a symphony, a novel, a painting, a company, or most important of all, a life.”

I suddenly realized that I had been looking at the problem in the wrong way. As is natural and intuitive, I had been looking at what *to do*, rather than what to *not do*. My new perspective allowed me to define an elegant solution for myself as one that achieves the maximum effect through the minimum means. And it allowed me to describe elegance more succinctly than the dictionary does. Elegance is the unique pairing of two often contradictory qualities: extreme simplicity and surprising impact.

These are seven lessons I’ve learned.

- What isn’t there can often trump what is.
- The simplest rules create the most effective order.
- Limiting information creates intrigue.
- Restraint and removal allows the receiver to collaborate.
- View limited resources as the source of innovation.
- Doing something isn’t always better than doing nothing.
- Break is an important part of any breakthrough.

Keep these principles in mind as you begin crafting and shaping your next great idea!

– Matthew E. May. *In Pursuit of Elegance: Why the Best Ideas Have Something Missing*

7 Principles of Japanese Aesthetics

The seven principles are interconnected. Our creativity comes in play not only in how we use each of them, but in how we find our own inspired balance among them all.

不均整

Fukinsei

asymmetry or irregularity
imperfection that is part of existence

自然

Shizen

naturalness
absence of pretense or artificiality
creative intent unforced

脱俗

Datsuzoku

freedom from habit or formula
escape from daily routine or the ordinary
transcending the conventional

簡素

Kanso

simplicity or elimination of clutter
clarity achieved through exclusion of non-essential

渋味

Shibumi

beautiful in understatement
elegant simplicity, articulate brevity

幽玄

Yugen

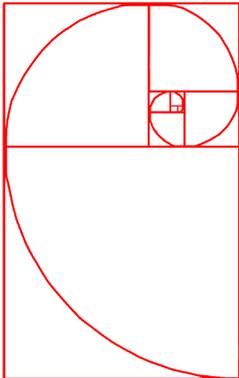
profundity or suggestion rather than revelation
subtleties and symbolic elements showing more
by showing less

静寂

Seijaku

tranquility
solitude
a feeling of active calm and stillness

– Japanese Aesthetic Principles to Change Your Thinking



Great innovation requires understanding and appreciating the concept of elegance as it relates to solving important problems. An elegant solution is one in which the optimal outcome is achieved with the minimal expenditure of effort and expense.

An elegant solution is recognized by its juxtaposition of simplicity and power. The most challenging games have the fewest rules, as do the most dynamic organizations. The most memorable films have a simple message with complex meaning, touching a universal chord while allowing multiple interpretations. An elegant solution is quite often a single tiny aha! idea that changes everything. Finally, elegant solutions aren't obvious, except in retrospect.

Elegant solutions are all around us, waiting to be discovered. But they're no easy challenge. Elegant solutions require a working knowledge of the forces at play, and obstacles in the way.

– Matthew E. May. *The Elegant Solution: Toyota's Formula for Mastering Innovation*

Environmental Stewardship

A sustainable society is one that is environmentally viable, economically robust, and socially just and equitable, and one that meets the needs of the present without compromising the resources for future generations. Sustainability presumes that resources are finite, and should be used conservatively and wisely with a view to long-term priorities and consequences of the way in which resources are used. Superior sustainable practices simultaneously consider ecology, economy, social equity and aesthetic elegance.

– Physical & Community Planning, UC San Diego

We are crew, not passengers. – Expeditionary Learning Philosophy

Expeditionary Learning

Expeditionary learning is learning by doing, with a particular focus on character growth, teamwork, reflection and literacy. Instead of sitting in a traditional classroom each day, schedules are broken into projects that engage students, challenge their thinking, and teach them critical problem solving skills. Work may be done inside or outside the classroom, with a particular emphasis on Outward Bound expeditions that promote teamwork and challenge students to their physical and mental limits.

Ten design principles that reflect the values and beliefs of expeditionary learning are:



- *Primacy of self discovery*
Learning happens best with challenge, emotion and proper support.
- *Having of wonderful ideas*
Time is given to foster curiosity, experiment and make observations.
- *Responsibility of learning*
Learning takes place individually and as a group.
- *Empathy and caring*
Both students' and teachers' ideas are respected.
- *Success and failure*
Students learn from their failures and celebrate successes.
- *Collaboration and competition*
Education involves the integration of group and individual learning experiences.
- *Diversity and inclusion*
Students learn about their own communities and cultures, as well as others.
- *The natural world*
The cultivation of a direct and respectful relationship with the natural world is important.
- *Solitude and reflection*
Students and teachers are given time to explore their own observations and connect their thoughts.
- *Service and compassion*
Service projects are used to teach students the strength of service to one another and their community.

When these design principles are properly incorporated into the classroom experience, students develop curiosity, skills, knowledge and courage in a safe, supportive environment. They learn to imagine a better world and how to do their part to realize it.

– Public School Review



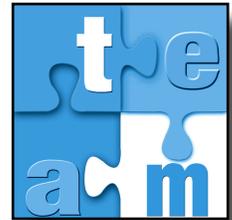
Challenger Centers are informal science education centers whose beginnings came as a direct result of the Challenger space shuttle tragedy in 1986. Surviving family members wanted to create a living memorial in honor of the Challenger crew. Their ideas spawned centers of informal science education that would be used to excite young people to study science, math, technology, and engineering in their exploration of learning.

The mission of the UTC Challenger STEM Learning Center is to create a scientifically literate population that can thrive in a world increasingly driven by information and technology. Their vision for the future is a global community where students command their own destinies by developing skills in decision-making, teamwork, problem solving, and communication. Approximately ten thousand students from the southeast visit each year to participate in simulated space missions that reinforce and introduce students to real-world applications of science principles and concepts discussed in their classrooms.

Team Building Challenges

Various exercises will address shared leadership while working within limitations. Focus is on communication, teamwork and problem solving.

attitude	enthusiasm	organization skills
communication skills	initiative	problem analysis
confidence	judgment	problem solving
decisiveness	motivation	sensitivity
delegation skills		tactical knowledge



During the exercises, reflect on what is happening.

- Can you think of alternative ways in which the problem could be resolved?
- Is someone being particularly helpful in resolving a problem? How?
- Are you experiencing any frustration? Why? How are you handling it?

Voyage to Mars Mission



The voyage begins in the year 2076 with a new crew of astronauts on route to the Red Planet. The purpose of their voyage is to replace the existing crew that has manned Mars Control for the last two years. Control of the incoming flight has been transferred from Mission Control, Houston to Mars Control at Chryse Station. Mars Control must safely guide the Mars Transport Vehicle (MTV) into Martian orbit and finally to a safe landing. Before returning to Earth, a probe will be launched to one of the Martian moons to gather data.



The session will create a space for reflection, relaxation and inquiry through a combination of movement, meditation, and somatic awareness exploration combined with reflective questions about learning. There will be an opportunity for the group to reflect and explore through writing, drawing, moving, singing our responses to the experiences.

Polly Curtis – Communications/Finance, PlayCore

The word *somatic* refers to the body as a whole.

Somatic Education

Our bodies are always ‘talking’ to us, offering us information about our subtle and not-so-subtle responses to the internal and external environments. Yet many of us are in the habit of ‘checking our bodies at the door.’ We step out of, or fail to recognize or utilize the wisdom of our physical bodies in our work. Yet our bodies don’t lie. How can we integrate the intelligence of the body in our moment-to-moment decision-making as a source of reliable and direct information? How can we learn to trust gut feelings or access the information buried in a headache? In our ‘thinking-oriented’ culture, many of us are cut off from this deep and direct source of wisdom. How can we learn to develop a more inclusive relationship with our own body in our decision-making?

Somatic education as an experiential approach to learning that includes the physiological intelligence of the body. Each cell in the body has an internal mechanism for learning. The cellular model of learning presumes that we are inherently conscious beings, able to learn through our experience.

- We can learn about the body through anatomy, physiology, development principles, and movement basics.
- We learn from the body by engaging awareness and tuning into the local intelligence within the body.
- Learning with the body can be a more active approach, engaging with the world through sensing, moving and responding.

Somatic education can happen in many ways, and each person can find a path that is appropriate to his or her needs. Somatic learning includes both inner and outer movement in action, receptivity, and stillness. Dynamic integration of all these elements involves exploring, healing, and learning with the body.

– Body Learning

Environmentally Healthy Schools for Healthy Students

Consider all the ways we insure our children’s safety. Car seats. Bicycle helmets. Mosquito repellent and sunscreen. Safety locks. Flu shots. Teaching them “stranger danger” and how to avoid being bullied on the playground. Playgrounds with rubber mats and inches of mulch to pad falling children and prevent injuries. Despite all these measures to keep children safe, most of us think nothing of sending our children to toxic school buildings to spend 7 hours a day, 180 days of a year, for 12-13 years of their lives.

What makes a school a healthy learning environment for millions of children attending them and the teachers and support staff working in them? “Green schools” need to take things further than providing recycle bins in every classroom and installing energy-efficient light bulbs. Most school buildings are industrial boxes with few windows and even fewer that open. Older buildings, while not full of asbestos any longer, often have poor ventilation and high levels of pollutants. Environmentally healthy schools provide a safe infrastructure and an environment that combine to produce healthy and safe students.

(continued at right under “green schools”)



Reflecting on Our Teaching

Enhancing learning for our students involves more than just understanding and being able to apply general learning and teaching principles or guidelines. Most importantly, it involves being able to make sense of what is going on in our classrooms, which means understanding our students and being able to respond appropriately to their needs and feedback. It also involves understanding ourselves as teachers, which means being aware of why we do what we do and the impact of this upon our students' learning. We develop this awareness and understanding through engaging in an ongoing process of reflection.

Reflection involves thinking about and critically analyzing our experiences and actions, and those of our students, with the goal of improving our professional practice. It allows us to adapt general guidelines of learning and teaching to our particular contexts and disciplines, and to our own particular teaching strengths and preferences.

It is a necessary component to becoming a scholarly teacher and a “reflective practitioner” engaged in continuous self-directed development and capable of making informed decisions about approaches to learning and teaching within particular disciplinary and academic contexts.

Most importantly, reflection helps us to develop our own learning and teaching framework that:

- allows us to consciously develop our own repertoire of strategies and techniques
- helps us take informed actions that can be justified and explained to others
- allows us to adjust and respond to issues and problems
- helps us to become aware of our underlying beliefs and assumptions about learning and teaching so we understand why we do what we do and what might need to change
- helps to promote a positive learning environment.
- helps us to locate our teaching in the broader institutional, social, and political context

Through reflection, our teaching becomes responsive to student feedback and needs, which can build trust in students when they see their feedback is valued and taken seriously through changes to teaching.

– Jan McLean. Learning & Teaching @ UNSW

Green schools, or environmentally healthy schools, by definition, should include:

- *Daylight*
Having windows in classrooms alters mood and behavior and reduces electrical use saving money and energy.
- *Transportation*
Efficient, safe, and emission free are good guidelines. Safe walking paths are ideal since they leave the least environmental impact and give children a chance to exercise and enjoy fresh air.
- *Good air quality*
Adequate ventilation and reduced environmental toxins mean healthier students.
- *Temperature control*
A well-constructed building won't have drafty classrooms or overheated classrooms.
- *Water use*
Safe drinking water should be available at water fountains. Low flow toilets and faucets reduce waste and use.
- *Access to nature*
Fresh air, exercise, playground areas, and green spaces for learning make children physically healthier and more able to think and learn.
- *Healthy food*
Chemical free, unprocessed, locally produced, nutritious food should be available for students. Many schools have instituted “healthy snack” policies and banned vending and soda machines.
- *No bad chemicals*
Environmentally healthy schools adopt integrated pest management and use nontoxic cleaning supplies.

These elements combine to make our students healthier and improve their ability to learn. These factors also combine to make public education cost-effective. What will you do to make your school greener?

– Eco Back-to-School: Environmentally Healthy Schools for Healthy Students

From inside to outside: how libraries are opening their virtual doors to accommodate the electronic needs of their users. This session will explore the physical and virtual design decisions for the new Lupton Library on the campus of UTC.

Theresa Liedtka – Dean, UTC Lupton Library

The definition of information literacy has become more complex as resources and technologies have changed. Information literacy has progressed from the simple definition of using reference resources to find information. Multiple literacies, including digital, visual, textual, and technological, have now joined information literacy as crucial skills for this century.

The continuing expansion of information demands that all individuals acquire the thinking skills that will enable them to learn on their own. The amount of information available to our learners necessitates that each individual acquire the skills to select, evaluate, and use information appropriately and effectively.

Learning has a social context. Learning is enhanced by opportunities to share and learn with others. Students need to develop skills in sharing knowledge and learning with others, both in face-to-face situations and through technology.

School libraries are essential to the development of learning skills. School libraries provide equitable physical and intellectual access to the resources and tools required for learning in a warm, stimulating, and safe environment. School librarians collaborate with others to provide instruction, learning strategies, and practice in using the essential learning skills needed in the 21st century.

– American Association of School Librarians. *Standards for the 21st Century Learner*

Personalized Resource Spaces

Good libraries have always been places where personalized learning has taken place, providing a variety of spaces for individuals and small groups to work together and often places for larger group presentations as well. Of course, they are also text-rich. The message in this type of architecture is, 'Here are some of the tools for you to learn with. You are a trusted learner. Go for it!'

Given that the Internet is now a ubiquitous presence in our lives, what's the point of a library when a world of information is available to us anywhere we have a computer or mobile phone? The Internet is like a library in many respects. Some things it does better than a library: it isn't as physically restricted; it contains far, far more information than the largest library in the world; and it has democratized media delivery.

However, a library can do some things better than the Internet. It not only has answers to our questions, past and present and future, it has a place, a physical domain in which we can become absorbed in those answers. It's comfortable and peaceful. It has humans in it! Librarians can help learners find and navigate their way through a wealth of resources.

– P. Hair and A. Gehling. *Rethink!*

Re-Conceiving the Library

The library media center should be the nerve center of the school, a place where students gather to get and create information, a place where they can get excited about learning and where they can escape from the pressures of the day.

The 21st century library media center must play multiple roles: carrying out its traditional role of bringing information resources to learners, of course, but also providing the tools and infrastructure that enable learners to analyze, synthesize, and evaluate resources in ways that demonstrate learning and create new knowledge. It must offer places for formal learning in which large groups can gather for presentations; places for social learning where teams can collaborate on projects; and places for individual learning where individuals can find a quiet space for reading, reflection, or relaxation. These centers must also connect students and adults to the wider world beyond the school by providing the audio and video communications technologies that build bridges between people and places all over the globe.

Some school media centers are borrowing an idea pioneered in higher education and transforming themselves into “learning commons” – hubs that support learners by providing library resources, IT tools and support, tutoring, and other academic support services, all in one central location. These new spaces show the promise of the 21st century school library – as a gateway to information resources and services, a design studio to spur creativity and collaboration, and a calm and orderly place to make sense of a data-flooded world.

– P21: Partnership for 21st Century Skills



New University of Tennessee at Chattanooga Lupton Library, due to open in early 2012

People of all ages, particularly children, are learning in, about, and through online tools. This session will explore the culture of electronic learning spaces and will discuss ways learners and educators enter and engage these environments.

Lesslie Jensen-Inman – Assistant Professor of Art, Design, and Technology
UTC Art Department



As long as they've been alive, the world has been a connected place, and more than any preceding generation they have seized on the potential of networked media. While highly mobile, moving from work to classes to recreational activities, the Net Gen is always connected. The particular device may change depending on circumstance (laptop, cell phone), but they are constantly connected and always on.

Whether it is the immediacy with which a response is expected or the speed at which they are used to receiving information, the Net Gen is fast. They multitask, moving quickly from one activity to another, sometimes performing them simultaneously. They have fast response times, whether playing a game or responding to an IM. In fact, more value may be placed on speed than on accuracy.

The Net Gen is oriented toward inductive discovery or making observations, formulating hypotheses, and figuring out the rules. They crave interactivity. And the rapid pace with which they like to receive information means they often choose not to pay attention if a class is not interactive, unengaging, or simply too slow. The Net Gen may need to be encouraged to stop experiencing and spend time reflecting.

The Net Gen is more comfortable in image-rich environments than with text. Researchers report Net Gen students will refuse to read large amounts of text, whether it involves a long reading assignment or lengthy instructions. The Net Gen's experiential nature means they like doing things, not just thinking or talking about things.

– Diana G. Oblinger and James L. Oblinger. *Educating the Net Generation*

A key term in thinking about these emergent shifts is participatory learning. Participatory learning includes the many ways that learners of any age use new technologies to participate in virtual communities where they share ideas, comment on one another's projects, and plan, design, implement, advance, or discuss their practices, goals, and ideas together.

Youth who learn via peer-to-peer mediated forms may be less likely to be excited and motivated by the typical forms of learning than they were even a decade ago. Too many conventional modes of learning tend to be passive, lecture driven, hierarchical, and largely unidirectional from instructor to student.

Digital technologies increasingly enable and encourage social networking and interactive, collaborative engagements, including those implicating and impacting learning. And yet traditional learning institutions, whether K-12 or institutions of higher learning, continue to privilege individualized performance in assessments and reward structures.

Institutional education has tended to be authoritative, top-down, standardized, and predicated on individualized assessment measured on standard tests. Increasingly today, work regimes involve collaboration with colleagues in teams. Multitasking and overlapping but not discrete strengths and skills reinforce capacities to work around problems, work out solutions, and work together to complete projects.

– C. N. Davidson and D. T. Goldberg. *The Future of Learning Institutions in a Digital Age*

The Distance Learning Environment

The Internet has had a profound effect on current educational environments. Students, teachers, and administrators use email, websites, browsers, and social media to access information for personal use or educational purposes. The Internet enables faculty to work and share academic research and other resources with colleagues and students. It also gives them, as well as their students, the option to work at a distance, away from the campus in their homes or other preferred places in an arrangement called distance learning. In synchronous courses, communication occurs in real time and is not time delayed. In asynchronous courses, instructor and students can log in to a class at their own convenience, not in the same real time.

To be successful, educators need to create a strategy for understanding:

- the affordances and constraints of the technologies they choose to use
- how these tools can be used to engage the learner in acquiring knowledge
- how these tools can be used to promote a more personalized environment in which information is freely distributed among the learners
- how situated learning allows for different social formations – independent, one-to-one, small groups, and large groupings

– Peter Lippman. *Evidence-Based Design of Elementary and Secondary Schools*

The Web and allied technologies can make each of these services more accessible, higher quality, and cheaper, even free to the student. Content, whether text, video, audio, or game-based, has progressed the farthest along that path. Interactive teaching algorithms can adapt to your learning style on the fly, allowing you to grasp concepts intuitively and at your own pace. The Internet hasn't just changed the way we consume information, though. It has also altered the way we interact. Social media can help students and teachers form learning communities.

– A. Kamenetz

Edu-punks, Edu-preneurs, and the Coming Transformation of Higher Education



Computer-Mediated Distance Education

Virtual education is the study of credit and non-credit courses from world-wide remote sites that are neither bound by time or physical location. In essence, a student hooks up with other students and an instructor in both real and virtual time. The shift in the teaching and learning paradigm (the old Carnegie model) is steadily evolving as technology itself does. Students are becoming more responsible for discovery and self-learning while teachers take on the role of facilitator. Occupying a seat in a physical classroom for a specific period of time is fast becoming the exception rather than the rule.

Computer-mediated distance education may not be for everyone. These classes tend to circumvent scheduling problems by allowing learners to make choices as to where and when they study and participate. This can also be the Achilles heel as it is easy to put off study with all the freedom technology provides. A big part of computer-mediated education is making the student more responsible for self-learning. Instructors in the online environment facilitate, leaving the student to find their own way. Some students like the idea of having an instructor meeting and leading class discussion with them at a regular time. In the virtual classroom students instructors come and go at all hours.

– John E. Reid, Jr. *What Every Student Should Know About Online Learning*

The session will focus on cognitive aspects of a learning environment, specifically drawing on ideas from positive psychology and self-efficacy. Participants will consider the idea of learningscapes as a state of mind, rather than a place. The conversation will be shaped by ideas from unschooling, and how it reinforces intrinsic motivation by allowing the student to pursue their own learning wherever it is available.

John M. Haworth – Head, Social & Behavioral Sciences Division
Chattanooga State Community College



Cognitive Psychology

Cognitive psychology is the branch of psychology that studies mental processes including how people think, perceive, remember and learn. As part of the larger field of cognitive science, this branch of psychology is related to other disciplines including neuroscience, philosophy, and linguistics. The core focus is on how people acquire, process and store information. There are numerous practical applications for cognitive research, such as ways to improve memory, how to increase decision-making accuracy, and how to structure educational curricula to enhance learning. Unlike behaviorism, which focuses only on observable behaviors, cognitive psychology is concerned with internal mental states. Unlike psychoanalysis, which relies heavily on subjective perceptions, cognitive psychology uses scientific research methods to study mental processes.

– Kendra Cherry. *What Is Cognitive Psychology?*

Positive Psychology

Positive psychology is the scientific study of the strengths and virtues that enable individuals and communities to thrive. This field is founded on the belief that people want to lead meaningful and fulfilling lives, to cultivate what is best within themselves, and to enhance their experiences of love, work, and play. There are three central concerns: positive emotions, positive individual traits, and positive institutions. Understanding positive emotions entails the study of contentment with the past, happiness in the present, and hope for the future. Understanding positive individual traits consists of the study of the strengths and virtues, such as the capacity for love and work, courage, compassion, resilience, creativity, curiosity, integrity, self-knowledge, moderation, self-control, and wisdom. Understanding positive institutions entails the study of the strengths that foster better communities, such as justice, responsibility, civility, parenting, nurturance, work ethic, leadership, teamwork, purpose, and tolerance.

– University of Pennsylvania Positive Psychology Center

Intrinsic Motivation

Most of us believe that the best way to motivate ourselves and others is with external rewards like money – the carrot-and-stick approach. That’s a mistake. The secret to high performance and satisfaction – at work, at school, and at home – is the deeply human need to direct our own lives, to learn and create new things, and to do better by ourselves and our world. There are three elements to intrinsic motivation:

Autonomy – We all long to be autonomous - to have control over our lives and destiny.

To the extent that we don’t have autonomy we feel something missing.

Mastery – We need to learn to master the tasks we are undertaking.

Purpose – We need to “buy in” to why we are doing things. There needs to be a reason.

– Daniel H. Pink. *Drive: The Surprising Truth About What Motivates Us*

Self Efficacy

Self efficacy is the belief in one’s capabilities to achieve a goal or an outcome. Students with a strong sense of efficacy are more likely to challenge themselves with difficult tasks and be intrinsically motivated. These students put forth a high degree of effort in order to meet their commitments, and attribute failure to things which are in their control, rather than blaming external factors. Self-efficacious students also recover quickly from setbacks, and ultimately are likely to achieve their personal goals. Those with low self-efficacy, on the other hand, believe they cannot be successful and thus are less likely to make a concerted, extended effort and may consider challenging tasks as threats to be avoided. Thus, students with poor self-efficacy have low aspirations which may result in disappointing academic performances becoming part of a self-fulfilling feedback cycle.

There are four sources of self-efficacy. Teachers can use strategies to build self-efficacy in various ways.

- *Mastery experiences* – Students’ successful experiences boost self-efficacy, while failures erode it. This is the most robust source of self-efficacy.
- *Vicarious experience* – Observing a peer succeed can strengthen beliefs in one’s own abilities.
- *Verbal persuasion* – Teachers and peers can boost self-efficacy with credible communication and feedback to guide the student through the task or motivate them to make their best effort.
- *Emotional state* – A positive mood can boost one’s beliefs in self-efficacy, while anxiety can undermine it. A certain level of emotional stimulation can create an energizing feeling that can contribute to strong performances. Teachers can help by reducing stressful situations and lowering anxiety surrounding events like exams or presentations.

– *On the Cutting Edge*

I am beginning to suspect all elaborate and special systems of education. They seem to me to be built upon the supposition that every child is a kind of idiot who must be taught to think. Whereas, if the child is left to himself, he will think more and better, if less showily. Let him go and come freely, let him touch real things and combine his impressions for himself, instead of sitting indoors at a little round table, while a sweet-voiced teacher suggests that he build a stone wall with his wooden blocks, or make a rainbow out of strips of coloured paper, or plant straw trees in bead flower-pots. Such teaching fills the mind with artificial associations that must be got rid of, before the child can develop independent ideas out of actual experience.

– Anne Sullivan

Unschooling

Unschooling is a range of educational philosophies and practices centered on allowing children to learn through their natural life experiences rather than through a more traditional school curriculum. Unschooling encourages exploration of activities led by the children themselves, facilitated by the adults. Unschooling differs from conventional schooling principally in the thesis that standard curricula and conventional grading methods, as well as other features of traditional schooling, are counterproductive to the goal of maximizing the education of each child.

– Wikipedia

The *genius loci* (spirit of place) of learningscapes draws upon the convergence of design and function of spaces. This session will explore the importance of the aesthetic and elegant choices to be made in creating the best environments for teaching and learning.

Sandy Hausler – Interiors. DH&W Architects

Sensations of experience become a kind of reasoning distinct to the making of architecture. Whether reflecting on the unity of concept and sensation, or the intertwining of idea and phenomena, the hope is to unite intellect and feeling, precision with soul. – Steven Holl

More than other building types, school facilities have a profound impact on their occupants and the functions of the building, namely teaching and learning. Students in various stages of development are impacted positively or negatively by light, color, the scale of their surroundings, even the navigational aspects of their school. They need a healthful and stimulating environment in which to learn which is comfortable visually, acoustically, and thermally. They should have excellent indoor air quality; and they should be safe and secure. These buildings should also be also good environmental citizens as they are teaching tools in and of themselves. – Ellen Larson Vaughan, Steven Winter Associates

Focus on Student Comfort

Change the intimidating, institutional design of most school buildings to one that is cheerful, colorful, and welcoming. Students (just like adults) need to be comfortable to learn. Almost every surface in school that students sit on is hard. To make things worse, the hard surfaces are rarely designed to be ergonomic. Reconsider the need for every student to be simultaneously seated on identical chairs. With a variety of furniture available, students are able to spend parts of each day standing, sitting on the floor and sitting on lounge chairs in addition to time on regular chairs. In addition to providing ergonomic seating and other furnishings, a school should have ample daylight, lots of fresh air, and well-designed artificial lighting and acoustics. Facilities that are created with respect for students are, in turn, respected by students.

– Prakash Nair. *Don't Just Rebuild Schools – Reinvent Them*

Design for Flexibility

The changing nature of work means greater mobility for workers, a multiplicity of workspaces within and external to buildings, greater use of geographically dispersed groups, increased dependence on social networks—and greater pressure to provide for all of these needs and behaviors in a leaner and more agile way. Workplaces have responded with many new options, including more teaming and informal interaction spaces, more supports for virtual individual and group work, more attention to integrating learning into everyday work experience, greater flexibility in work locations, and more focus on fitting the workplace to the work rather than vice versa. Many workplaces are also incorporating spaces that encourage relaxed engagement with colleagues to reduce stress and promote a sense of community. – *Whole Building Design Guide*



Color in Education



The choice of color used in schools can either enhance or impair learning, morale and behaviors. Throughout the years, color trends for schools have come, gone and changed. All the while, studies have shown that color affects a student's attention span and perception of time, and can reduce absenteeism and vandalism. What is a school to do? Is repainting every couple years required or helpful? Yes. Are there some colors that withstand the test of time? Yes, again.

The psychophysiological effects of color have entered common knowledge; generally, red and orange are stimulating, yellow is cheery, and blues and greens are calming. Warm and cool colors make people perceive temperature differently, either warmer or cooler as their name implies. In addition, cool dark colors seem to recede, whereas bright warm colors seem closer — something not lost on designers who need to use illusion to improve a space.

Young children seem to gravitate towards bright primarily warm colors, such as red and yellow. One study showed that children between the ages of five and eight rejected black, white, gray and dark brown. Instead, the youngsters preferred red, orange, yellow and violet. Warm and bright color schemes seem to complement the active, energizing nature of children. However, while color brightness and intensity are useful in attracting attention, they may not be conducive to learning.

For preschools and elementary facilities, mild, soothing colors – such as warm, soft shades of whites and light creams – work well as the anchor color. Stronger, brighter colors are recommended as accents and focal points. In this age category, it should be remembered that children's artwork is frequently on display, so the color scheme selected shouldn't compete with the artwork but, rather, should compliment or enhance the display.

Teenagers, on the other hand, view primary colors as immature. But they are often influenced by prevailing fashion. In selecting a color scheme for middle schools and high schools, subtle colors work well, such as light sage greens and refreshing blues and greens, with brighter, trendy and more saturated hues used as accent colors. In addition, the use of school colors also works to promote school spirit. Where computers are used a lot, eyestrain and glare are common problems. Mild and mid-toned wall and floor colors help reduce the contrast between workstations and surroundings.

In classrooms, students and teachers need to feel stimulated and motivated, but not so much so that the colors discourage concentration. An effective technique is to paint the teaching wall a deeper or brighter shade than is used on the sidewalls. This does two things: It attracts attention to the front of the classroom, yet the eyes get a visual break when focus is shifted to the sidewalls. Libraries don't need to be dreary, dull spaces. Actually, using color to warm and brighten these spaces encourages students to read. Walls and stacks lined with books can be energized with the use of colorful wall graphics. Frequently, libraries also contain computers, so remember to select colors that help reduce glare and eyestrain.

Auditoriums, gymnasiums and cafeterias are often poorly lit. In addition, their large size makes color selection a critical issue – bright colors on large expanses can easily overwhelm the space. Lighter warm tones or neutrals are recommended for the main color, with brightly colored accents to invigorate the room. Corridors and stairwells are ideal spaces for bright, happy colors to reflect school spirit. Lockers can be painted school colors. Combinations of colors also can be used effectively to color code sections of the building and aid navigation and traffic flow in a large or multistory building. Remember that color, as well as decorative patterns and textures, also can be added to the environment through furnishings, window treatments and floor coverings.





Community-Based Learning Strategies

Each of the following strategies brings a unique perspective and valuable resources to teaching and learning.

Academically Based Community Service

connects the academic mission of universities and schools with the aspirations of the communities that surround them. University faculty work with their public school colleagues to devise joint learning; university students enter schools as co-learners and role models for younger students; and university and school students share resources with each other.

Civic Education

aims to prepare competent and responsible citizens. It advocates civic and political engagement and provides active learning experiences that connect students' academic learning with civic involvement. The ideas and concepts emphasized are essential to constitutional democracy and highlight democratic concepts of relevance to students and their experiences.

Environmental Education

capitalizes on children's native curiosity about the natural world and the social relationships they find there by using the school's surroundings and the community as a framework within which students construct their own learning. This strategy is not primarily focused on learning about the environment. Rather, it uses the environment to give voice to students' natural interests and prior knowledge.

Place-Based Learning

uses the unique history, environment, culture, and economy of a particular place to provide a context for learning. Student work is directed toward community needs and interests, and community members serve as resources and partners in every aspect of teaching and learning.

Service Learning

integrates community service with academic study to enrich learning, teach civic responsibility, and strengthen communities. The service activity meets a community need identified by students. The activity is tied to academic goals and provides an opportunity for student reflection and celebration.

Work-Based Learning

is a strategy that allows young people to spend time with adults – whether in a mentoring relationship, role model situation, or informational interaction – to learn about careers. Its aim is to make learning relevant by incorporating industry valued standards to inform curricula and providing opportunities for contextual and applied learning.

– Coalition for Community Schools. *Community-Based Learning: Engaging Students for Success and Citizenship*

Connected to the Community

There are three separate aspects that make a school a community school. The first is its location in a place that is close to the heart of its community. The second are the ties the school makes to community businesses, organizations, industries and recreational amenities as a way to extend the school's learning potential beyond its own four walls. The third is the way the school itself is designed to be a welcoming place for the community – extending the so-called day so that the facilities are open very early in the morning and late into the evening.

– Prakash Nair, Randall Fielding, Jeffery Lackney
The Language of School Design: Design patterns for 21st Century Schools

The Importance of School and Community Collaboration

Most people would agree that it is considerably easier for children to develop and learn with the support of strong families who in turn enjoy the support of individuals and institutions in their surrounding communities. However, the increase in single-parent and dual-income families – coupled with the gradual disappearance of village-like communities – leaves a growing number of children and families woefully isolated from helping relationships, peer and emotional support, and access to referral services.

When families, schools, and community institutions (e.g., local businesses, community colleges, and health agencies) collectively agree upon their goals and decide how to reach them, everyone benefits. Schools enjoy the informed support of families and community members, families experience many opportunities to contribute to their children's education, and communities look forward to an educated, responsible workforce. Benefits accrue to the staff of schools and community agencies as well: they can observe boosts in morale, heightened engagement in their work, and a feeling that their work will net results.

Researchers and practitioners have documented for some time how schools and communities working toward common goals can be beneficial. Communities can provide schools with a context and environment that can either complement and reinforce the values, culture, and learning the schools provide for their students or negate everything the schools strive to accomplish. Communities also can furnish schools – and the students in them – with crucial financial support systems as well as the social and cultural values necessary for success and survival in contemporary society. Finally, communities have the potential to extend a variety of opportunities to students and to their families – social, cultural, and vocational.

Schools, in turn, offer communities a focal point of educational services for children. Symbolically, schools are seen by many as the last enduring public institutions in many communities. Instruction typically includes lessons in social and cultural skills, in addition to acculturation into mainstream values and ethics. Schools frequently provide employment for community residents and, in some cases, offer community services. Most important, schools have the potential to build well-educated citizens ready to take on responsibilities as contributing community members.

By working together, schools, families, and communities can prepare for a more promising future. In urban communities struggling against violence, unemployment, and deteriorating institutions, school-community collaboration offers hope for those who may have given up on the social institutions in their neighborhoods and cities. Rural communities searching for opportunities to revitalize themselves in a technologically sophisticated society can discover ways to bring themselves into the information age by intertwining school and community improvement initiatives.

– Leaders for Tomorrow's Schools



When students engage in learning, they are more likely to care deeply, work harder, and achieve their goals. Drawing on the assets of a community – its history, culture, resources, and challenges – can help schools build citizens while infusing academic course work with meaning and relevance. Rather than diluting the school curriculum, community-based learning strategies increase the intensity of learning and the likelihood that young people will transfer knowledge and skills to new situations. By fostering student interest in their own communities, these strategies sow the seeds of lifelong learning. When students see themselves as citizens, they take responsibility for what happens to their neighborhoods, communities, and country. The end result? Learning that lasts well beyond the last test and a commitment to service that lasts a lifetime.

Battle Academy for Teaching and Learning is a K-5 magnet school founded in 2002 as a result of an unprecedented partnership that came together to create an effective learning community for children who live downtown as well as for children of downtown working parents. The partnership included Hamilton County Department of Education, The University of Tennessee at Chattanooga, city and county government, downtown developers, and private philanthropists. The partnership envisioned a learning community consistent with current school reform models based on scientific research for educational design and best practices for teaching and learning.

Battle Academy's mission is to cultivate life long learners through rich and varied instruction, which focuses on the use of the multiple intelligences enabling students to become productive and respectful citizens. Teachers seek to sustain a safe and supportive learning community that affords all students multiple opportunities to be successful. The school was recognized as a Magnet School of Excellence in 2006.

Scott Rosenow (magnet, technology and arts education facilitator) notes: "The arts have changed the way our schools looks, the curriculum, and the use of spaces. The focus on MI is altering teaching methodologies that now incorporate technology and visual and kinesthetic learning in a multitude of ways."

<http://www.teacherweb.com/TN/BattleAcademy/Battle/h2.aspx>

Teaching With, About, In and Through the Arts

Arts specialists know how the arts offer a distinctive means to actively make meaning. Now growing numbers of teachers are using the arts to infuse other subjects with energy and relevance. The worth of the arts as unique disciplines, with specialist teachers in each discipline, is important, but preparing classroom teachers to include the arts as content disciplines and means of learning – as alternative modes for expressing and understanding self, others, and the world – can facilitate teaching with, about, in, and through the arts.

– Claudia Cornett. *Creating Meaning Through Literature and the Arts*



Third Space

The term *third space* describes the sets of relationships forged by the arts and the context these relationships create for teaching and learning. The term has a history in the arts in describing the way in which meaning exists, not in a view alone (the first space) or a piece of art (the second space), but in the interaction between the two – where the viewer brings his or her own experiences and imagination to bear in the interpretation of the artwork.

A similar third space is opened in the process of creating a work of art. The space is one between the artist and his or her medium in which the artist's imagination and skill combine with formal elements of an art form to create an artifact rich in meaning that stands on its own. This space allows the artist to try out and explore new ideas. In collaborative art forms, members of an ensemble enter this space together to create their work of art. They take on new identities, such as characters in theatre, as they explore relationships and meanings with others in the space.

Third space packs into a single metaphor the changes that students, teachers, artists, parents, and principals say happen to them and their schools when the arts are made a central feature of a school's philosophy and program. The term captures the rich environment that the arts create for learning, not just for learning the arts themselves but for learning other disciplines such as mathematics, social studies, language arts, history, and science, and for linking that learning to the concerns and daily lives of students.

– Lauren Stevenson and Richard Deasy. *Third Space: When Learning Matters*

Multiple Intelligences

Howard Gardner's theory of multiple intelligences proposes eight different intelligences to account for the broad range of human potential in children and adults. One of the most remarkable features of the theory is how it provides eight different pathways to teaching and learning:

- words – linguistic intelligence
- numbers or logic – logical-mathematical intelligence
- pictures – spatial intelligence
- music – musical intelligence
- self-reflection – intrapersonal intelligence
- a physical experience – bodily-kinesthetic intelligence
- a social experience – interpersonal intelligence
- an experience in the natural world – naturalist intelligence

The theory of multiple intelligences is intriguing because it expands our horizon of available teaching/learning tools beyond the conventional linguistic and logical methods (e.g. lecture, textbooks, writing assignments, formulas) used in most schools.

– Thomas Armstrong. *Honoring Diversity in Human Growth and Learning*

The Effects of Poverty on Teaching and Learning

Poverty is considered a major at-risk factor. Some of the factors related to poverty that may place a child at-risk for academic failure are: very young, single or low educational level parents; unemployment; abuse and neglect; substance abuse; dangerous neighborhoods; homelessness; mobility; and exposure to inadequate or inappropriate educational experiences.

Teachers need to be tuned in to the culture of poverty and be sensitive to the vast array of needs that children of poverty bring to the classroom. Social contexts have a significant impact on the development of children. The social world of school operates by different rules or norms than the social world these children live in. Focus should be placed on finding a harmonious relationship between the cultural values of students and values emphasized in school. Considering that so many different cultures are represented in our society, we often encounter students who belong to more than one cultural group. They may be poor in addition to being non-English speaking or of an ethnic/racial/religious minority group.

As teachers, these aspects of poverty make planning and preparation absolutely critical. Content needs to be related in varying ways to meet the needs of the diverse students in the classroom. We have to consider the cultural values of these children as we arrange their learning. Constructivism is a key concept in that it respects student differences and allows students to use their own prior knowledge and experiences to make connections and learn. It affords students the opportunity to become active learners by questioning, hypothesizing and drawing conclusions based on their individual learning experiences. If there is limited foundation for children to draw upon, we need to help them develop a base of knowledge and experiences so they have somewhere to start.

– teAchnology: The Online Teacher Resource

Indoor-Outdoor Connection

Human beings are genetically engineered to be outdoor animals and the need to be connected to the outdoors is never stronger than when we are young. Every opportunity should be explored to create strong connections between indoor spaces and outdoor areas such as learning terraces, kitchen gardens, shaded reading areas, natural creeks and other water features, nature trails, and playfields.

– Prakash Nair, Randall Fielding, Jeffery Lackney
The Language of School Design: Design patterns for 21st Century Schools

Chenoweth . Halligan Studios is a working studio space specializing in sculpture, mixed media, and painting for artists Jan Chenoweth, Roger Halligan, Mary Helen Robert, and Karen Rudolph. Front Gallery is home to a series of original exhibitions of contemporary fine art and crafts. Rather than being an ordinary commercial gallery, they put together shows they want to see, introduce artists, and show art that is not common in the region.

Since 2007, accomplished artists Jan Chenoweth and Roger Halligan have created, gathered, discussed, and shown their own work and that of other artists in and out of the Chattanooga area. The gallery and studio spaces continue as opportunities to spark and develop conversations between artists, their materials, and the community.

www.janchenoweth.com

www.rogerhalligan.com

Studio-Based Learning



Studio-based teaching is well-established in creative disciplines such as the arts and architecture, but is less frequently employed in other disciplines. The wider use of the studio model can be seen in teaching innovations such as problem-based learning. Students practice skills and techniques and learn new concepts while working in an environment that encourages learning by doing, working together, and seeking advice or assistance from mentors and tutors. The studio is an environment similar to that which students will experience in the workplace.

– Peter Jamieson. *A Studio-Based Approach to Teaching Information Technology*

A studio classroom is where students work in groups and are responsible for their own learning. Studio classrooms are not all the same, but all share common elements. They involve longer, fewer, class sessions with focused, intense, student activity. Any disconnect between laboratory and lecture time is absent because lab and lecture are combined. In fact, lectures are de-emphasized or eliminated altogether. Instead, students work together to solve in-depth problems and answer questions, sometimes moving from one workstation to another. Teachers serve as guides or mentors. The interactive classroom promotes holistic skills, including thinking, inquiry, creativity and reflection by students, frequently involving peer review and critiquing.

– Dexter Perkins. *Studio Teaching in the Geosciences*

In studio-based learning environments all work-in-progress is always made public. As a result, every student can see what every other student is doing. Moreover, everyone witnesses the thinking processes that others are using to develop their designs. And then there is the public criticism. What typically happens is that the master and several outside practitioners come in and critique each of the student's projects. The other students not only get to hear each other's critiques, but because they were in some sense peripheral participants in the evolution of each other's work, they understanding the thinking behind it. They have a moderately nuanced understanding of the design choices, the constraints, the unintended consequences of choices made early on, and the compromises that may underlay the final product. As a result, the criticism holds substantial significance and presents learning opportunities for all the students – not just the one whose project is being assessed.

– John Seely Brown

Student Display Space

Student display spaces by the school's entrance and throughout the building can make a powerful statement about the learning mission of the school. Displays should change frequently illustrating the dynamic vibrant learning that is taking place.

Student work displays don't always need to mean paper stuck to the walls, and in many cases this is an inappropriate form of display. Garden can showcase the authentic work of students and community. Electronic media allow students the opportunity for authentic publication of their work, and can be presented to the community online, in exhibitions and using projectors or large screens in prominent locations. Displays needn't be collections of near-identical finished work. They can highlight the journey of inquiry throughout a unit. Photographs of students at work show that the process of learning, as much as the end product, is valued by the community.

The best display of student learning is active learning itself. On walking through the school, the community is able to see the core business of the school: students engaged in meaningful activities.

– Prakash Nair, Randall Fielding, Jeffery Lackney
The Language of School Design: Design patterns for 21st Century Schools

Student Exhibitions

Many visual arts programs are lacking one major part of the artistic cycle, exhibition. Teachers place the burden of exhibiting student work on themselves instead of using exhibition as an opportunity to engage students with works of art and history in another way. Little attention is given to the fact that if artists do not show their work after they have created it, the work does not become a part of the history of art. By teaching students to participate in exhibitions you are teaching them to participate and complete the artists cycle.

The steps of exhibition:

- *Theme development*: the conceptual basis for the exhibition
- *Design*: based on the theme, why, how, and where work is hung
- *Installation*: the preparation and placement of artwork and space
- *Publicity*: reviews, catalogs and all written materials
- *Event/Assessment*: the opening event and opportunity for authentic assessment

By learning about all aspects of exhibiting, students are given another tool with which to create a connection with artistic mediums and history. The final goal is to infuse exhibition skills into every aspect of the curriculum as a natural part of learning and talking about art.

A public exhibition draws positive attention to the artwork being created by the students, and the art program in which they study. By drawing attention to their program the teacher is more likely to gather support and participation from the parents and community and therefore support from administration.

– Lynn A. Hatcher.

Exhibition In The Curriculum: Preparing Students To Complete The Artistic Cycle



CreateHere is a group of residents and new recruits working for arts, economic, and cultural development in the urban core. We put creative processes to work and connect locals around pressing issues, including safety, education, jobs, and talent retention. Our projects include a leadership development fellowship, a small business planning course, a grants program for creatives, and Stand, the world's largest community visioning effort. What inspires our work? A belief that place-making and connectivity are the source of innovation. Chattanooga is full of people with ideas, passions, and skills bigger and more diverse than our own. We work to connect, support and build.

We seek to re-energize Chattanooga's efforts to become a more dynamic city. We believe that creativity is the driving force of community renewal in the 21st century. We understand that the generation of creative capital requires new models of social connectivity and civic engagement.

CreateHere's mission is to engage Chattanoogaans to express their ideas, organize around common purposes, and take action in order to make Chattanooga the most dynamic, creative and entrepreneurial city in the world.

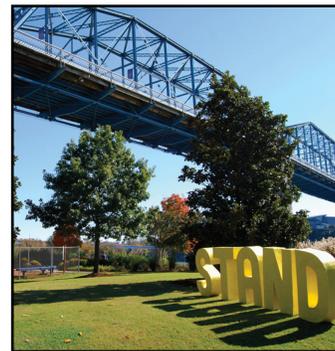
www.createhere.org



Civic Engagement

Civic engagement means working to make a difference in the civic life of our communities and developing the combination of knowledge, skills, values and motivation to make that difference. It means promoting the quality of life in a community, through both political and non-political processes.

Thomas Ehrlich. *Civic Responsibility and Higher Education*



A problem cannot be solved with the same consciousness that created it.

– Albert Einstein

The Net Gen readily takes part in community activities. Given a choice, they seem to prefer working on things that matter, such as addressing an environmental concern or a community problem. They believe they can make a difference and that science and technology can be used resolve difficult problems.

– Diana G. Oblinger and James L. Oblinger. *Educating the Net Generation*



Flexible Workspace

The concept of a flexible workspace has been around for some time, but since companies have placed a heightened focus on the environmental impact of their internal operations, and in particular their real-estate footprint, they have been grappling with implementing this kind of workspace strategy.

At Sabre we began to look at flexspace, as we call it, to save costs and reduce our environmental footprint. We wondered whether these principles could be applied to a business like ours where only some employees travel, and not all of the time. Our goal was to create greater flexibility and agility for our workforce. This strategy of “work is what you do, not where you go” accelerated a transformation in our employees and our work culture because not only did our employees adapt to the new flexspace environment, they began working more closely with each other, breaking down many of the silos between projects and departments. This created a more collaborative environment and ultimately strengthened our competitive position in the fast-evolving travel technology industry.

– Leilani C. Latimer and Sabre Holdings.

How Flexible Workspaces Can Transform Your Company's Culture

Collaborative Problem Solving



Most of the problems that we have today, we probably had — in a different degree—last week, last year or ten years ago. Einstein said it best: stop trying to figure out how to solve your own problems... it ain't working!

Any successful person has a team of people around him or her: consultants, employees, coaches, friends, family, psychologists, doctors, lawyers, accountants, etc. It is a rarity to find a wildly successful (and generally happy) person alone. Any time that we find ourselves in a [small or large] heap of a mess: in work, in our homes, with our friends... it is an opportunity to find a solution.

Finding a solution means we must be ready for a better experience. Then we have to become willing to ask for help. The ego will not want us to do that... but anyone with an unwavering commitment to success must be willing to admit when he or she is wrong and seek counsel from a third party who can provide feedback.

Today, if you are experiencing a situation that is beyond your mental comprehension... go out on a limb and pull someone on board to help you come up with a logical solution. You deserve peace of mind, success and happiness. Don't settle for anything less than that. You will be in good company (Einstein, myself and lots of other really smart people).

– Alison Hummel. *A Powerful Lesson in Problem-Solving*

The Creative Discovery Museum is a hands-on children's museum that provides educational programs and exhibits in the arts and sciences. The mission is to stimulate the creative spirit and natural curiosity of every child, create an excitement for learning through interactive exploration of the arts and sciences, and foster innovation and excellence as an educational resource. The museum has permanent and temporary exhibits and an array of education programs. The audience includes children, families, parents, teachers, caregivers, schools, and organizations that serve children. CDM collaborates with 40 community partners providing a variety of educational programs.

www.cdmfun.org



Exploration

We are powerful and natural explorers. Most developmental psychologists believe that a child's need to know is a drive as pure as a diamond and as distracting as chocolate. If children are allowed to remain curious, they will continue to deploy their natural tendencies to discover and explore until they are 101. Discovery brings joy. Like an addictive drug, exploration creates the need for more discovery so that more joy can be experienced. The words "Let's find out!" are exploratory magic.

– John Medina, *Brain Rules*

Emulate Museums

An environment rich in evocative objects – whether it's a classroom or a museum – triggers active learning by letting students pick what to engage with. Active learning occurs when people stretch their minds to interact with the information and experiences at hand. In museums, visitors are learning actively when they do such things as formulate their own questions about works of art and artifacts, reflect on their own ideas and impressions, make their own discerning judgments, construct their own interpretations, and seek their own personal connections.

As theaters of active learning, museums are distinct from schools in that they make their educational offerings without demand. In museums, visitors are free to move about at their own pace and to set their own agendas. They are free to choose whether to read wall text or take audio tours, free to follow a recommended trail through an exhibition or choose their own path. Museums invite learning rather than require it. When we're in charge of our own learning, we often do find opportunities to engage our minds, especially in environments rich with evocative objects and experiences.

– *Learning in Museums*

Play

Jean Piaget defined play as “actions that are an end in themselves and do not form part of any series of actions imposed by someone else or from outside. The kind of learning from which true knowledge follows isn’t a matter of passively absorbing and storing skills and information. Rather it is an active construction process, the building blocks of which are the kinds of discoveries that emerge from real play, whether it be with objects, ideas, or other people.” Real play, in other words, is its own reward. It involves imagination, improvisation, and quite often the natural world. It’s when kids engage in making-believe, horsing around, and inventing their own games. It’s when they paint, or draw, or sing, or dance, or write a poem or story, not in order to fulfill an assignment, but to answer the call of the Muse.

Research increasingly confirms the fundamental contributions play makes to every aspect of a child’s growth. Infants are born with an innate drive to understand and master their worlds. Fueling that drive is the biological and unquenchable desire to investigate the novel aspects of their environment, and to be persistent in their attempts to make them familiar. And novelty, of course, is the basic ingredient of play.

– Chris Mercogliano. *In Defense of Childhood: Protecting Kids’ Inner Wildness*



Most Net Generation learners prefer to learn by doing rather than by being told what to do. The role having grown up with video games plays in this preference is unclear, but Net Gen students learn well through discovery – by exploring for themselves or with their peers. This exploratory style enables them to better retain information and use it in creative, meaningful ways.

– Diana G. Oblinger and James L. Oblinger. *Educating the Net Generation*



Signal Centers is a community based non-profit organization funded through a variety of agencies, community groups, and charitable donations. The mission is to strengthen children, adults, and families through services focusing on disabilities, early childhood education, and self-sufficiency. The Center serves both typically-developing children and those with disabilities/special needs. Speech, feeding, occupational, and physical therapy are incorporated into classroom activities.

The Adults with Disabilities Program services those aged 18 and above providing opportunities to socialize while developing, maintaining, or increasing work and independent living skills. The Geriatric Program serves low-income individuals aged 60 and above who engage in activities to enhance their independent living skills, allowing their caregivers to maintain a day-time work schedule. The Therapeutic Playground for the Arts opened in 2010 as the first accessible, naturalized playground in Tennessee. There is a musical playscape installation, a tricycle path, and equipment accessible play nooks all surrounded by plants.

www.signalcenters.org

Curriculum is everything that happens, formally or informally, the moment the children arrive at the Center. For some children, this is the moment they are brought through the front door by their family member, and for others this is when they come off the bus with the assistance and supervision of a staff member. Indoor and outdoor curricula are inseparable as well. Experiences with imagination, language, problem-solving, motor planning, artistic expression, social awareness, and emotional coping are seamlessly connected. Children quickly learn these experiences transcend a specific location. When supported by engaged teachers, materials, and learning schemes, relationships become portable moving easily from outdoors to indoors and vice versa.

– Dr. A. Graham Parker, Director, Chattanooga Children's Program

We hold these truths to be self-evident: that all men are created equal.

Declaration of Independence, July 4, 1776



Access

In daily life, as we maneuver through society, nothing is more important yet taken for granted more often than access. For millions of people with disabilities, the access that most of us take for granted is difficult, impossible, or achievable only with the intervention of a third party. We live in what is considered an independent society, yet independent access to programs, facilities, and employment are not easily achievable by many. Physical access is historically the arbiter of success and the source of opportunity in education, employment, and social freedom. Thus, accessibility is a civil rights issue for many people with disabilities and for our society.

If we live long enough, all of us may eventually have a disability that requires a modification of the built environment. The number of Americans having a disability is projected to grow rapidly as our population ages. One outgrowth of this is that the line between who is and who is not a person with a disability will steadily erode. We must redefine and redirect our traditional understanding of designing for accessibility to not only include those persons permanently disabled, but also those temporarily disabled due to an injury as well as any other potentially debilitating condition.

– *Whole Building Design Guide*



Accessibility Guidelines for Play Areas

The Americans with Disabilities Act is a comprehensive civil rights law that prohibits discrimination on the basis of disability. The ADA requires that newly constructed and altered state and local government facilities, places of public accommodation, and commercial facilities be readily accessible to, and usable by, individuals with disabilities. Recreational facilities, including play areas, are among the facilities required to comply with the ADA.

A play component is an element designed to generate specific opportunities for play, socialization, and learning. Play components may be manufactured or natural, and may be stand alone or be part of a composite play structure. Swings, spring riders, water tables, playhouses, slides, and climbers are among the many different play components.

Emphasis is placed on ensuring that children with disabilities are generally able to access the diversity of components provided in a play area. Accessible routes connecting play components in various spaces are crucial to making a play area usable for children with disabilities.

– *A Summary of Accessibility Guidelines for Play Areas*

Universal Design for Learning

The key to helping all students achieve is identifying and removing barriers from our teaching methods and curriculum materials. The UDL framework proposes that educators strive for three kinds of flexibility to:

- represent information in multiple formats and media
- provide multiple pathways for students' action and expression
- provide multiple ways to engage students' interest and motivation.



These three principles share one common recommendation: to provide students with a wider variety of options. To accommodate a broad spectrum of learners, universally designed curricula require a range of options for accessing, using, and engaging with learning materials. Like universal design in architecture, with its stairs, ramps, and elevators, these alternatives reduce barriers for individuals with disabilities while enhancing opportunities for every student.

– CAST: Universal Design for Learning

Universal design is an approach to designing environments and products so they can be used by the widest range of users without adaptation. It is also a way to conceptualize access and to maximize learning for the greatest number of students. Key issues include flexibility and adaptation to each student's unique needs and attributes. At its most basic level, universal design for education seeks to ensure that all students have the option of learning from instructional materials and practices that suit their abilities and learning styles in settings and facilities that can accommodate their various needs.

The Center for Universal Design developed seven basic principles for the universal design of products and environments.

- *Equitable Use* to ensure that designs are useful and marketable for people with diverse abilities
- *Flexibility in Use* to accommodate a wide range of individual preferences and abilities
- *Simple and Intuitive Use* so that products or environments are easy to understand
- *Perceptible Information* that can be communicated effectively regardless of the user's sensory or physical abilities
- *Tolerance for Error* that minimizes the effects of accidents or unintended actions
- *Low Physical Effort* so that products and environment can be used comfortably and with minimum fatigue
- *Size and Space for Approach and Use* to support access regardless of user's body size, posture, or mobility

– *Universal Design to Support Access to the General Education Curriculum*

We are our stories. We compress years of experience, thought, and emotion into a few compact narratives that we convey to others and tell to ourselves. That has always been true. But personal narrative has become more prevalent. There is a hunger for what stories can provide – context enriched by emotion, a deeper understanding of how we fit in and why that matters. We are each the authors of our own lives and must listen to each other's stories. – Daniel Pink. *A Whole New Mind: Why Right-Brainers Will Rule the Future*

Participants' Favorite Places

All participants in the Forum were asked to describe one of your favorite learning environments and explain why it is or was significant to them. Those places are listed below. Their stories about their experiences there accompany their contact information.

anywhere with a book
apprentice blacksmith
Art House in Chastain Park, Atlanta
art museum
atrium gallery in school
Biltmore Estates in Ashville, NC
cognition
collaborative and project-based spaces
Cox Computing Center at Emory University
CreateHere office
discovery-based learning
environments fostering multi-disciplinary approaches to learning
firing a wood kiln
forest, on flat rocks near a stream, or in a meadow surrounded by forest
Frederik Meijer Gardens in Grand Rapids, Michigan and its Children's Garden
Google IO, 2009
graffiti classroom
great outdoors
group informal learning style environment, both indoors and outdoors
group study room of the library at my college Rhodes College in Memphis
high school theatre tech shop
juvenile detention centers
kitchen
kitchen table
learning outdoors
library
library
Little Yellow House at the museum
Ms. Thigpen's 11th grade creative writing classroom
my body
my daughter's first grade classroom
my first classroom when teaching art at Ducktown Elementary School
my second grade classroom
my studio
putting numbers together
rooftop garden at Battle
scene studio or backstage
school culture
senior project designing an auto-balancing roll changing device using liquid mercury
short intense hands on situations
somatic education and global awareness
studio
the theatre
under the shade of a tree or, better yet, on a branch
unorganized chairs
UTC studio theatre space
walking tours
water...lakes, rivers, ponds, streams, fountains, oceans...water...in it, on it, under it

**JOEL BAXLEY**

director of visual art education
Southeast Center for Education in the Arts, Chattanooga
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scene studio or backstage

Working on stage sets, I had to take limited and unfamiliar materials and construct something I had never made before. The work was often solitary, but became a dialogue with the materials, which taught me what would and wouldn't work. Each new project set up a new conversation.

**SUSANNE BURGESS**

director of music education
Southeast Center for Education in the Arts, Chattanooga
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kitchen

My favorite learning environment is the kitchen because it was always nurturing, relevant, and full of creative opportunities.

**MARY LABIANCA**

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dance studio

three-dimensional flexibility of time, flow, autotelic, exploratory, inside out & outside in, safe, interpersonal, active, cognitively engaging, kinesthetically challenging, uncharted, relevant, focused, understand myself, understand the world

**LAURIE MELNIK**

director of theatre education
Southeast Center for Education in the Arts, Chattanooga
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My **high school theatre tech shop** was an open space that students could manipulate based on a given project. Sometimes it was a drafting studio, and sometimes it was shop space. The only consistency was that it was always covered in saw dust. This was where I fell in love with set design and one of the few places where I could take risks, make mistakes, and start over as much as I needed until I got it right.

**REDEITHA WEISS**

administrative assistant
Southeast Center for Education in the Arts, Chattanooga
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I think **putting numbers together** is quite amazing and I think this goes back to when I learned that my grandfather would add a row of numbers without pencil and paper. This also carries over into my hobby of quilting. Putting scrapes of materials together to form a beautiful pattern is like putting a lot of different numbers together and getting the same the same result.

**KIM WHEETLEY**

executive director
Southeast Center for Education in the Arts, Chattanooga
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kitchen table

When I was growing up, all family meetings, excursion planning, problem solving, and eating happened at the formica table in our small kitchen. This was also where I did my homework, perhaps because we didn't have a desk and the formal dinner table was never used for anything. Cosy with cookies.

LIZA BLAIR

arts manager
Creative Discovery Museum, Chattanooga
www.cdmfun.org/
llb@cdmfun.org

**environments fostering multi-disciplinary approaches to learning**

As a folklorist working in the arts, diversifying the ways an audience can participate and engage with the arts is a priority, and finding unique and different approaches to make those connections makes that process much more fun and enriching.

CHRISTA J. MANNARINO

director of development, College of Engineering & Computer Science
University of Tennessee at Chattanooga
www.utc.edu/Development <http://cmannarino.blogspot.com/>
Christa-Mannarino@utc.edu

**walking tours**

I'm able to move around. I don't do very well at sitting still. You can see, touch and smell all of the information in.

ANN LAW

artistic director at Barking Legs Theater, Chattanooga
director and adjunct professor of dance at Chattanooga State Community
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**somatic education and global awareness**

One gives me a personal reference point and the other connects me into the world. Their interrelationship embodies a new consciousness that uplifts the art of dance from only skill-based learning. I gather invaluable information and support from these learningscapes to further my dance teachings.

MICHAEL PECKERAR

6th grade social studies teacher
Sallie B. Howard School for the Arts and Education, Wilson, NC
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**library**

Hackney Library at my alma mater, Barton College in Wilson, NC is where I spent the majority of time in college, immersed in academia and drowning in books. It is a highly functional space that is extremely conducive to learning and research. Even the lighting, furniture, and colors made you feel good about learning. I have many great memories from this library.

ALLISON UPSHAW

performing arts education consultant
Classroom OPERAtunities, AL, AR, GA, KY, SC, TN
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**juvenile detention centers**

Until I participated in a program that brought the arts into detention centers and other youth facilities for long-term exposure to the arts, I never really understood the potential the arts had to transform lives. I learn so much every time I work in these spaces.

**POLLY CURTIS**

communications and finance
PlayCore, Chattanooga
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my body

It is rich and complex and integrally connected to all other aspects of my life – my psyche, spirit, wellness and well being, and my capacity to learn, think and grow.

**SANDY HAUSLER**

interiors
DH&W Architects, Chattanooga
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the Art House in Chastain Park, Atlanta

The Art House was an old bungalow with windows and porches all around the house, and art was made and displayed in every corner, on every surface. As a 10-year old, it really kicked off my love of art, windows, and old houses.

**LESLIE JENSEN-INMAN**

assistant professor of art, design, and technology
Art Department, The University of Tennessee at Chattanooga
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collaborative and project-based spaces

My favorite learning spaces are those that are collaborative and project-based. They can be online and/or in a physical space – they just need to include working as a team towards a common goal. Students have a fuller learning experience when they collaborate on projects.

**THERESA LIEDTKA**

dean
Lupton Library, University of Tennessee at Chattanooga
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Cox Computing Center at Emory University

We visited Cox when planning for the new library and found it very inspiring. The space is designed for faculty – student interactions. It is a beautiful and flexible space with excellent lighting and all sorts of seating (includes individual seats, classrooms, and group spaces). The space is designed for the sort of contemporary collaborations expected of faculty and students in the 21st Century.

**JOHN M. HAWORTH**

department head, social & behavioral sciences division, associate professor, psychology
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cognition

I like a learningscape that encourages self-efficacy or the belief in one's own ability to succeed, learn, and be competent. I believe the best route to self-efficacy takes place when individuals are choosing and learning what they want to learn, not what they are forced to learn.

JAN CHENOWETH

artist/partner
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**my studio**

It is there that the physical space, tools, and stimuli become my personal learningscape. It is a place for quiet disengagement, where my concentration turns creative. As a visual artist I need a dedicated space that is away from the distractions of everyday living, a space for creation, learning and open-ended investigation. Some artists can make their art anywhere; I am not one of them.

ROGER HALLIGAN

sculptor
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**short intense hands on situations**

I have acted both as an instructor and student at schools like Arrowmont, Penland, and John C. Campbell Folk School. I find these live in week-long workshop situations highly stimulating. You can concentrate and block distractions. The intense experience immerses you in learning on many levels; cognitively, aesthetically, and intellectually. The interactions with students and teachers raises the level of learning.

BIJAN DHANANI

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CreateHere, Chattanooga
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**the CreateHere office**

All of the furniture and surfaces are movable and can be oriented based on creative needs. There are writable wall surfaces. This environment literally pulls creative ideas, content, and passion out of people. There is no better location to lock yourself in a room and crank out whatever project it is that you are working on. Our space on Main Street has become a hub for creativity in Chattanooga, and I'm blessed to call it home base.

JAYNE GRIFFIN

director of education
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**the Little Yellow House at the museum**

It is aesthetically appealing and provides an immersive environment in which kids can take on adult roles. Physical, social, and cognitive development, especially language development, are imbedded in this learningscape in very natural ways. The area provides emotional and physical safety and above all, the kids visiting this area have BIG FUN!

DR. GRAHAM PARKER

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**anywhere with a book**

I learned to read very early, given natural inclination and the guidance of a mother who read to me and shared a love for words and stories. Any home I have ever lived in has been full of books. To this day, just as when I was a child, I love to prop up in the bed with big pillows and a soft blanket and read. My preferred personal learningscape is my home, but I am happy anywhere I have a book.



CARLA GUERRA

visual arts specialist
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in school – the atrium gallery

It is a well lit wide open space where student-made art is on exhibit regularly. This is the entryway/greeting place, and main area of transition for students and staff throughout the day. To me, it is the heart of the school.



PATTY STREIP

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rooftop garden at Battle

It's a private green space in the heart of the city and affords kids an opportunity to read, write, draw, dance, and more using nature as their inspiration. Kids can join an afterschool garden club, where they get their hands dirty as they learn about life cycles, sustainable food sources, nutrition, and themselves. As it's maintained by students, it's a vision come to fruition.



SHANE BERRY

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school culture

Changing the culture of schooling involves consideration of extending education, currently restricted by antiquated traditions of time and space, beyond the boundaries of the school building and the conventional school day, re-examining learning goals, and employing pedagogies that facilitate collaborative multidisciplinary experimentation, innovation, and knowledge creation.



BILL FLOYD

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my 1982 Mechanical Engineering **senior project designing an auto-balancing roll changing device for ALCOA using liquid mercury** – As part of a team, you were responsible for certain aspects of the design. I had to understand all components, complexities, and costs of the device and demonstrate the machine's legitimacy to company decision makers.



APRIL KING

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discovery-based learning

In this type of environment, I have seen students of all types of behavioral and academic levels achieve success in their learning activities, even exceeding their regular classroom teacher's expectations in some cases.



DANA SMITH

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the great outdoors

You never know what might happen, what might come around, and well it is just beautiful. I think it is important for people to spend time outside in our environment.

VIRGINIA CAIRNS

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group study room of the library at my college Rhodes College in Memphis

It was quiet, comfortable, private, and offered a gorgeous view of the avenue of oaks and the lawn. I studied here for my comprehensive exams prior to graduation and was able to open the window, enjoy the breeze, hear the birds, and put my feet up on the table to read and take notes. I recall vividly that I was able to focus, relax, think clearly and complete the monumental study task at hand because I felt so at ease there.

ANGIE COOK

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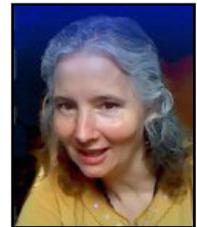


my first classroom when teaching art at Ducktown Elementary School

The room was large enough to have tables rather than desks, with enough space for a variety of arrangements. It had very large windows down one side, a nice sized closet, and a nook for a center. There were also large white boards and bulletin boards. It was spacious, lots of natural light and high ceilings, inside an old but solidly built school with beautiful architecture, and lots of character, surrounded by an amazing campus, operating under a relaxed administration, and 7- in a community full of history.

JEANNIE HACKER CERULEAN

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the forest, on flat rocks near a stream, or in a meadow surrounded by forest

A wooden deck in a similar setting can be nice for longer learning sessions. Any grassy field will do, even in the urban environment: the circle in Renaissance Park! I like to have a natural setting because it puts me and other learners in right relation to the planet. Even a grassy field in the city can help ground people and make them more hopeful that we can accomplish together what so many others forgot to do.

RICH DAVIS

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A graffiti classroom (all walls and ceiling were covered in multicolored signatures and comments and drawings by people that had used that room to create things...10 years worth) at a retreat ranch near my home. It oozed with the message, "Freedom to explore and create! Do something you don't usually get to do (write on the wall!) Get messy trying...have fun!" It was significant because it was "real/integrity" and had a sense of history by people who came to creatively express things inside them. It was like standing in a crowd of people who were like I am as a creative person. And it yelled to me, "YeeHa! FUN!"

AMY DOLLAR

8th grade language arts teacher
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unorganized chairs

Most of my learning environments have been similar and somewhat traditional: straight rows of desks in a traditional classroom. Occasionally we would walk in to find the rows arranged in an open circle or grouped together. When that would happen, we always knew something new and exciting was going to happen; something to cultivate and encourage creativity, collaboration, and sharing – and I loved it!



JOHN DORSEY

teacher

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firing a wood kiln

It takes a group effort to plan, prepare, and fire a kiln. Constant attention has to be paid during the firing to pull it off well. It is all about teamwork and collaboration.



OLIVE B. "LOLLY" DURANT

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under the shade of a tree or, better yet, on a branch

It is comforting to sit under the shade of a tree to read, write, or draw. I like to feel the sway of the tree in the breeze.



VICKY FLESSNER

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Frederik Meijer Gardens in Grand Rapids, Michigan and its Children's Garden

Parts of it are larger than life so I became immersed in the experience. The sculptures seem tossed about in random areas that have been left natural. It is an indoor and outdoor experience but with so much nature in both places and glass walls that it blurs together. Many sensory experiences in the Children's Garden. A place of discovery, surprise, whimsy, and serenity.



THOM HAWTIN

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UTC studio theatre space

It is interchangeable and allows for creativity. Couches allow comfort. With a sense of freedom there is a sense of ownership as well. When a student feels like they are helping create their own education, students get motivated to participate in activities and lessons.



CAROL JONES

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water...lakes, rivers, ponds, streams, fountains, oceans...water...in it, on it, under it, around it

I grew up in a world between two oceans and then moved to the most beautiful bay in the world. I sail, boat, canoe, kayak, swim, ride waves, water ski and snorkel so water has provided joy, spiritual nourishment, adventure, exercise, challenge, new worlds, relaxation, comfort, and fun.

SUSAN JONES

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my second grade classroom

We had a young teacher who let us write our names on the board and go to the restroom whenever we needed to go. Sometimes I left just to be alone for a few minutes. That gave me a huge sense of freedom and control. Then, as long as I finished my work, I could go get really nice paper and write poems on it. The paper was slick and shiny, and it smelled good. I just loved that year.

JENNIFER KISH

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a group informal learning style environment, both indoors and outdoors

Being able to teach through drama, song, and visual art brings to their minds images that when acted out the information remains and is reinforced. My students have increased their vocabulary, learned geography and science, as well as spending a good amount of time on cultural history, all coupled with art and a free form style of teaching. My love of people, particularly children, my life-long love of the arts, and hope for the future motivates me to bring the three together with successful results.

ALEXANDRA MILLER-LONG

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the theatre

There's something about being surrounded by what you're learning about that is much more stimulating for me. I feel like any immersion environment would allow me to have a deeper understanding of the things around me, and the processes that go on inside of the specific environment. By being in the theatre, I was able to see, smell, touch, and hear everything, which enhanced my understanding of what I was learning.

DEBRA MARKHAM

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Biltmore Estates in Ashville, NC

It is significant because it has a myriad of various art forms, from architecture, to original masters, furniture, clothing, and interior design. I was especially impressed with the basement room walls on which murals were painted by party guests.

KEN MCELRATH

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Google IO, 2009

Google's first global event, held in San Francisco. The audience was small. The content was large, and they converted Moscone Center into a miniature version of Google's HQ, including all the food you could eat, pool tables, foosball tables, beanbag chairs, etc. This facilitated ongoing casual learning, or what I call "backchannel" learning, in addition to the scheduled training events offered in an a la carte fashion. The following year's events were too crowded and the ethos was lost.



MICHELE MUMMERT

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library

As a student, I felt an almost spiritual connection to the universe while learning , researching and studying in a library setting.



CINDY PRIDE

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my daughter's first grade classroom

The environment allows my very independent learner freedom to explore and the tools she needs to answer her many questions. I'm looking forward to our time together.



DAVID ROANE

artist, educator
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an art museum

It is a text book brought to life. It allowed me to really "see" the paintings. Ironically, the increased knowledge which such an experience imparts, only heightens my sense of awe regarding the craft.



SCOTT ROSENOW

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Nothing better than **learning outdoors** at the 4-H Center at Jekyll Island, GA, or immersed as an **apprentice blacksmith** at the Tennessee Valley Railroad. Both honor my desire for hands on learning experience; one involves the ocean and surrounding habits which have always been an interest to me as an explorer; the other satisfies my insatiable desire to create things with my hands.



EMILY R. WHITE

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11th grade, Ms. Thigpen's creative writing classroom

The desks were in a U formation. Natural light was always coming in from her windows. She had two lamps and winkle lights all over the room making the light warm (no fluorescent light on). Comfy seating was provided during certain lessons. Some lessons were held outside. This classroom made me feel at home and safe. Mt. Thigpen had put a lot of care into her room and it showed. So we, as students, respected the space. Also, I am sensitive to fluorescent lights when I have migraines and it makes learning/listening impossible. Her classroom/light was like a breath of fresh air.

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PROFESSIONAL DEVELOPMENT VIDEO WORKSHOPS

SCEA directors served as consultants, writers, and reviewers for three educational television series commissioned by Annenberg/Corporation for Public Broadcasting Channel (Washington, DC) and produced by Lavine Production Group (New York City). The project includes videotape resource libraries, eight-hour video workshops, instructional materials, and interactive websites. Annenberg Media is now airing three professional development series about arts education which can be viewed via video-on-demand on the Annenberg Media website.

The Art of Teaching the Arts

Video workshop examines how principles of good teaching are carried out in high school arts programs. Arts specialists from across the country demonstrate their practice and discuss their goals, methods, and experiences.

Connecting with the Arts

Video workshop and library feature a variety of meaningful arts integration approaches taking place in middle school classrooms around the country.

The Arts in Every Classroom

Video workshop and library provide new ideas about working with the arts for K-5 classroom and arts specialist teachers.



www.learner.org

this project is funded under an agreement with the Tennessee Arts Commission

