



**Work Session #1 Report**  
*Issued April 25, 2011*

# CONTENTS

<b>ABSTRACT</b>	<b>i</b>
<b>INTRODUCTION</b>	<b>1</b>
Objective	1
Mission Statement	1
Approach: The How in Education	3
Work Sessions	6
Work Session #1: Thought Leaders of 21 <sup>st</sup> Century Education	
Acknowledgments	
Work Session #1 Agenda	
<b>BACKGROUND</b>	<b>11</b>
DoDEA Today	11
DoDEA Military Communities	12
DoDEA—Americas	
DoDEA—Europe	
DoDEA Europe Districts	
DoDEA—Pacific	
DoDDS Pacific Districts	
Enrollment Demographics	16
Student Distribution	
Student Race and Ethnicity	
Student Enrollment by Service	
Workforce Race and Ethnicity	
DoDEA Attributes	18
Current Thinking	
Trends	
Work Session Findings	
<b>THOUGHT LEADERS OF 21<sup>ST</sup> CENTURY EDUCATION</b>	<b>23</b>
Student-Centered Education	23
Current Thinking	



Trends	
Work Session Findings	
<b>Curriculum (What) and Instruction (How)</b>	<b>31</b>
Current Thinking	
Trends	
Work Session Findings	
<b>Facilities</b>	<b>36</b>
Current Thinking	
Trends	
Work Session Findings	
<b>Technology</b>	<b>39</b>
Current Thinking	
Trends	
Work Session Findings	
<b>Sustainability</b>	<b>44</b>
Current Thinking	
Trends	
Work Session Findings	
<b>Safety and Security</b>	<b>48</b>
Current Thinking	
Trends	
Work Session Findings	
<b>Policy</b>	<b>50</b>
Current Thinking	
Trends	
Work Session Findings	
<b>RESOURCES</b>	<b>53</b>
Bibliography/Works Cited	53

## ABSTRACT

### WORK SESSION #1

*This abstract provides a four-page summary of the published report that documents the results of Work Session #1.*

On April 4-7, 2011, some of the most highly-regarded thought leaders in 21<sup>st</sup> Century K-12 education gathered for a collaborative brainstorming session. Their task: to collaborate with DoDEA to provide a vision for education based on best-practices and promising new trends that promote student success. This vision will impact the development of more than 100 DoDEA schools that are slated for replacement or renovation in the next five to seven years.



### THEMES

From this workshop, four major themes emerged. Outlined below, these themes set the framework and tone for exploring 21<sup>st</sup> Century education. The four themes are:

**Differentiated Learning:** Students are individuals with unique learning requirements. To facilitate more effective and accelerated rates of learning, 21<sup>st</sup> Century education must respond to students' individual learning needs. Scholastic needs vary greatly and students have varying skill and interest levels. Some students work best as individual learners, while others prefer one-on-one or group arrangements. Additionally, some students may benefit from atypical space layouts. The current model of one instructor to many students in a 900 square-foot classroom box will not provide sufficient opportunities for personalized education. 21<sup>st</sup> Century models of learning must empower each student by optimizing learning potential through personalized, diversely facilitated instruction.

**Multiple Modalities:** To accommodate this wide array of learning styles, students also need facilities that adapt to different spatial and furniture arrangements, both inside and outside the educational facility. 21<sup>st</sup> Century education must think outside the traditional classroom configuration and



*A report summarizing the results of Work Session #1 was prepared by the Jacobs Advance Planning Group.*

*DODEA has an incredible opportunity to first define the instructional pedagogies it will deploy globally across its 194 schools, and then design and construct almost 60 percent of its school portfolio to support that pedagogy with innovative, flexible, sustainable, high technology, safe, and secure schools that embrace the digitally native students of today, preparing them for the knowledge-based economy they will most certainly face.*

instead provide spaces that can respond to a variety of concurrent instructional activities, including team-building events, small group sessions, individual learning, and peer presentations—all potentially simultaneously.

Space shared between teachers, subjects, and even communities can provide enhanced investment opportunities in a wider array of room typologies without necessarily increasing the footprint and resultant cost of a facility. Instead, sharing spaces increases the usefulness of each room by keeping them fully utilized for more hours of each day.

**Multidisciplinary Teaching:** Teaching across disciplines directly supports the concept of differentiated learning while being directly supported by multiple modalities. Providing students ways of exploring new subjects within the context of familiar and more approachable topics can enhance each student’s access to, and interest in, their own individual learning journey.



*An excerpt video of speaker, Joel Klein, Vice President at News Corp, with vignettes from other Work Session #1 professional participants, is available for greater insight into non-DoDEA perspectives.*

The process of synthesizing subject content across disciplines enhances critical thinking skills. As teachers assemble lesson plans, they have opportunities to explore and integrate other subject matter while simultaneously receiving and providing expert peer input via collaboration. This enhances professional development.

**Real-world Skills Development:** Key to the success of 21<sup>st</sup> Century learning is the ability to prepare students to be competitive in the real world. To achieve this, learning environments must provide access to hands-on instruction, as well as opportunities for students to apply their knowledge, while still providing a rigorous focus on core curricular competencies.

# Facilities for **21<sup>ST</sup>** Century Learning

Shifting the delivery method of core competency education to include related real-world problem solving, enhanced by multidisciplinary critical thinking, can provide efficiency in fulfilling all requirements.

## **STUDENT-CENTERED EDUCATION**

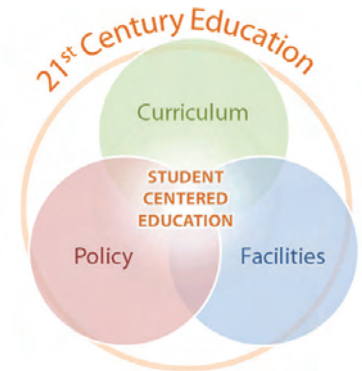
The themes described previously culminated in the overarching theme of *student-centered education*. This concept was pervasive and carried implications for change in three areas of 21<sup>st</sup> Century education, including curriculum and instruction, facilities, and policy.

**Curriculum and Instruction:** 21<sup>st</sup> Century education must provide a wide spectrum of curricular opportunity both for students to excel and teachers to grow professionally and personally. Instead of narrowing curriculum to enhance performance on standardized tests, learning environments should provide for broad-ranging, multifaceted, and interdisciplinary instruction; this approach will produce long-term decision-making and critical thinking skills applicable in the real world. 21<sup>st</sup> Century education should also offer flexibility in curricular pace and instruction, as well as provide real-time, interactive experiences. This facilitates an array of learning opportunities while also providing teachers the flexibility they need to customize their lesson plans.

**Facilities:** The physical spaces in which students learn, play, and grow can be extraordinarily influential. Many ideas were presented and discussed to describe the envisioned facilities needed to support and enhance 21<sup>st</sup> Century curriculum and instruction, including:

- **Adaptable and flexible** indoor/outdoor space to support multiple modalities
- **Hard and soft spaces** (both physically and psychologically)
- **Accommodations** for students, teachers, parents and community elements
- **Sustainability** that promotes leadership by example, supports community values, and leverages technology and competition
- **Safety and security** considerations that facilitate community accessibility, provide experiential consistency, address unique operational and installation requirements, and provide physical and psychological safety and protection

**Policy:** Often, policy limitations hinder, complicate, or eliminate the possibility for change. Therefore, any dialogue on propelling 21<sup>st</sup> Century education forward must supplant obsolete policy with proactive, evolutionary directives that support the ever evolving needs of children. Furthermore, policy change should provide for greater educator support, clearer communication of expectations, openness to new ideas, account for lessons-learned from mistakes, and diverse technologies that enhance and

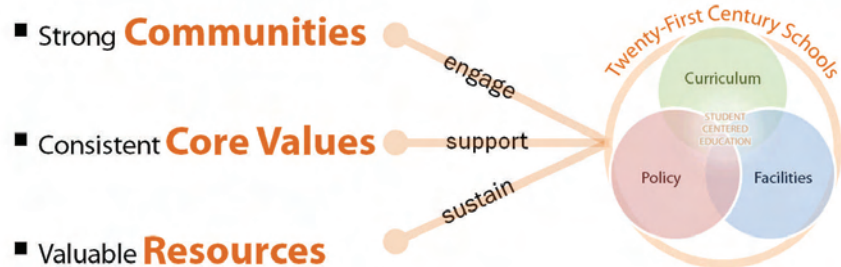


further facilitate the learning process. Policy change should allow for schools to share community resources while also creating spaces that inspire.

### CONCLUSION

In line with President Obama’s directive to strengthen our military families, Secretary of Defense Robert Gates has made a significant investment in DoDEA schools. Work Session #1 highlighted this unique opportunity for DoDEA to reassess their current path for 21<sup>st</sup> Century education.

By exploring best practices in curriculum, instructional technology, innovative and sustainable design, DoDEA began a process of re-visioning their mission. Drawing from the recognized expertise of Work Session #1 participants, DoDEA is poised to rise above many of the pervasive issues that plague so many non-military educational facilities in the United States. DoDEA’s strong communities, consistent core values, and access to valuable resources are all conducive to engaging, supporting, and sustaining a 21<sup>st</sup> Century student-centered educational model.



As stated by participants in Work Session #1, this effort represents DoDEA’s “shot at the moon.” Their charge is to be **bold, demand change**, and leverage that change to expand and **enhance diverse learning**. DoDEA has begun that journey.

## Facilities for **21<sup>ST</sup>** Century Learning

*DODEA HAS AN INCREDIBLE OPPORTUNITY TO FIRST DEFINE THE INSTRUCTIONAL PEDAGOGIES IT WILL DEPLOY GLOBALLY ... WITH INNOVATIVE, FLEXIBLE, SUSTAINABLE, HIGH TECHNOLOGY, SAFE, AND SECURE SCHOOLS THAT EMBRACE THE DIGITALLY NATIVE STUDENTS OF TODAY ...*







*DoDEA has an incredible opportunity to first define the instructional pedagogies it will deploy globally across its 194 schools, and then design and construct almost 60 percent of its school portfolio to support that pedagogy with innovative, flexible, sustainable, high technology, safe, and secure schools that embrace the digitally native students of today, preparing them for the knowledge-based economy they will most certainly face.*

## INTRODUCTION

### OBJECTIVE

In January of 2011, President Obama released a report directed at strengthening our military families. One of the President's top four priority areas is education—the report specifically endorses an initiative to ensure excellence in military children's education. In order to guarantee that the families of our military personnel have access to world-class K-12 educational facilities, the Department of Defense Educational Activity (DoDEA) sought progressive expertise that incorporates concepts for innovation in education curriculum, the use of future technology, and current best practices in facility design including the growing expectation for sustainability. This report takes into account current trends in all three of these areas — cutting edge curriculum, instruction technology, and sustainable yet flexible design — to develop a vision for a dynamic student-centered learning environment, with a recommended path for achieving this goal.

### MISSION STATEMENT

DoDEA operates 194 schools serving 86,076 students. Additionally, American servicemen and women have over 1.2 million students in local educational agencies (LEA's). Considering only DoDEA schools, this identifies DoDEA as the 34<sup>th</sup> largest school system in the nation, just ahead of Jefferson County Public Schools, west of Denver and the largest school district in the state of Colorado. Looking at the total number of schools, DoDEA is the 21<sup>st</sup> largest school system just after Baltimore City Public Schools. By some measures, DoDEA is like any other large school district with all of the challenges present in our nation's public schools, including student achievement and dropout rates, curriculum, technology, teacher performance, and facilities improvement. In fact, the organizational structure at DoDEA for the most part mirrors just about any other large urban school district. However, DoDEA schools face a number of unique challenges including the large geographical distribution of facilities, the variability in climate for school facilities, the multi-cultural influences, and the need for consistency across the educational platform as service men and women migrate from base to base.

## Facilities for **21<sup>ST</sup>** Century Learning

In a recent interview with Deputy Under Secretary of Defense for Military Community and Family Policy, Robert L. Gordon III provided his thoughts about military communities and strong schools. Mr. Gordon pointed out the country's shift to a knowledge-based economy, creating the need to prepare students with a consistent education with focused skills to excel in the knowledge-based economy of the 21<sup>st</sup> Century. Mr. Gordon also gave insight into the role of technology, identifying the need to tailor education to meet the needs of the individual students for a student-centric education. Children learn differently today than they did when many post World War II era DoDEA schools around the world were constructed. Identifying ways to tailor education to the way children learn today will allow them to better connect these ideas with performance.

There is one additional area where DoDEA is distinctly unique. In an assessment and master plan completed in 2010, Jefferson County Public Schools in Colorado identified 12 to 15 schools, out of over 150 schools, that were candidates for complete replacement due to the overall condition of the schools. Facility assessments conducted for DoDEA have identified over 100 of the existing inventory of physical plants as candidates for replacement. The subsequent \$3.6 billion military construction funding appropriation will finance a replacement program that will result in the opportunity for DoDEA to replace almost 60 percent of their school portfolio over the next five years. **This is an opportunity to build truly 21<sup>st</sup> Century schools supporting 21<sup>st</sup> Century instructional pedagogy.** Possibly the only other school district in the history of public education that has had that opportunity is New Orleans, where 134 of their schools were destroyed in the aftermath of Hurricane Katrina in 2006.

The immediate challenge is defining the 21<sup>st</sup> Century pedagogy at DoDEA, and how school facilities should be shaped to support not only today's instructional practices, but also those of the next 25 to 50 years. Fortunately, there are great minds aggressively working on this challenge. From small schools like the KIPP academies to large urban school districts like Los Angeles Unified School District, educators across the nation are innovating, implementing, and integrating new approaches to learning. Unfortunately, most are doing so in industrial age schools designed under 20<sup>th</sup> Century, if not 19<sup>th</sup> Century, factory models with long double-loaded corridors of classrooms. While architects are now constructing award-winning 21<sup>st</sup> Century schools across the country, these schools represent potentially less than 10 percent of the 97,000 public schools in the United States. And while many of these are beautiful schools, many still represent variations on the same theme of arranging 24 x 32 foot rectangular classrooms in rows.



## **APPROACH: THE HOW IN EDUCATION**

DoDEA facilities must respond to the strategic vision of DoDEA curriculum and instruction. As architects and engineers begin designing and constructing DoDEA's 21<sup>st</sup> Century schools, they will have to fully understand the range of programs and instructional technologies that will be deployed across these schools. And those programs in all likelihood may vary across geographic locations.

To provide that understanding, DoDEA will have to go further than the current Educational Specifications to state the problem to be addressed in the design solution. What truly defines flexible design? Is this moveable walls, no walls, or is this space that is creatively structured to serve multiple functions? How do structures provide passive and active security in a military base setting? How can the school facilities better support the social and emotional developmental needs of DoDEA students who may move from school to school several times across their educational timeline? How will technology and the spaces that students use embrace a digitally native student population that is "wired" prior even to starting school? And what kinds of facilities may constitute the educational environment of the next 25 to 50 years? These and more questions must be explored with outcomes that provide concrete direction for the architects of the educational environment to address in their designs.

DoDEA embarked on an approach to provide concrete direction by bringing together leading thinkers in educational pedagogy, facility design, and construction to coalesce the ideas that already existed, and specifically tailor that thinking to DoDEA schools for the 21<sup>st</sup> Century. This approach allows key staff at DoDEA that are already most familiar with DoDEA curriculum, instruction, and facilities to interact with curriculum and instructional leaders combined with representatives from the Council for Educational Facility Planners International (CEFPI), representatives of the American Institute of Architects (AIA) as well as with innovative thought leaders in education, sustainability and technology that may operate "outside the box."

DoDEA's intent is that this effort is a collaborative approach substantiated by research and input from acknowledged leaders in both educational and school facility trends (individuals and professional organizations) as well as input from DoDEA in-house resources and the population DoDEA serves. The overriding objective is the definition of a school facility that will best support delivery of a world-class education and will serve as a benchmark for primary and secondary educational facilities.

## Facilities for 21<sup>ST</sup> Century Learning

This report will describe research of current literature and other appropriate sources to benchmark current thinking in 21<sup>st</sup> Century teaching pedagogy as well as facility requirements. This shall include:

- Education — current and projected trends in education to support changing requirements and curriculums. The focus will be on how school facilities can best efficiently support these changes and provide an educational environment that provides both flexibility for current use and adaptability to future requirements. Flexible space should include both consideration of various types and sizes of educational functional areas as well as areas that can be easily and quickly reconfigured. Use of the facility for education will also be a holistic approach that will not only review current DoDEA Education Facility Specifications for improvement but look for opportunities where all parts of the school facility can support and enhance current and future trends in education.
- Facilities — guidance and consideration to support current and future facility configurations. These shall correspond to the educational and technology considerations associated with future requirements. The facility focus should look at critical areas for learning and their response to changing requirements. Flexibility will be the key to accommodating unforeseen changes in the future.
- Technology — as stated in the United States Department of Education 2010 National Education Technology Plan (NETP):  
“Education is the key to America's economic growth and prosperity and to our ability to compete in the global economy. It is the path to good jobs and higher earning power for Americans. It is necessary for our democracy to work. It fosters the cross-border, cross-cultural collaboration required to solve the most challenging problems of our time. We must embrace innovation, prompt implementation, regular evaluation, and continuous improvement. The programs and projects that work must be brought to scale so every school has the opportunity to take advantage of their success. Our regulations, policies, actions, and investments must be strategic and coherent.”

The technological portion of the research report should first and foremost outline the current and emerging technology trends and identify how those trends can best be implemented in the future for student success in the 21<sup>st</sup> Century. Guidance should be provided on how school facilities can best implement flexible frameworks that will allow the facilities to adapt to future technologies and implementations. Identification and analysis of the following components will be essential frameworks:

- Identify technology currently on the market and available for use
- Determine what research says about the effective use of technology for improving student achievement in K-12 education



- Outline how DoDEA can best capitalize on various technologies to become a leader in providing “learning powered by technology”
- Identify infrastructure requirements and flexibility for growth
- Energy and Sustainability — guidance and consideration to support current and future technologies for both energy conservation and environmental sustainability. The DoDEA minimum standard for sustainability is The United States Green Building Council’s Leadership in Environmental and Energy Design (LEED) Silver certification. DoDEA facilities will meet DoD energy goals. The DoDEA desire is to not only meet but to exceed these mandated standards.

The school facility must incorporate these requirements as much as possible. These areas are not to be construed as the only focus of the effort. Other areas of equal or greater importance that may be discovered during research must be considered.

## WORK SESSIONS

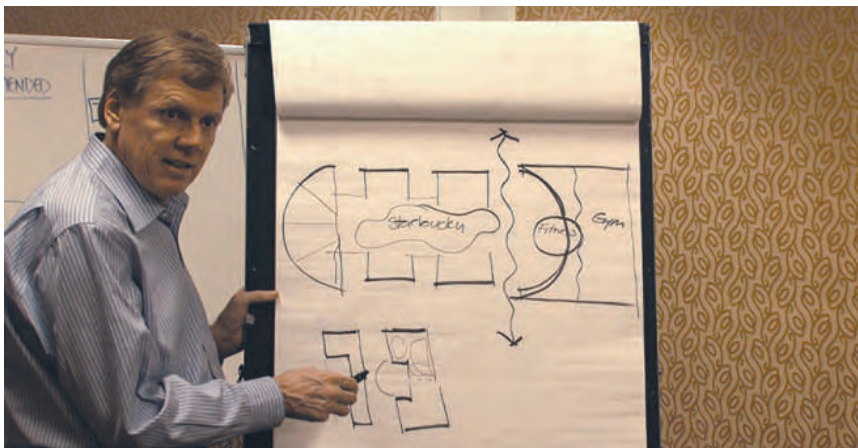
This report documents the compilation of key points from the first of three work sessions to be held as part of this project. The three work sessions are :

- Work Session #1 - Vision For 21<sup>st</sup> Century Education: focused on providing an overarching vision and definition for 21<sup>st</sup> Century education, incorporating the experience and input of external and internal thought leaders.
- Work Session #2 - Internal DoDEA Collaboration Session: will be a discussion of the results of Work Session #1 combined with DoDEA data-driven research and perspectives from vertical instructional channels within DoDEA.
- Work Session #3 - Incorporating Innovation into Design: will integrate the creative results of Work Session #1 with the ideas and perspectives discussed in the results of Work Session #2, to achieve options for design. The goal is to establish an optimal standard for modules, which can be site adapted.

### WORK SESSION #1: THOUGHT LEADERS ON 21<sup>ST</sup> CENTURY EDUCATION

The process engaged Subject Matter Experts (SME) who provided perspective on relevant innovative educational initiatives. The SMEs addressed a broad range of factors that influence education at DoDEA including, but not limited to, curriculum, instructional coursework, CATE (career and technology education), STEM (science, technology, engineering and math education), special needs education, enrichment programs, libraries, athletics, instructional technology, nutrition, health, and safety.

The mix of participants included representatives of DoDEA leadership, DoDEA area directors, the Department of Defense (DoD), Center for Naval Analysis, United States Army Corps of Engineers (USACE) Design Center, futurists/generalists, student learning theorists, external curriculum experts, instructional technology innovators, and safety and security experts.





## ACKNOWLEDGEMENTS

The following is a listing of Work Session #1 participants. DoDEA thanks everyone for their participation in this very important project.

<b>Name</b>	<b>Title</b>	<b>Company</b>
<b>External Subject Matter Experts</b>		
Victoria Bergsagel	President	Architects of Achievement
John Blackburn	Chief of Police	Dallas Independent School District
Lynn Boyer	Assistant Executive Director, Professional Development Services	Council for Exceptional Children
David Byer	Senior Manager, Education Leadership and Policy	Apple Inc.
Joseph Cevetello	Director of Learning Environments, Information Tech Services	University of Southern California
William DeJong	CEO	DeJONG Inc.
Cathy Feldman	Educational Consultant and Co-Founder	Reach Associates
Mary Filardo	Executive Director	21st Century School Fund
David Friedberg	Chief of Security	Hillsborough County Public Schools
Rick Hess	Director of Education Policy Studies	American Enterprise Institute
Denise Hobbs	North America Regional Director	Oracle Education Initiatives
Judy Hoskens	Associate Principal	Cunningham Group
Stephen Jefferies	Professor Dept. of Physical Education, School and Public Health	Central Washington University
Tomas Jimenez-Eliaeson	Director of Design	Little Diversified Architectural Consulting
Norma Jost	Assessment Supervisor	Austin Independent School District
Herb Karpicke	Consultant	21st Century Learning
Richard G. Kidd IV	Deputy Assistant Secretary Army, Energy & Sustainability	Office of the Assistant Secretary of the Army (Installations, Energy and Environment)
Joel Klein	Executive Vice President	News Corp.
Kathi Littman	President	City Prep Academies
Gene Longo	Senior U.S. Field Operations Manager	Cisco Global Education
Christian Long	Founder	Be Playful
Tom Luce	CEO	National Math & Science Initiative
Robert Lurker	Chair - School of Drafting and Design	ITT Educational Services
Timothy Magner	Executive Director	The Partnership for 21st Century Skills
Paul Miller	Director of Global Initiatives	National Association of Independent Schools
Kathy Oliver	Assistant State Superintendent For Career and Technology Education	Maryland State Board of Education
Bob Pearlman	Strategy Consultant	21st Century School Development
Ainsley Rose	Professional Development Associate	The Leadership and Learning Center
Joel Rose	CEO	School of One - NYC Department of Education
Anne Taylor	Professor School of Architecture and Planning, Director of the Institute for Environmental Education	University of New Mexico
Bernie Trilling	Consultant	21st Century Learning
Scott Van Beck	Executive Director	Houston A+ Challenge
Julie Walker	Executive Director	American Association of School Librarians
Chris Walsh	Director of Innovation & Design	New Tech Network
John Weekes	Founding Principal	DOWA Architects
Dennis Wilde	Principal (Designated "Green Guy")	Gerding and Edlen
Kate Willis	Center of Excellence Lead	Nike
John Winn	Chief Program Officer	National Math & Science Initiative
<b>DoDEA</b>		
Mark Bignell	Arts, Careers, Information Branch Chief	DoDEA
Clarence Bostic	Science, Health, Physical Education Branch Chief	DoDEA
Brian Chance		DoDEA
Christopher Dahl	Chief, Information Assurance	DoDEA
Jay Edwards		DoDEA
Jeffrey Friedler	Chief, Information Officer	DoDEA
Joel Hansen	Executive Director of DoD Education Review	DoDEA
Karin Hornstein	Facilities Engineer	DoDEA
Michael Kestner	Mathematics Branch Chief	DoDEA
Lori Pickel	Early Childhood Education Branch Chief	DoDEA
Patricia Riley	Distant Learning and Virtual Schools Branch Chief	DoDEA
Russ Roberts	Chief, Logistics Division	DoDEA
Mike Smiley	Chief, Facilities	DoDEA
John St. Louis	General Engineer	DoDEA
Charlie Toth	Principal Deputy Director and Associate Director for Education	DoDEA
Steve Thomas	Teacher - Fort Knox High School	DoDEA
Wendy Woodworth	Teacher - LeJeune High School	DoDEA

# Facilities for 21<sup>ST</sup> Century Learning

<b>Name</b>	<b>Title</b>	<b>Company</b>
<b>USACE Norfolk</b>		
Bryan Burge	Architect	USACE
Cheryl Fromme	Chief, Engineering	USACE
Melody Will	Architect	USACE
<b>USACE Architects and Engineers (A/Es)</b>		
Doug Brown		Woolpert
Richard Hammett		AIA RS&H
Joe Landrigan		Ewing Cole
Robert Rollo		PSC
Scott Sampson		LS3P Associates
<b>Government Guests</b>		
Robert Gordon III	Deputy Assistant Secretary of Defense for Military Community and Family Policy	Department of Defense
Lucian Niemeyer	Professional Committee Staff	Senate Armed Services Committee
Rob Miller	Vice President, Education	CNA
<b>Conference Specialists and Coordinators</b>		
Stacey Shepard	Corporate Vice President	Jacobs
Cathy Minberg	President & CEO	Center for Reform of School Systems
Tim Scarbrough	Division Vice President	Jacobs
Sam Wilson	Division Vice President	Jacobs
Cecilia Gil	Senior Consultant Advanced Planning Group	Jacobs
Jeff Hendrick	Senior Consultant Advanced Planning Group	Jacobs
Joel Kirzner	Consultant Advanced Planning Group	Jacobs
Derek Roberts	Consultant Advanced Planning Group	Jacobs





## WORK SESSION #1 AGENDA

The following is the work session agenda for the four days of work sessions held in Arlington, VA, from April 4 through April 7 of 2011. The work sessions were a combination of subject matter expert panel discussions, keynote speaker presentations, and group facilitated work sessions drawing from the knowledge and expertise of all in attendance.

	Monday 4-Apr-11	Tuesday 5-Apr-11	Wednesday 6-Apr-11	Thursday 7-Apr-11
0730 - 0800 (7:30 am)	Travel	Networking Continental Breakfast	Networking Continental Breakfast	Networking Continental Breakfast
0800 - 0900 (8:00 am)		<b>Creatively Meeting Students' Needs</b> Kathy Littman, City Prep Academies Bernie Trilling, Consultant Cathy Mincberg, Moderator Open Discussion	<b>Sustainability</b> Richard Kidd, Dept of Army Anne Taylor, UNM Dennis Wilde, Gerding & Edlen John Weekes, Moderator	Outbrief <b>Summary Overview and Wrap Up</b> Next Steps/Action Items
0900 - 1000 (9:00 am)		Break (15 Minutes)	Break (15 Minutes)	Closing Remarks
1000 - 1100 (10:00 am)		<b>Curriculum Paths for the Future</b> Tom Luce, National Math & Science Initiative Kathy Feldman, Reach Associates Kathy Oliver, Maryland State Board of Education Cathy Mincberg, Moderator Open Discussion	<b>Instructional Technology Innovation</b> Denise Hobbs, Oracle Education Initiatives; Chris Walsh, New Tech Network; Bob Lurker, ITT Educational Services David Byers, Apple, Inc. Sam Wilson, Moderator Small Group Collaboration:	Travel
1100 - 1200 (11:00 am)		Registration	Lunch with Keynote Speaker: <b>Rick Hess</b> AET	
Noon	Welcoming Remarks: <b>Charlie Toth</b> , DOE/EA Principal/Dep Dir/ Assoc Dir for Education <b>Robert L. Gordon, III</b> Dep Asst Secy Defense Keynote Speaker: <b>Joel Rose</b> School of One Break (15 Minutes)	Break (15 Minutes)	Break (15 Minutes)	
1300 - 1400 (1:00 pm)	<b>Synergy in Educational Environments</b> Christian Long, De Playful Mary Filardo, 21st Century School Fund Bill DeJong, DeJong Inc. John Weekes, Moderator Open Discussion	Facilitated Session 1: <b>Meeting Academic Needs Direction</b> Break (15 Minutes)	Small Group Collaboration: <b>ES/HS Facility Concepts for 21st Century Schools</b> Basis of Design Ideas Break (15 Minutes)	
1400 - 1500 (2:00 pm)	Break (15 Minutes)	Facilitated Session 2: <b>Educational Environments Direction</b>	Small Group Collaboration: <b>Group Concept Presentations</b>	
1500 - 1600 (3:00 pm)	Ice Breaker	Dinner on Your Own	Dinner on Your Own	
1600 - 1700 (4:00 pm)				
1700 - 1800 (5:00 pm)				

## Facilities for **21<sup>ST</sup>** Century Learning

THE DODEA EDUCATION SYSTEM INCLUDES 86,076 STUDENTS, 11,859 EMPLOYEES, 194 SCHOOLS IN 14 DISTRICTS LOCATED THROUGHOUT THE WORLD





## BACKGROUND

### DODEA TODAY

The Department of Defense Educational Activity (DoDEA) is part of the Department of Defense (DoD) in charge of managing the education of military children around the world. There are four major components to DoDEA

1. The Department of Defense Dependent Schools (DoDDS) is located overseas, with presence in Europe (E) and Asia Pacific (P). The DoDDS operates a total of 130 schools for eligible dependents of active duty and DoD civilians. Schools are located in: Bahrain, Belgium, England (UK), Germany, Italy, Japan, Korea, The Netherlands, Portugal, Spain, and Turkey.

	DoDEA	DoDDS-E	DoDDS-P	DDESS
<b>Districts</b>	14	5	4	5
<b>Schools</b>	194	82	48	64
<b>Employees</b>	11,859	4,741	3,131	3,987
<b>Students</b>	86,076	34,456	24,288	27,332

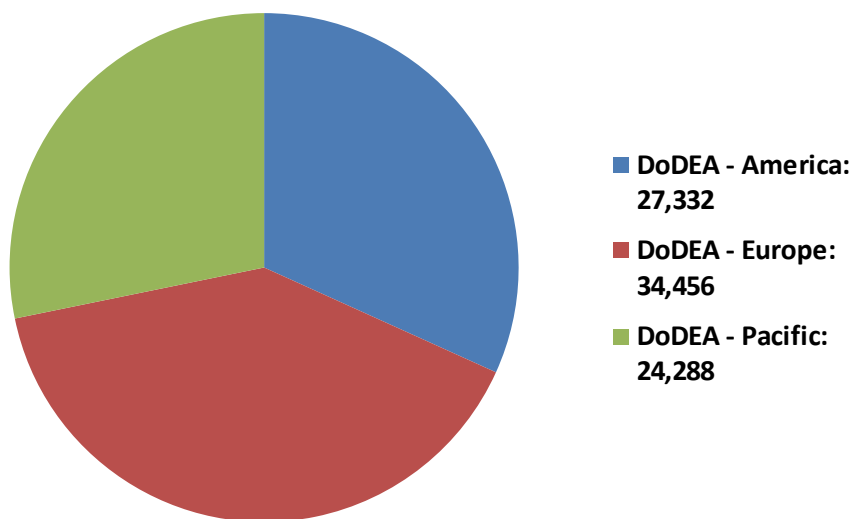
*Approximately 92 percent (1.2 million) of children of military families do not attend DoDEA schools. The Educational Partnership is working collaboratively with the Department of Education to ease the transition of military students and to provide resources to local education agencies (LEA) that educate military students.*

2. A second component of DoDEA is the Domestic Dependent Elementary and Secondary Schools (DDESS) of the Americas. The DDESS operates 64 schools at stateside locations in 5 districts located in 7 states and 2 territories for eligible dependents of active duty and DoD civilians who reside on military installations. DDESS Schools are located in: Alabama, Georgia, Kentucky, New York, North Carolina, South Carolina, Virginia, Guam, Cuba, and Puerto Rico.
3. A third component of DoDEA is the Non-DoD School Program (NDSP). The NDSP supports 3,455 students in 188 countries .
4. Lastly, DoDEA shares expertise with local education agencies (LEA) and public schools that educate 1.2 million military students through the Educational Partnership Branch. This partnership is devoted to assisting partnering local education agencies and school districts in providing a quality education for all military students.

*(DoDEA Today (September 13, 2010), Retrieved from: <http://www.DoDEA.edu/home/facts.cfm>)*

## DODEA MILITARY COMMUNITIES

DoDEA's schools serve the children of military service members and Department of Defense civilian employees throughout the world. Through their two major components DoDDS and DDESS, they are located in the following locations in three different Area Service Centers: Americas, Europe and Asia Pacific.



Forty-seven percent of DoDEA students are in 3<sup>rd</sup> grade and below; and, 70 percent are in 6<sup>th</sup> grade and below.

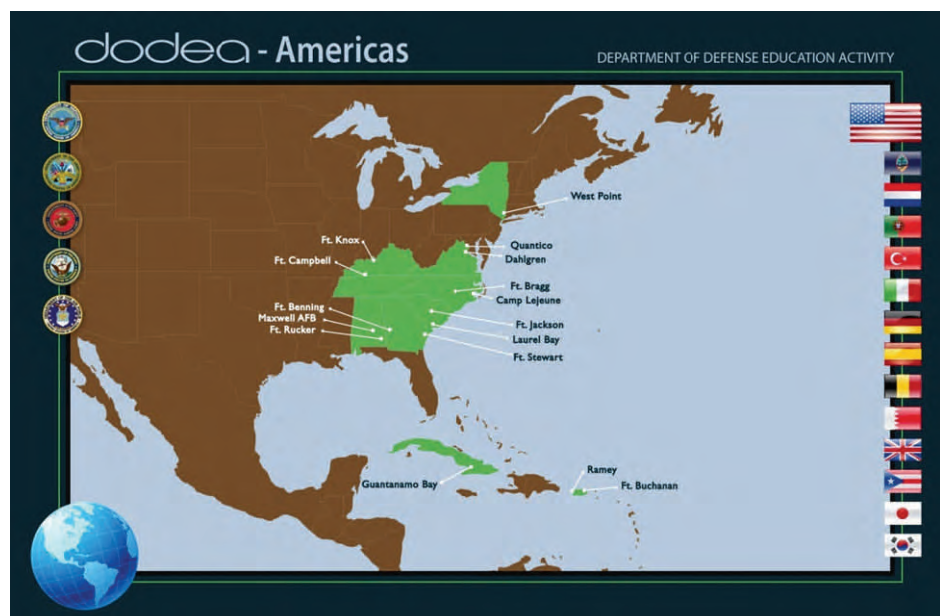
(DoDEA, DoDEA Maps (n.d.), retrieved from: <http://www.DoDEA.edu/home/facts.cfm>)

### DODEA - AMERICAS

- Georgia / Alabama District - The Georgia/ Alabama District is made up of DDESS schools located on the military installations of:
  - Fort Benning
  - Fort Rucker
  - Maxwell Air Force Base (AFB)
- Kentucky District - The Kentucky District is made up of DDESS schools located on:
  - Fort Campbell
  - Fort Knox Army installations
- North Carolina District - The North Carolina District consists of all DDESS schools on the:
  - Marine Corps Base Camp Lejeune
  - Fort Bragg Army Installation

- New York/Virginia/Puerto Rico District - The New York/Virginia/Puerto Rico School District serves the following locations:
  - United States Military Academy, West Point, NY
  - Naval Surface Warfare Center, Dahlgren, VA
  - Marine Corps Base, Quantico, VA
  - Fort Buchanan Army Installation, Puerto Rico
- South Carolina/Fort Stewart/DoDDS Cuba District - The DDESS Area Director is responsible for supervising the Department of Defense Dependent Schools' (DODDS) school in Cuba in addition to the DDESS schools. Management efficiencies make it possible for one superintendent to supervise the DDESS schools in South Carolina, Georgia, and Cuba. The South Carolina/Fort Stewart/DoDDS Cuba district consists of DDESS schools located at:
  - Tri Command Communities, Beaufort SC
  - Fort Jackson Army Installation, SC
  - Fort Stewart Army Installation, GA
  - Guantanamo Bay Naval Station, Cuba

*(DoDEA - Domestic Dependent Elementary and Secondary Schools, About DDESS/DoDDS-Cuba (February 4, 2011), Retrieved from: [http://www.am.DoDEA.edu/ddessasc/aboutddess/aboutddess\\_doddscluba.html](http://www.am.DoDEA.edu/ddessasc/aboutddess/aboutddess_doddscluba.html))*



# Facilities for 21<sup>ST</sup> Century Learning

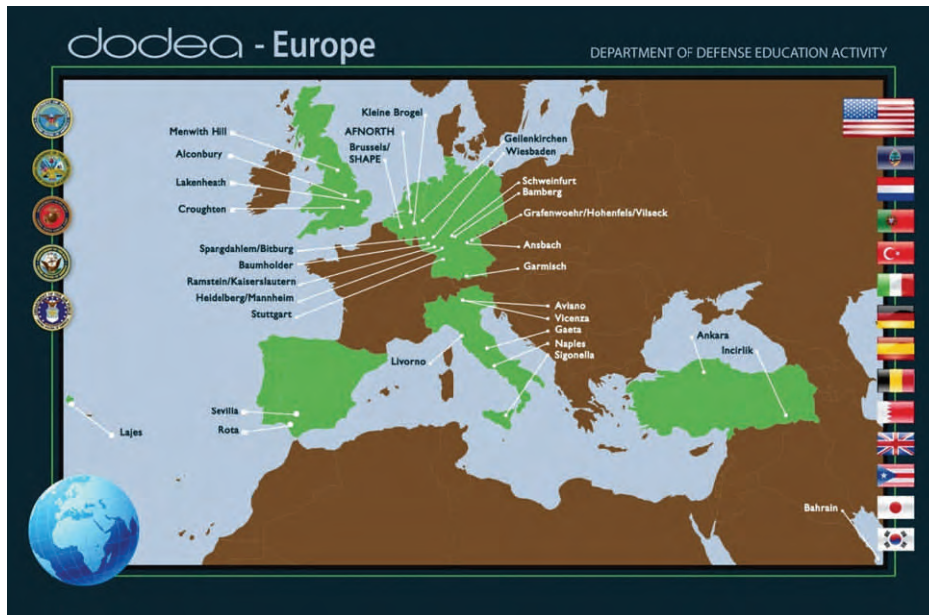
## DODEA – EUROPE

The Department of Defense Dependent Schools (DoDDS) - Europe operates 82 schools within five districts throughout Europe. DoDDS - Europe serves 34,456 school-age children of active duty military and civilian employees.

## DoDDS EUROPE DISTRICTS

- Bavaria
- Heidelberg
- Isles
- Kaiserslautern
- Mediterranean

*(DoDEA - Department of Defense Dependent Schools, About DoDDS Europe (n.d.), retrieved from: <http://www.eu.DoDEA.edu/home/>)*



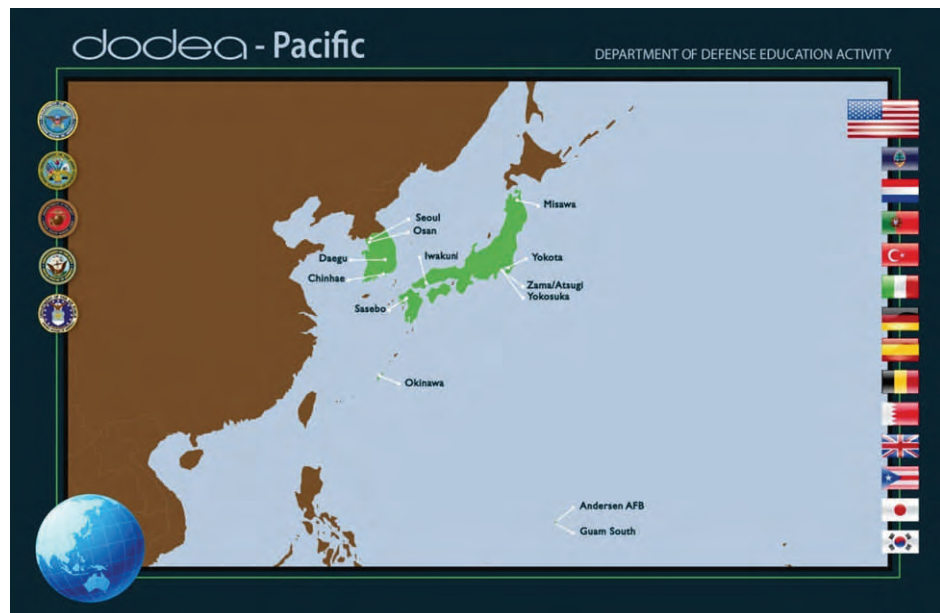
### **DoDEA – PACIFIC**

The Department of Defense Dependent Schools (DoDDS) - Pacific is responsible for the operation of four districts, 48 schools, and 24,288 students affiliated with 22 military installations within the Pacific. DoDEA Pacific serves school-age children of active duty military and civilian employees.

### **DoDDS PACIFIC DISTRICTS**

- Guam
- Japan
- Korea,
- Okinawa

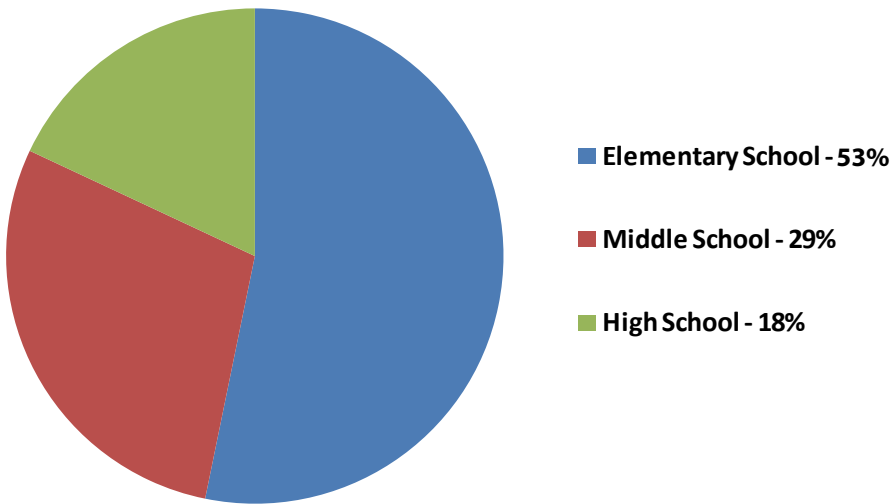
*(DoDEA - Department of Defense Dependent Schools, DoDEA Pacific (April 4, 2011), retrieved from: <http://www.pac.DoDEA.edu/aboutus/DoDDSOoverview/index.htm>)*



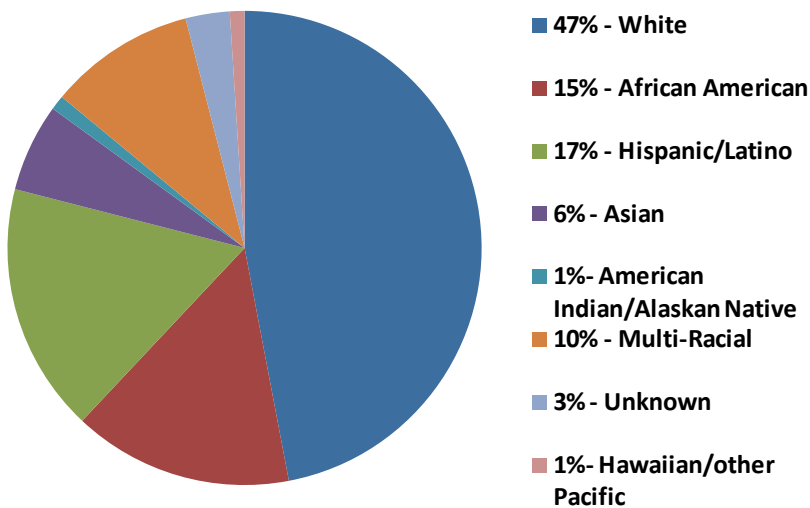
## ENROLLMENT DEMOGRAPHICS

Based on 2009 - 2010 School Year statistics total enrollment under DoDEA was 86,076 students distributed as follows:

### STUDENT DISTRIBUTION

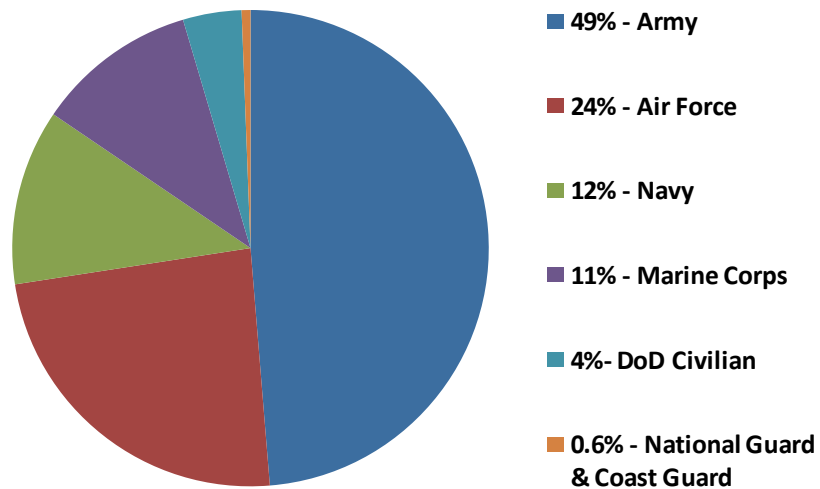


### STUDENT RACE AND ETHNICITY

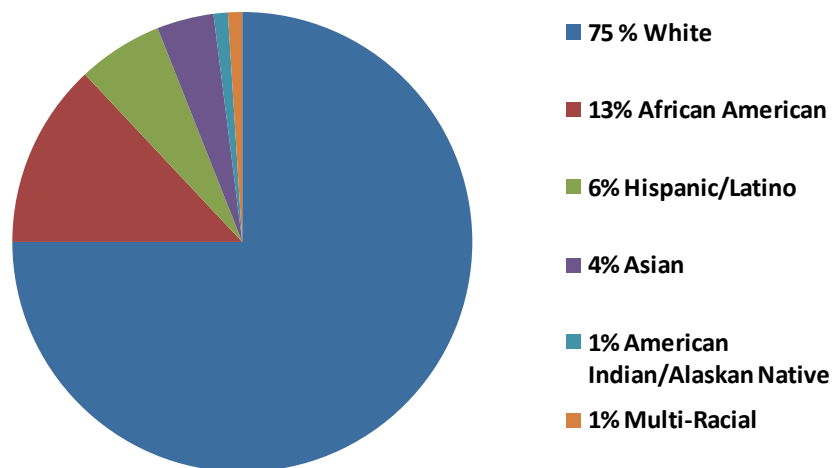




### STUDENT ENROLLMENT BY SERVICE



### WORKFORCE RACE AND ETHNICITY



(DoDEA, DoDEA Demographics (SY 2009-2010), Retrieved from: <http://www.DoDEA.edu/home/facts.cfm>)

## **DODEA ATTRIBUTES**

### **CURRENT THINKING**

Since DoDEA's inception, it has been a leader in the country for education, improving student performance and achievement. Throughout the years, DoDEA has strived to be at the forefront of innovative thinking providing the highest quality education for students in pre-kindergarten through 12<sup>th</sup> grade.

### **TRENDS**

Past initiatives by DoDEA include the Community Strategic Plan (CSP) 2006-2011 — a five-year plan outlining strategies, actions and measures, goals and objectives. In April 2008, DoDEA representatives developed a revised strategy to clarify the connection between strategies, actions and measures used to achieve the desired goals and objectives.

Highlights from the CSP 2008 include:

### **VISION**

- Communities committed to success for all students

### **MISSION**

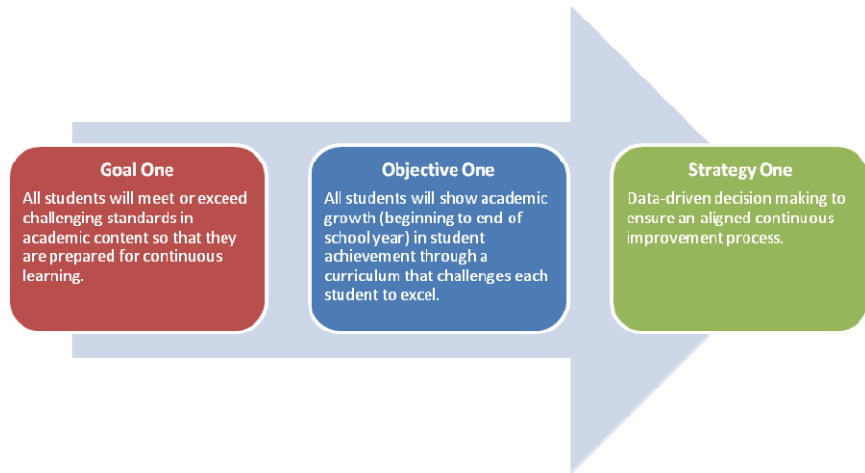
- To provide an exemplary education that inspires and prepares all DoDEA students for success in a dynamic, global environment

### **GUIDING PRINCIPLES**

- Success for all students
- Trust and respect for others
- Uncompromising advocacy for students
- Development of lifelong learners
- Equal access to quality, rigorous education
- New and motivating challenges to inspire excellence
- Teaching with high expectations
- Safe and stable learning environments
- Meet the needs of 21<sup>st</sup> Century learners with individualized curriculum and pedagogy approaches
- Develop students who can think and problem solve

*"The 2008 alignment to DoDEA's 2006-2011 Community Strategic Plan (CSP) provides direction for our efforts toward continuous improvement in providing the highest quality education for all students to ensure their success inside and outside the classroom."*

A typical planning scenario from the CSP 2008 follows:



Embarking on a 21<sup>st</sup> Century education initiative, DoDEA is continuing its commitment to creating a beneficial and rewarding school experience. Innovative facility design and diversified curriculum will create a realm of accomplishment and excellence throughout DoDEA's schools.

**WORK SESSION FINDINGS**

In visioning for 21<sup>st</sup> Century education, DoDEA recognizes the challenges and opportunities its organization has in rethinking education and facility design. The following section highlights DoDEA key drivers and characteristics.

**DoDEA 21<sup>ST</sup> CENTURY EDUCATION DRIVERS**

DoDEA has the advantage of being a centralized organization with a strong command and control structure. Unlike most school districts with varying facility types and teaching methods, DoDEA aims to create a sense of unity among its schools.

Keys to a successful unified educational environment stem from:

- Leadership
- Policy
- Training

Leadership from key stakeholders results in creating strong visions, goals and objectives. These in turn become the policies and guidelines in designing a 21<sup>st</sup> Century education. Ultimately, training teachers in these new techniques and models will be the basis for successful implementation.

*WE ARE CHARGED WITH:  
"CRAFTING A SHARED  
VISION OF WHAT A  
21<sup>ST</sup> CENTURY SCHOOL  
MEANS"*

*DEVELOP A  
CONSISTENCY  
IN HOW WE SPEAK  
ABOUT 21<sup>ST</sup> CENTURY  
SCHOOLS*

# Facilities for 21<sup>ST</sup> Century Learning

## DoDEA'S WORLDWIDE SYSTEM

One of DoDEA's main objectives is continuity in standards worldwide. Whether in the United States or in foreign countries, providing a consistent educational and built environment is critical. Students often spend just two to three years at any one base. DoDEA provides faculty and staff with the resources to handle the transiency unique to children of military parents.

## DoDEA FACILITY DESIGN

Foreign countries often have varying guidelines and specifications in school construction. In the case of developed European countries, building standards and overall continuity are generally sufficient, if not better than in the United States; however, in developing middle eastern countries, incorporating new standards such as sustainable "green" building may prove difficult.

Security at military bases is another challenge with facility standardization. Anti-Terrorism/Force Protection (AT/FP) requirements for buildings within a military base may differ depending on the site.

Teaching foreign countries the flexibility in the design standards is critical. The architects need guidance from the educational specifications with the knowledge that certain sites impose unique opportunities or constraints.

DoDEA typically has a seven-year planning cycle from facility design to move-in and occupancy. Creating demonstration schools and teacher training programs now will be beneficial in new 21<sup>st</sup> Century education initiatives.

## DoDEA CURRICULUM

At the core of DoDEA's goal of moving towards a new 21<sup>st</sup> Century paradigm of learning and facility design is a new type of curriculum. DoDEA is moving beyond a skills base to a conceptual base curriculum. This has broad implications for teachers, students and facility layout.

Curriculums that are project-focused, collaborative and hands-on will be the future. Such curriculums will translate into more diversified learning environments. Additionally, embracing technical skills innate in many students will further enhance opportunities for new curriculums and problem solving.

DoDEA's military resources such as simulators and immersion techniques can be integrated into the curriculum for a richer, more diverse learning experience.

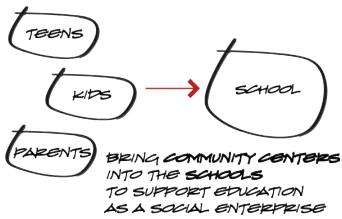
MILITARY APPROACH

ADAPT  
ADJUST  
IMPROVISE

PREVAL!

WHAT ARE THE  
UNIQUE  
CHARACTERISTICS  
OF A MILITARY CULTURE  
THAT CAN ENHANCE THE  
LEARNING ENVIRONMENT?

CULTURE OF  
DoDEA EDUCATION  
FACILITIES IS VERY  
"COMMUNITY  
ORIENTED"



### DoDEA CULTURE

DoDEA fosters a thriving cultural environment throughout all of its military bases. Facilities such as **commissaries**, **hospitals** and **schools** form the foundation for a cohesive and welcoming community. Schools in particular provide a safe haven for students and their families.

The school is central to the military community by providing not only a place for student learning, but for adult engagement in performing arts, continuing education and general meeting space.

The main benefit that any DoDEA school has is that the community and support network are already in place. Although each military base is unique, a reoccurring theme is that DoDEA has ample amenities and support from the parents and the general military community.

# Facilities for **21<sup>ST</sup>** Century Learning

*"...SCHOOLS MUST BE CONDUCTIVE TO 21<sup>ST</sup> CENTURY LEARNING,  
SPARK LEARNING, AND PROVIDE INSTRUCTION IN THE SCIENCES  
AND THE ARTS..."*

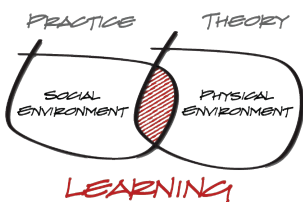
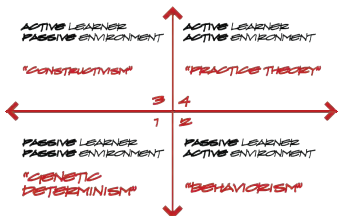
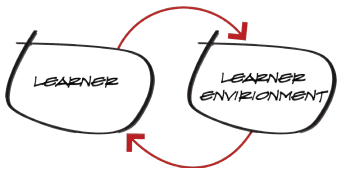
*Deputy Under Secretary of Defense for Military Community and Family Policy,  
**Robert Gordon III***



# THOUGHT LEADERS OF 21<sup>ST</sup> CENTURY EDUCATION

## STUDENT-CENTERED EDUCATION

21<sup>st</sup> Century education emphasizes providing active learners with active learning environments, as was highlighted by Peter C. Lippman in his book, *Evidence-Based Design of Elementary and Secondary Schools*. Much of the focus of Work Session #1 was on curriculum, policy, technology and facility design, as is highlighted by this document. Based on input from subject matter experts, as well as research performed prior to this work session this section provides an array of information, as well as means and methods, for personalizing and diversifying education such that the emotional, physical, social and cultural needs of military children are appropriately and sufficiently accommodated by future DoDEA facilities and curriculum.



The call for educators to teach to various learning styles was made nearly 30 years ago. Yet, the discussion continues today regarding traditional pedagogy with “one teacher and 28 kids in a box” as this 20<sup>th</sup> Century classroom model remains prevalent for students — thus requiring students to conform their learning style to that setting. In contrast to this “one size fits all” approach, many educators are now mindful to address the “multiple intelligences” of students — words and numbers, plus pictures, body, music, people, self, nature and real-world. (Gardner, 2008)

Over time various theories of learning and development have been established that describe the activity of the learner and his/her environment and the increasing need to individualize instruction for each student. The Practice Theory is anticipated to be appropriate for 21<sup>st</sup> Century learning and describes an active learner in an active environment. (Lippman, 2010) This theory recognizes the interrelationship between the learner and the learning environment as transactional. That is, the learner affects the learning environment and vice-versa. The perspective that 21<sup>st</sup> Century learning is responsive and transactional accounts for current approaches to instruction that embrace the setting of education. For example, “learning environment equals social environment” is based upon the recognition that meaningful learning occurs when individuals participate in social activities.; or, in other words, knowledge acquisition is a social activity in relation to place. It follows then that teamwork (a social activity) is first in the seven listed characteristics of a 21<sup>st</sup> Century learning approach: work in teams, oral communication, written communication, technology, citizenship, career and research. (Partnership for 21<sup>st</sup> Century Skills, 2009)



### **CURRENT THINKING**

Students have a wide variety of needs that evolve over time. Each child maintains his or her own unique set of **emotional, physical and social needs** that directly influence how they respond to life and to education. Therefore, in order to prepare students appropriately, contemporary trends in education need to better recognize and respond to these evolving individualized needs such that each child develops necessary competencies while also receiving the personal support they need.

Beyond this, students in military families are often working through additional intense life situations as the result of circumstances. These circumstances may include their particular long-term parental deployment, single-parent anxiety and depression, personal separation anxiety and depression, frequent short-term (potentially international) relocations, as well as a whole host of additional circumstances unique to military life. Children, unlike their parents, are not positioned to legally act on their own behalf or make personal decisions that immediately address circumstantial issues and, therefore, need additional resources to navigate. DoDEA carries the task of providing these additional resources in order to nurture these students through each stage of development.

The United States military, including the Department of Defense, is a resourceful institution that has developed the world's most advanced technology, has trained the world's greatest soldiers and leaders, is located around the world, and has developed a cadre of services to support military employees, active service members, and their families. These military schools benefit from DoDEA's commitment to develop optimal learning environments for 21<sup>st</sup> Century students.



## TRENDS

**Industrialization vs. Individualization:** Many sources and studies cite that schools in the United States, a model followed by DoDEA, were originally designed to meet the needs of a more industrialized society (Hille, 2011). While times have changed, school and classroom arrangements remain the same in many ways. Only a handful of contemporary schools in the United States are even beginning to adjust typical curricula and architecture to meet this new, broader, individualized skill-set. As a result, the United States is losing competitive ground to other developed and developing nations (Johnson, 2010).



**Workforce vs. College:** 21<sup>st</sup> Century work is heavily based in technology, automated manufacturing and service-based industries. To prepare for this new reality, approximately 70 percent of US high school graduates attend college following graduation (Baum, 2009). This number rises each year as parents continue to expect their high school graduates to attend college. Developed and developing nations across the world have similar expectations of their students and are adjusting their curricula to accommodate. For those who do not plan on attending college following high school and are workforce-bound, a rigorous education in core competencies that include math, science and writing will still be critical in the workplace, given the technological basis of even the most laborious work. So, whether a student plans on attending college or not, a rigorous, academically challenging K-12 education will still be necessary.

**Standardized Testing and Department Silos:** Standardized testing in the United States was developed to encourage schools to achieve measurable levels of performance within a specific set of core-curricula. The No Child Left Behind Act of 2001 further institutionalized standardized testing by nationalizing measurements such that school districts could be measured against others and individual schools and teachers within each district could be identified as on-target or underperforming. While standardized testing provided measurable academic performance, “Test-taking skills and strategies took precedence over knowledge” (Ravitch, 2010). In addition, work session participants pointed out that many schools began to abandon the programs that fulfilled the physical and social needs of children in order to be able to fund and focus on the standards of No Child Left Behind (NCLB).

## WORK SESSION FINDINGS

In reconsidering what constitutes 21<sup>st</sup> Century learning, DoDEA has an opportunity to rethink how its schools can refocus education back on the needs of individual students. While there were a multitude of ideas expressed and explored during the first three-day 21<sup>st</sup> Century education work session, there was consensus that broad learning opportunities needed to be reintroduced both within and without the walls of DoDEA schools. In addition, K-12 learning should facilitate the intellectual curiosity and creativity that spurs the emotional, physical, social and cultural growth of students as they learn. Further, there was much discussion that both teachers and parents need to understand and commit to 21<sup>st</sup> Century pedagogy in order to more fully utilize 21<sup>st</sup> Century buildings.

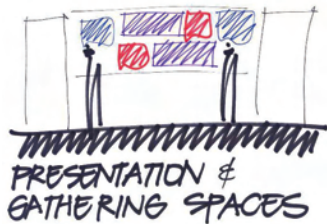
## Educating the Whole Student

In developing each individual student holistically, educational opportunity must reach beyond academic development in the core subjects. This should include facilitation of emotional, physical, social and cultural development for each student.

- **Academic:** Among other topics, work session dialogue regularly focused on how to personalize the academic experience. Students learn in a multitude of different fashions. What one student is good at, another might need more help on. The way in which one student may learn best is not necessarily best for every child. Therefore, a singular approach to classroom design and curricular arrangements will inevitably not benefit every student. Work session participant, Tom Luce, suggested that we refocus education on “academic rigor” and that the military take the lead in using technology to facilitate “transportable data” that measures individuals’ knowledge and performance regardless of location - similar to the School Of One curriculum algorithm.

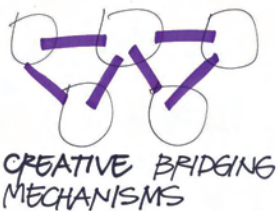
## CURRICULUM CONSTRUCTS

1. COMMUNICATION
  2. COLLABORATION
  3. CRITICAL THINKING
  4. PROBLEM SOLVING
- + CORE CURRICULUM



Other elements in focusing education on the individual student are:

- Provide **information and technology** to students **where they are**
- Promote **curiosity and wonder** in each student
- Enable students to develop excellent **communication skills** via presentation and dialogue
- Promote regular **collaboration** with peers
- Provide a curriculum that is **learner focused** and develops individualized **critical thinking** skills
- Emphasize **trial and error learning** - it is okay to fail and try again
- Develop **problem solvers** and **agile thinkers**
- **Teach students how to learn** by providing **playlists** that develop individual **accountability** in the process of learning
- Provide **multi-disciplinary education** to enliven educational opportunities and interests across disciplines
- Provide opportunities for **hands-on** problem solving



- **Emotional:** K-12 education provides a wide spectrum of opportunity in the emotional development of a student. At each stage of childhood development, there are opportunities to **boost personal confidence** both in learning and in exploring personal strengths, weaknesses and challenges.
- Specific to DoDEA, many military children are exposed to many additional emotional burdens related to the following possibilities:
  - **Parental deployment:** When a parent or parents have to serve active duty via deployment, this repeated and prolonged separation can cause significant emotional stress both for children and spouses. Furthermore, depending on each parent's role in raising children, the absence of one or both parents can potentially create a void that hinders development. In all cases, it is important that students be provided the opportunity for counseling necessary for understanding their own needs and exploring alternative methods of seeking and securing the emotional support needed to excel.
  - **Regular relocations:** Moving is difficult for anyone, let alone children. Not only do children experience the emotions of each adult in the process, they also experience their own emotional challenges. There are emotional challenges associated with everything from making new friends to experiencing different schools and learning environments. Emotional opportunities include providing resources for students to develop a multitude of healthy friendships and relationships that facilitate growth in confidence and tolerance.

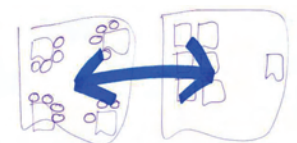
## Facilities for 21<sup>ST</sup> Century Learning

- **International relocation:** Children who undergo extended international relocation are exposed to a host of related emotional challenges and opportunities. On top of the changes associated with regular relocations, international relocation may involve cultural assimilation, potential language and communication differences, social differences, climate differences and familial structure differences. Emotional opportunities related to international relocation include an enhanced and more tolerant understanding of other cultures, climates and social structures. This can enhance levels of confidence in developing awareness and social skill.
- **Emotional and physical injuries and death:** All three circumstances can cause long-term, life-changing emotional distress for all family members, especially children. In addition, all three circumstances can result in a re-ordering of family responsibilities in order to accommodate roles that can no longer be fulfilled by the affected parent. In order to maintain the emotional well-being of affected students, timely and confidential access to crisis counseling is essential. Following that, children will need access to community support mechanisms that assist in fulfilling new family and social roles.
- **Physical:** Children have an inherent need for physical activity. This need is manifest in different ways depending on the age and disposition of each individual student. To accommodate this, schools should provide access to exercise equipment, physical education classes, opportunities to learn and play sports, and facilitation in gaining an appropriate balance of physical activity and down-time for each student.

In rethinking 21<sup>st</sup> Century education, DoDEA is encouraged to explore and design for an appropriate amount of physical activity to be provided at each school and for each education level. In addition to typical exercise options that non-DoDEA schools can consider, **DoDEA's proximity and relationship to military establishments** can provide enhanced access to a multitude of tools and methods of physical activity unique to military training.

In addition to the more explicit forms of physical activity, individuals and groups involved in the first work session explored a number of options for regular, organically inspired movement opportunities that can be designed into school spaces. This includes:

- **Flexible classrooms** that accommodate change and allow for movement between different types of learning opportunities and movement of furniture to facilitate active teaching.
- **Indoor and outdoor spaces** that encourage movement between activities that require a roof and activities that can be performed outside.



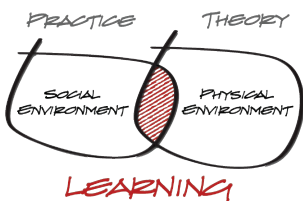
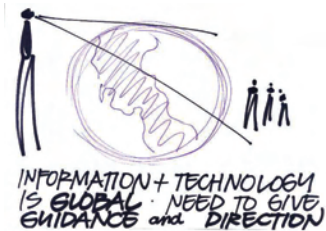
NEED FLEXIBILITY  
TO BE ABLE TO  
TRANSCEND TIME

AUGMENT EDUCATION  
BY TAKING THE CLASS  
OUTSIDE



C. MELDANAN

- **Alternative learning opportunities** that support physical activity as a part of the school day. This can include any number of activities such as gardening and harvesting that supports food preparation, field trips that include walking and movement, or encouraging the use of stairs and movement between indoor and outdoor spaces and places.
- **Social and Cultural:** Schools represent one of the most significant and important platforms for teaching children social skills. In addition, it is often the most interactive and self-directed activity available in the school environment. Any exploration into 21<sup>st</sup> Century schools should consider and sufficiently accommodate a social component.
  - **Relocation:** DoDEA schools present additional social challenges and opportunities for military children. When students regularly move from one base to another and one school to another, typically as a result of a parental reassignment, social circumstances inevitably change; therefore, adjustments in methods of socialization and assimilation are required. It also requires resilience in cultivating new friendships while maintaining remote ones..
  - **Schooling abroad:** Many DoDEA schools are located in foreign countries. This presents additional social challenges and opportunities for children. During this work session, participants in suggested that DoDEA facilitate greater international learning opportunities by providing opportunities for cultural and social immersion of schools and students, especially when located abroad. In tandem, DoDEA could then provide digital facilitation tools that allow schools to share cultural and social discoveries amongst other schools. Once established, students can then be given ownership and charged to maintain the gathering, analysis and dissemination of this information.
  - **Community interactions:** Promoting active participation in local communities, both on and off base, and encouraging schools to assimilate more fluidly into local cultural and social norms can provide students with a broader knowledge base and expanded learning platform. It also provides opportunities for students to teach other students in ways which can ease anxiety over international relocation.
  - **Social Networking / Wikis / Blogs:** New methods of social interface are quickly gaining mass appeal and momentum. Schools should strive to understand these tools as well as establish protocol for student use.



## Facilities for 21<sup>ST</sup> Century Learning

DoDEA schools are also encouraged to study the risks associated with social networking, especially when facilities are located internationally. While these new social tools allow for new and exciting forms of interaction and communication, they can also provide opportunities for individuals to post harmful, inappropriate and inaccurate information for millions to see. Teaching students methods and means for navigating and interfacing with social networks is valuable. It is important that schools provide resources for students who need additional assistance in dealing with all of the previously discussed issues

### **Activity-based and experiential learning**


Learning by experience provides essential knowledge in translating academic skills into the real world. It also encourages ownership and empowers students to think and act in ways which provide immediate feedback. Options for this type of learning include:

- Virtual, hands on laboratories and work spaces
- Simulation
- Field trips
- Wiki and blog publication
- Volunteerism
- Internships
- Vocational training

Technology: This topic will be covered in much greater detail in an upcoming section; however, in the information age, technology is key to the complete development of a student. This technology needs to interface with students at their level and in ways that are supportive.

Ultimately, DoDEA schools offer unique opportunities and challenges related to educating whole students. In considering the requirements for 21<sup>st</sup> Century schools, this work session highlighted the many opportunities and challenges for DoDEA to comprehensively consider.

DEVELOP  
WHAT IF  
SCENARIOS TO  
UNCOVER THE  
POSSIBILITIES





## CURRICULUM (WHAT) AND INSTRUCTION (HOW)

Curriculum and instruction are the foundation of any educational system. The desired curriculum must be established prior to facility programming and design; in other words, as adopted by modern design and architectural practice, “form follows function.” (Sullivan, 1896) To distinguish these terms, *curriculum* is used to describe *what* material is to be learned, whereas *instruction* is meant to convey *how* this material will be taught.

### CURRENT THINKING

Curriculum typically includes **core subjects**, often supplemented by 21<sup>st</sup> Century **themes** and **skills**. Core subjects today generally include English, Reading/Language Arts, World Languages, Arts, Mathematics, Economics, Science, Geography, History, Government and Civics. Themes that are often incorporated are global awareness, financial, economic, business and entrepreneurial literacy, civic literacy, health literacy and environmental literacy. (Partnership for 21<sup>st</sup> Century Skills, 2009)

In 2002, these categories of 21<sup>st</sup> Century learning skills were defined: research and communication, thinking and problem solving, interpersonal, and self-directional information technology. (Partnership for 21<sup>st</sup> Century Skills, 2002) Indeed, these are the skills that are generally considered necessary for success in the 21<sup>st</sup> Century business world. Further, these skills are among those included in the 21<sup>st</sup> Century skills gap — a label given to abilities that are lacking in today’s students entering the workplace.

Skills provide specific application of core subjects and themes, and may be subdivided as follows:

- Life and Career Skills: flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, leadership and responsibility.
- Learning and Innovation Skills: creativity and innovation, critical thinking and problem solving, communication and collaboration.
- Information, Media and Technology Skills: information literacy, media literacy, information, communication and technology (ITC) literacy.

Another way to understand 21<sup>st</sup> Century learning is to consider the following characteristics as a preview of a successful program: teachers as leaders and guides, project-based curriculum, final presentations (to classmates and outside experts), “office setting” with personalized spaces for individual and group learning, computer access is critical.

## Facilities for **21<sup>ST</sup>** Century Learning

Notwithstanding these approaches to curriculum, another voice suggests we consider that “If students know **how** to learn, they don’t need to be told **what** to learn.” This perhaps makes for an interesting debate, or at least stimulates discussion regarding curriculum and instruction and serves as segue to information regarding instruction.

Many of the following 21<sup>st</sup> Century learning guidelines, adapted from Grulke, Beert & Lane (Lippman, 2010) address the environment of the learner: privacy, personal space, resource access, control of environment, physical comfort, ability to manage interactions, team mobility, flexibility, variably sized spaces, complexity and order, prospect and refuge (prospect is opportunity to see), technology, design of place, place attachment and place identity.



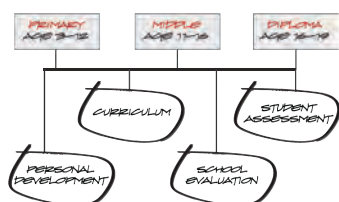
When addressing instruction – the “how to” of learning – the following components should be considered for inclusion in a comprehensive 21<sup>st</sup> Century education program: student knowledge and skills, education support systems, education leadership, policymaking, partnering and continuous improvement/strategic planning. (Partnership for 21st Century Skills, 2009)





Finally, curriculum and instruction must not exist in a vacuum, but must be informed by measures of success for 21<sup>st</sup> Century learning communities. The following questions are intended to provide useful feedback regarding the effectiveness of an educational program (Lippman, 2010):

- Are students encouraged to learn?
- Are teachers and staff encouraged to learn?
- How is learning measured?
- How is the learning community evaluated?
- What is the effectiveness of the learning community?



### TRENDS

Many programs have been developed and schools have been established that utilize and capitalize on the current thinking described previously. In addressing trends for curriculum and instruction, the following real-world successes have been included. The examples include well-known, widely applied methods and programs as well as a burgeoning approach with three pilot schools. All of the programs are replicable and therefore useful for reference.

The **International Baccalaureate® (IB)** is a non-profit educational foundation that encourages students to develop their intellectual, personal, emotional and social skills to live, learn and work in a rapidly globalizing world. (International Baccalaureate Organization, 2005-2011) The program is international in scope with 3,202 schools in 140 countries – recognized worldwide for improving the quality of education. Components of the IB include: curriculum, student assessment, teacher-training and school authorization/evaluation. IB offers three educational programs differentiated by age group: primary (ages 3 – 12 years), middle (ages 11 – 16 years) and diploma (ages 16 – 19 years).

The **Advanced Placement (AP®)** program is a rigorous academic program built on the commitment, passion, and hard work of students and educators from both secondary schools and higher education. (The College Board, 2011) The program enables students around the globe to take college-level courses and exams, and to earn college credit or placement while still in high school. Thus, AP is a cooperative program between high school and higher education institutions. Sixty percent of all high schools participate in AP.

## Facilities for 21<sup>ST</sup> Century Learning

**Charter Schools** are innovative public schools providing choices for families and greater accountability for results. By law they obtain freedom from governing rules, regulations and statutes in exchange for accountability for results. The "charter" establishing each such school is a performance contract detailing the school's mission, program, goals, students served, methods of assessment, and ways to measure success. (WestEd, 2011) Key characteristics of charter schools include: public facility, no tuition, no discrimination and accountable to state and federal standards. Charter schools are located in 39 states and the District of Columbia comprising 5 percent of all public schools. Their popularity is represented in part by the current waiting list of 365,000 students.

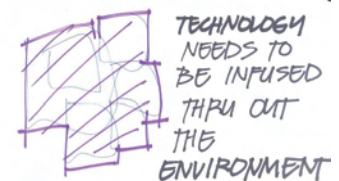
**School of One** is a pioneer in the emerging field of customized learning. The program effectively differentiates instruction based on each student's unique needs and learning styles – thus creating a personalized learning experience for each student. (School of One, n.d.) The chief tools of this approach are a "reimagined" classroom, comprised of a large open space used for multiple "modalities" of instruction, and technology that tracks students' progress daily and delivers appropriate curriculum – a "digital tutor." This program is focused on math exclusively and is being piloted with striking results at three New York City public middle schools.

The Montessori and Waldorf schools are also considered by many as models for 21<sup>st</sup> Century education.

### WORK SESSION FINDINGS

The symposium work session provided a forum for discussion and consideration of many ideas and approaches to 21<sup>st</sup> Century education. The key ideas and common themes that were uncovered will be most useful in further consideration of 21<sup>st</sup> Century curriculum and instruction:

- Learning should be hands-on and personalized to meet individual learning needs
- Provide instruction that is diverse and accommodates multiple learning styles
- Provide one-to-one learning with technology that we now have
- Give students accountability for their own learning
- Consider delivering instruction using technology that is native to students: cell telephone, internet, computer, post-computer device (iPad).
- Provide project-based learning experiences: team work, problem solving, presentation, interaction with outside experts
- Integrate technology into education
  - Create or adapt curriculum that utilizes new technology that is native to students
- Learning should be integrated and interdisciplinary





- The future role of teachers should be facilitators and connectors
- Emphasize rigor in learning
- Provide real-world skills development
  - Core competencies will remain the same, but delivery methods will change.
- STEM needs to include the arts, consider STEAM (Science, Technology, Engineering, Arts and Mathematics)
- Curriculum constructs – communication, collaboration, critical thinking and problem solving, supported by the core curriculum

## FACILITIES

In many ways, facilities represent the realization of education systems. Traditionally, school buildings provide the places for instruction and learning; thus, these facilities provide the venue for implementation of curriculum and instruction. Or, as referenced earlier, the school buildings provide the *form* for the *function* of education. However, virtual education, is a “game changer” in that it significantly alters the physical needs and requirements for learning. Both instructors and students have experienced this change as they have participated in this alternative pedagogy.

## CURRENT THINKING

Facility design for schools has evolved over time from the traditional classroom in the 1800s, with one teacher addressing a roomful of students sitting in individual desks all facing forward to the teacher’s desk, to the open-plan schools of the 1970s, with various seating arrangements and sizes of classes, supplemented by temporary or modular classroom buildings used when student populations surge. Increasingly, schools originally built with an open-plan are being modified to enclose the open classrooms. Ironically, schools originally built with traditional, enclosed classrooms, often along a double-loaded narrow corridor, are frequently being modified to remove the walls making them more open to provide a variety of spaces and to increase available daylight to the interior.

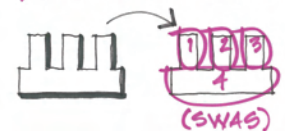
## TRENDS

A popular approach being used with traditional large school buildings is creating small schools from larger schools – “school within a school (SWAS).” Part of the impetus for this is the belief that smaller learning communities produce more successful learning. When a larger school is subdivided, multiple “schools” are produced, often with individual themes, or grade ranges, that promote personal ownership by the students.

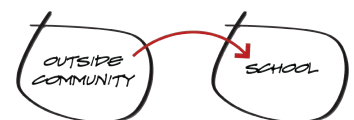
21<sup>ST</sup> Century schools require a variety of space sizes for learning in order to provide for various learning strategies: individuals, one-on-one (teacher - student), small groups and large groups. New school designs, as well as renovations, are incorporating this variety, either with fixed walls, or with portable walls created, for example, by movable partitions and/or flexible furniture.

Another popular trend is to incorporate spaces shared for public use within school facilities. Traditionally, this has included athletic facilities such as the gym and stadium, but increasingly includes performing arts spaces such as an auditorium or theater. This often reflects a programmatic desire to invite the public to use the school building for civic functions. A parent room is a space that should be considered for incorporation.

CREATING SMALL SCHOOLS  
FROM LARGER SCHOOLS =  
“SCHOOL WITHIN A SCHOOL”

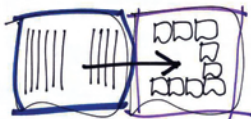


PROVIDE A RANGE OF LEARNING SPACES

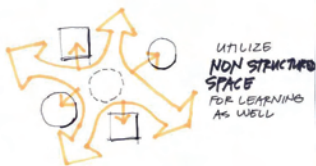




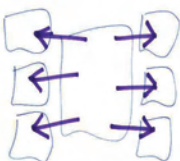
THE 'BONES' OF THE NEW SCHOOL MUST BE ABLE TO ADJUST TO CHANGE



CONSIDER MULTIPLE ASSIGNMENTS FOR BIG COMMUNAL SPACES LIKE THE CAFETERIA



UTILIZE NON STRUCTURED SPACE FOR LEARNING AS WELL



BREAK OUT AREAS TO ALLOW FOR FLEXIBLE LEARNING



SIGNATURE (IDENTITY) SPACES



"EXTRA" SPACE SO MULTIPLE SIMILAR EFFORTS CAN OCCUR

Many school facilities are designed for a curriculum that capitalizes on using the school building and grounds as a learning laboratory, promoting the concept that learning extends beyond the traditional classroom.

### WORK SESSION FINDINGS

- Create adaptable and flexible spaces – agile buildings that can change over time
  - The “bones” of new schools must be able to accommodate change
  - Pursue higher utilization of large, single-use spaces (cafeteria, auditorium, gym)
  - Quick and easy adaptation by teacher/students
- Provide a variety of spaces to accommodate all learning styles and modalities
  - Reassign existing facilities to provide for varying modalities
- Incorporate hard and soft learning spaces
- Use building and the local community (i.e., military installation as a learning tool)
- Invite and provide for different community elements in the school (i.e., teen community, parent community, general public, etc.)
- Accommodates all users – students, faculty and parents



- Embrace virtual education with supporting physical space
- Utilize non-assigned space for learning
- Allow for protected exterior space as an extension of the learning space
- Consider bringing the openness of elementary school design to middle and high school design
- Balance the need for a securable facility with desired characteristics of open, collaborative and aesthetically pleasing space

## Facilities for **21<sup>ST</sup>** Century Learning

- Consider distributing media areas (library, technology) throughout the school
- Consider the Apple Store as a model for learning spaces that are open, inviting, and participatory with specialty areas for targeted support functions
- Consider the openness and flexibility in the layout of a professional office as a model for learning centers
- Provide breakout areas for flexible learning spaces
- Building patterns to consider
  - Visually supervised open space
  - Central greeting/gate keeper
  - Signature identity spaces, in part to aid transition of transferred students (Bergsagel, et al., 2007)
- Permeate ubiquitous technology throughout the school



## TECHNOLOGY

### CURRENT THINKING

In the past, designers incorporated new technologies into schools as a secondary, more subservient layer. Technology was an add-on feature to the primary structure. In the case of older schools, this was often an unavoidable circumstance due to a building's physical limitations. Additionally, computers were large, less portable and required a set place with a wired connection.

A primary component in moving towards a new 21<sup>st</sup> Century educational model is infusing new technologies into every aspect of the learning environment. New technologies occur in the fixed physical hardware and software built into the school as well as the personal learning tools that teachers and students use daily.

### TRENDS

Technology has changed the expectation of space. The advancement of new technologies that are smaller, more portable, and smarter has opened up a wide range of possibilities in school design and education. The key to successfully incorporating the rapidly evolving technological landscape requires innovative thinking outside of the box (i.e., the traditional classroom with blackboards and desks).

### TECHNOLOGY INTERACTION

User interaction with new technologies varies greatly depending on demographics such as age and socio-economic status. Generally, students in the 21<sup>st</sup> Century learning environment are "digitally native". They have been surrounded by technology early on in their development. They have embraced new gadgets and software and rely on them heavily for everyday use. Unlike many of their parents and teachers who can be thought of as "technical immigrants", students bring an innate curiosity, eagerness and adeptness to utilize new technologies.

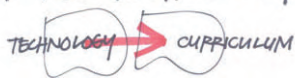
Any new technology has the potential to be either an asset or a hindrance to learning. The goal of 21<sup>st</sup> Century education is to find harmony between new technologies that students already use and a more diversified, flexible and adaptable learning space and curriculum. Cell phones, tablets, laptops and any other portable devices offer an enhanced way for the student to interact with the teacher, curriculum and learning space. With proper guidance and control, these tools are a positive force in reshaping 21<sup>st</sup> Century education.

Information now steadily flows to the student. Communicating, analyzing and synthesizing the information is where the student-teacher interaction becomes critical. Technology will not replace the teacher, but rather aid learning more efficiently. Teachers bring a level of experience that enriches the learning process.

*"Pervasive computing sends a message about the norms of the school: If you want to know something, you can find it; if you want to express yourself, you can do it." (Bergsagel et al., 2007)*

**TECHNICAL NATIVES**  
VS.  
**TECHNICAL IMMIGRANTS**

CREATE  
**CURRICULUM**  
THAT TAKES ADVANTAGE  
OF NEW TECHNOLOGY



**MISSING PIECES**

1. COMMUNICATION
2. ANALYSIS
3. SYNTHESIS

SKILLS THAT TECHNOLOGY  
CANNOT PROVIDE

# Facilities for 21<sup>ST</sup> Century Learning

## EQUITY

Student access to new technologies is not always balanced. The disparity between the tech-haves and have-nots often stems from varying socio-economic conditions and school funding. DoDEA has the opportunity to level the playing field with a unified approach to balance access.

## VIRTUAL LEARNING ENVIRONMENTS

An exciting emergence of new technologies in education is virtual learning environments. Virtual education refers to instruction in a learning environment where teacher and student are separated by time or space, or both, and the teacher provides course content through course management applications, multimedia resources, the Internet, and videoconferencing. Students receive the content and communicate with the teacher via the same technologies. (Kurbel, 2001) Formerly known as distance learning, virtual education provides for asynchronous learning (delayed time) so that the instruction from the teacher to the student does not need to occur at the same time.

DoDEA currently has a global program in place to support this new way of learning. Virtual learning is student centric, similar to on-demand learning. Student participation combined with teacher guidance is critical.

Virtual learning is complex because of the need to deliver services worldwide.

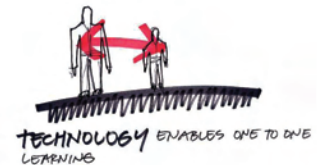
## INFORMATION CENTER

The Information Center is a dedicated virtual learning collaborative and quiet space. It includes key components:

- High-end computers
- Webcams
- Telephones
- Printers
- High speed internet connections



*"Human communities no longer are place-based, but reside instead within personalized, digital communication networks unbounded by space and time." (Stokols and Montero, 2002)*







### **TECHNOLOGY REQUIREMENTS**

The main challenge in supporting virtual learning environments is having adequate internet bandwidth. Approximately 10 years ago, DoDEA invested heavily in T1 internet connectivity. Since then, internet speeds for the average U.S. consumer have improved greatly; however, there has been little improvement within DoDEA's network. Currently, the average DoDEA bandwidth speed is 18 Kb/s. In many foreign countries, the cost of providing high-speed internet is extremely expensive. Expanding the virtual learning environment will require significant policy infrastructure improvements and costs. An additional requirement for DoDEA is complying with DoD internet security protocol. DoDEA has connections with other military networks and requires enhanced security like National Security Agency (NSA) monitoring and complex passwords for all users, including students of all ages. Wireless connectivity on military bases is also a security issue—only 15 percent of DoDEA schools have wireless. Balancing these security requirements with student need for more open access is an ongoing challenge.

### **VIRTUAL LEARNING AND PHYSICAL SPACE**

Virtual learning allows tremendous flexibility in how and where students attend class. The information center requires physical space within a school building; however, remote learning from home or any place with an internet connection is possible with proper oversight.

### **WORK SESSION FINDINGS**

#### **TECHNOLOGY VS. INSTRUCTIONAL TECHNOLOGY**

The definition of technology is broad in scope and generally refers to computer-specific hardware and software. Instructional technology is the tools one uses to enhance teaching capabilities. It is integrated like any other technology and requires having professionally trained staff.

#### **TECHNOLOGY AIDS**

Incorporating various features into a school design facilitates new technology integration:

- Flexible furniture
- Adaptable room configurations
- Large open spaces
- Flexible building infrastructure
- Visual transparency/audio privacy

Several companies and schools have already created successful models for infusing technology into learning.

# Facilities for **21<sup>ST</sup>** Century Learning

## **NEW TECH MODEL**

The New Tech model focuses on professional development. The core principles of New Tech are based on students using their current technology to enhance the following:

- Collaboration
- Communication
- Presentation
- Experimentation

Additionally, schools need to have professionally trained staff to support teachers working with new technologies. The current procedure for many schools is to provide teachers with new technologies bereft of any IT training or support.

With technology, schools can track the learning process and have real-time feedback. Access to learning occurs anywhere, anytime and is not limited to the classroom, the school building, or school hours; however, digital does not necessarily obviate face-to-face interaction.

## **THINKQUEST MODEL**

Thinkquest is a collaboration vehicle for all students to: display ideas, compete with peers, and reach out globally.

Students can work both individually or in groups. The instructional platform exists on a global scale and focuses on solving real-world problems. Students showcase their skills competitively in a secure environment. The competition aspect is a strong driver for student achievement.

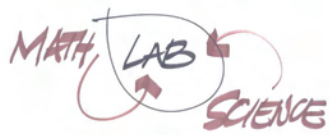
## **APPLE MODEL**

Innovation in retail establishments correlates well with new learning environments. Schools can emulate spaces to be more dynamic and engaging, similar to how Apple designs its retail stores. Apple is undoubtedly a leader in innovation and technology. Their foresight reaches beyond what most people typically grasp. Innovation requires imagination and asking the “what if...?” and “what do you want?” questions. In visioning for 21<sup>st</sup> Century education, developing scenarios to uncover possibilities is crucial.

**THINKQUEST BY ORACLE**  
ENABLES COLLABORATION  
BEYOND THE 8 TO 3  
SCHOOL SCHEDULE

STUDENTS COMPETE  
GLOBALLY IN THE FORUM

**INNOVATION**  
**REQUIRES**  
**IMAGINATION**



### TECHNOLOGY STUDIO MODEL

A technology studio is a model many schools are now implementing. It can be used both by students as well as outside businesses to help foster a collaborative career oriented curriculum. The characteristics of a technology studio include:

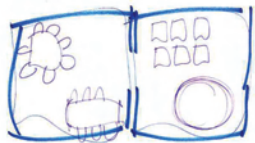
- Prototyping facility
  - 3D printers, plastics, metals, composites
- Biotechnology
- Robotics
- Animatronics
- Hydraulics
- Camera technology

Additionally, visibility into the studio using transparent elements helps stir imagination and curiosity throughout the school.

### INFORMATION CENTER MODEL

Repurposing a library into an information center is an integral component in blending new technologies into schools. An information center provides the tools and guidance students need beyond basic information retrieval. Although students have access to resources virtually anywhere and anytime, the physical information center bridges knowledge acquisition with synthesis and analysis.

The information center is a collaborative space that aggregates various activities. It is a vibrant, flexible and adaptable space allowing for multi-use functions.



RE-PURPOSE OLD SPACES AS  
OPEN LEARNING RESOURCES

## SUSTAINABILITY

This section provides DoDEA with direction both in terms of selection and implementation of sustainable construction methods and means, as well as integration of these elements into hands-on learning opportunities for DoDEA students.

### CURRENT THINKING

The United States Army, as well as other branches of the armed services, is committed to becoming a model of sustainability. Deputy Assistant Secretary of the Army for Energy and Sustainability, Richard Kidd, pointed out that the Department of Defense has made a commitment to sustainability required by Presidential Executive Order 13514, which dictates that all new or renovated structures must meet or exceed the US Green Building Council's LEED (Leadership in Environmental and Energy Design) Silver certification. In addition, all new or renovated structures must meet ASHRAE 189.1 standards, which can often be higher than LEED Silver criteria. As a result, this commitment will be carried through to DoDEA schools that are constructed or renovated as part of the 21<sup>st</sup> Century schools initiative. The U.S. Army has set a goal of gaining "net-zero" for all of its buildings by the year 2030.



**ACTIVELY ENGAGE USERS  
IN THE NET ZERO PERFORMANCE  
OF THE FACILITIES**

A "net-zero" energy building is one that produces as much energy as it consumes. Through efficiency technologies and on-site power generation, the use of renewable energies allows the building to produce as much energy as it consumes from the electric grid. A net-zero school will reinforce teaching and learning as it becomes an extended classroom. Because of the use of efficient materials and cutting-edge renewable energy technology, the building becomes a three-dimensional learning space. Students will learn through practical, hands-on experiences. Issues such as geothermal science, rainwater collection, solar panel usage, and wind turbine efficiency will also help students learn responsibility for energy conservation.



TO ENSURE A  
SUCCESSFUL  
SUSTAINABLE  
PROJECT DODFA  
PROJECTS SHOULD  
BE DONE AS AN  
INTEGRATED  
DESIGN

Some additional sustainability considerations include:

- **Integrated Design:** The Department of Defense is exploring methods of simultaneously contracting with designers, engineers and construction managers to enhance the design process and collaborate in improving the ultimate performance of building projects pre- and post-occupancy.
- **Global Portfolio:** The Department of Defense maintains a global portfolio that, according to Secretary Kidd, represents approximately 25 percent of U.S. Government facilities. With international facilities, standards are often unique to each country and are typically related to climate and culture. Depending on where a Department of Defense facility is located, building and sustainability standards can be more or less stringent than the LEED Silver certification standard required in the United States. Maintaining standards from the United States can be prohibitive in international construction based upon a variety of factors, including building material and systems availability and cost.
- **Cost:** Sustainable construction can be more expensive to build than typical construction due to its higher level of quality. However, the period in which a building saves enough money's worth of resources to be able to pay for its sustainable systems is improving every year. When considered over the long-term, however, sustainable structures save money over typical construction. This is especially true when considering a portfolio as large and diverse as the Department of Defense, where increased numbers of better performing structures equal exponentially decreased operational costs.

## TRENDS

The world of sustainable buildings is growing rapidly. As mentioned, LEED has become a popular tool of measuring the implementation of sustainable construction methods. Additional measurement tools exist as well. As a result of this new focus, access to sustainably produced and environmentally friendly materials is becoming easier. Costs are also dropping as a result of increased supply and demand.

Some developments in LEED have been:

- Structures that are more responsive to local ecosystems
- Enhanced connectivity to surrounding communities through access to public transit and resource sharing
- Building skins that provide improved thermal performance and significant energy savings
- Expanded reuse and recycling of building materials both during construction and post-occupancy
- Healthier buildings and sites due to reduced or eliminated off-gassing of toxic materials as well as user controlled conditioning that automatically turns down or off when not in use

In addition, LEED continues to pioneer new methods of measuring sustainability, including methods that are more community-based.

## WORK SESSION FINDINGS

- **Lead by Example:** The various stages of childhood are formative for humans, especially during K-12 school years. During this period, children rely on adults for exemplary behavior. In a world of depleting resources and increasing environmental challenges, DoDEA has an opportunity to teach conservation and environmental responsibility by example through its new schools. As DoDEA students learn their subjects and exercise their bodies and minds, they can also absorb the why and the how of sustainable design.
  - Some possible methods of implementation:
    - Farming and gardening:
    - Landscape and water management
- **Education:** New structures and sites that incorporate sustainable features should provide enhanced *post-occupancy evaluations that include student participation and learning*. In addition, building and site users should be provided enhanced education in using facility features, both to improve long-term performance, as well as extend longevity of systems. Those charged with building operations management should be provided with extended and improved training in operating sustainable features and equipment.

- **Reinforce Community Values:** Military bases are unique communities designed to support a wide array of individuals and groups. These groups include military employees, active service members, and families. As a result, military bases are often self-contained, self-sustaining communities. Therefore, sustainable methods, when delivered at a community level, can provide immediate, widespread benefit to many while also dramatically improving the operational bottom-line of a base. Furthermore, sustainability also enhances the Department of Defense’s global mission.
- **Learning via Participation:** As places of learning, schools are often poised to support design opportunities that simultaneously provide hands-on learning. On top of the many other benefits, sustainable design can also be leveraged as a valuable learning opportunity for students, as it typically includes conscious decisions to conserve specific resources and encourage collective sharing of resources such as transportation, water, and air.
- **Ownership through Competition:** Many workshop groups concluded that students respond to competition. It provides an opportunity to take ownership in a task or group of tasks that, if organized, can provide real-time feedback for competitive comparison.
- **Evidence-Based Design:** Data affiliated with sustainable systems is becoming more available as LEED and other programs mature. In rebuilding and renovating existing structures, DoDEA has an opportunity to comprehensively measure the performance of its portfolio, given that the appropriate means and mechanisms are specified and installed.

**CONSIDERATIONS:**

- DoDEA is encouraged to **establish a sustainability-based teaching ethos** that integrates sustainability into the educational platform
- The U.S. Army is a **model of sustainability** applicable for DoDEA
- The U.S. Army holds itself to the **high performance requirements:**
  - Presidential Executive Order 13514
  - United States Green Building Council LEED Silver Certification
  - American Society of Heating, Refrigeration and Air Conditioning Engineers Standard (ASHRAE) 189.1
- Government structures to be **net-zero by 2030**
- Seek the Living Building Challenge - **sustainability that incorporates beauty and inspiration**
- The U.S. Government, including DoDEA, needs to research and establish effective mechanisms of **creative financing** to help amortize the additional cost of sustainable systems

## **SAFETY & SECURITY**

### **CURRENT THINKING**

DoDEA has unique safety and security requirements associated with location on military installations. Anti-terrorism/force protection (AT/FP) measures apply to DoDEA schools within all military bases. This translates into minimum standoff distances between parking areas and buildings, restrictions on glass facades, and landscaping around building perimeters. Furthermore, many foreign military installations require enhanced security due to increased threats.

DoDEA strives to find a balance between open, welcoming, accessible learning spaces, and safe and secure environments. The school is the focal point for many military communities; it aims to not only enrich students' lives, but to be a central hub of activity for families on base.

### **TRENDS**

Over the past ten years, safety and security have been a priority for school systems nationwide, especially after tragic school shootings and terrorism threats. Many schools have opted for a hard-line approach to protect students, faculty and staff. Metal detectors, video surveillance and security doors are common features. This has led to an environment that is increasingly closed off to the public and limits visitor engagement. Creating a fortified safe haven for students often results in a sense of mutual low-level hostility and dread suffuses the interactions between students and adults. (Bergsagel et al., 2007)

One trend for safer schools is the use of CPTED standards and guidelines. An acronym for Crime Prevention Through Environmental Design, CPTED refers to a group of strategies intended to reduce the fear of crime and opportunities to commit crimes such as breaking and entry, assault, and vehicle theft. These strategies are typically considered during the planning and design stage of a project. The CPTED program is a holistic approach which balances reduction of crime opportunities with other objectives which achieve good design and enhance the built environment.

### **TRANSPARENCY**

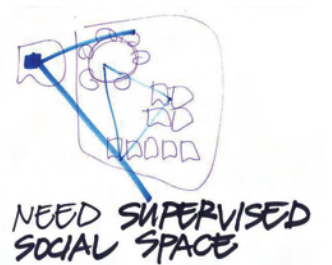
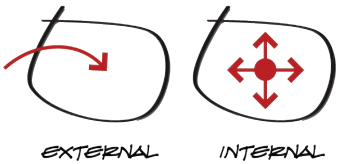
Some schools are now incorporating elements into their buildings that both protect inhabitants while maintaining a vibrant and interactive learning atmosphere. Typically, older schools may have individual classrooms with limited views to corridors via windows in and around the doorway. Opening up the classroom with more transparent elements fosters a greater sense of community and engagement within the entire school. Increased visual connections allow teachers to track students more efficiently creating a safer environment.

*"Treat safety and security as a human issue, not merely a mechanical one. Design your school to maximize the degree to which people see, know and communicate with one another. Provide security mechanisms that will operate in people's absence and invest equally in resources that will build trust with the community."*  
(Bergsagel et al., 2007)



HOW DO YOU GET  
BALANCE BETWEEN  
OPENNESS,  
COLLABORATION,  
AESTHETICS  
AND STILL BE SECURE?

WHAT IS THE THREAT?



Moreover, the silo effect that many school layouts creates lessens as the physical walls open up and multi-disciplinary collaboration occurs. Students are more energized about their own work when visually associated with their peers. A mutual sense of respect among students, teachers and the surrounding built environment can occur.

### WORK SESSION FINDINGS

Balancing the need for a securable facility with the desired characteristics of open, collaborative spaces, and pleasing aesthetics is a fundamental goal. DoDEA has specific requirements in terms of Anti-Terrorism/Force Protection (AT/FP) that constrains building siting, circulation, and material use. However, opportunities exist to design safe and functional learning environments that align with 21<sup>st</sup> Century education paradigms.

### KEY POINTS

- Define the security threat — external or internal?
- Consider what level of security to design for—worst case scenario?
- Create an open and engaging school within the community by designing lobby/atrium spaces that can be cordoned off from the rest of the school.
  - Locate fitness centers and auditoriums in areas that are easily accessible to the public.
- Use transparent features throughout facility for more efficient collaboration and supervision.
  - Visual transparency/audio privacy
- Create indoor/outdoor relationships to enliven space and provide better monitoring

## **POLICY**

Policy is the engine needed to propel the vehicle of 21<sup>st</sup> Century learning. Policy must provide the plan and course of action necessary to influence and direct actions and other matters related to 21<sup>st</sup> Century Education. Thus, policy is a critical resource in the pursuit of advancing the education of the nation's military children through implementation of curriculum, instruction and facilities.

## **CURRENT THINKING**

The purpose of DoDEA is to educate the children of Department of Defense military and civilian families worldwide. The mission of the U.S. Department of Education includes promoting student achievement and preparation for global competitiveness by fostering educational excellence and ensuring equal access to learning.

Current policy is widely variable but includes actions necessary to support the curriculum and instruction described previously. For example, the approach developed by The Partnership for 21<sup>st</sup> Century Skills requires a policy that responds to their framework. Similarly, changes have been critical in implementing the initiatives described below.

## **TRENDS**

Policy has been modified from a traditional approach in order for schools to implement programs such as International Baccalaureate® and Advanced Placement. Similarly, the many charter, Montessori and Waldorf schools, and the School of One benefited from atypical policy approaches. These programs and schools are considered by many to reflect key aspects of 21<sup>st</sup> Century learning as indicated by their influence on curriculum and instruction.





*“Schools must be conducive to 21<sup>st</sup> Century learning, spark learning and provide instruction in the sciences and the arts.”*

*- Robert Gordon III*

## **WORK SESSION FINDINGS**

The symposium workshop provided a forum for discussion and consideration of many ideas and approaches to 21<sup>st</sup> Century education. Deputy Under Secretary of Defense for Military Community and Family Policy, Robert Gordon III, issued the challenge at the outset of the symposium when he said “Schools must be conducive to 21<sup>st</sup> Century learning, spark learning and provide instruction in the sciences and the arts.” The key ideas and common themes that were “uncovered” will be most useful in further consideration of 21<sup>st</sup> Century policy:

- Enable change
- Support the educator
  - Define a process of inclusion for faculty development
- Focus on consistent guiding principles and objectives
- Communicate expectations for all stakeholders – students, parents, faculty, administrators, and the local community
- Identify possible contributors to success
- Crafting a shared vision of what a 21st Century school means
- Capitalize on military techniques to improve learning, immersion, etc.
  - “...Adapt, adjust, improvise and prevail, prevail, prevail.”
- Insist on transportable student profile data that is critical for the students’ transitions between grades and between schools.
- Produce students that are trainable, rather than specialized with vocational training.
- Challenge the traditional vocabulary in order to embrace new ideas and avoid only repeating the past (i.e., classroom, school, etc.)
- Entice people to utilize the new 21<sup>st</sup> Century learning spaces
- Enable the school to be the activity center of the local community, especially for family support services
  - Consider addressing all facilities on military installation when designing school facilities.
- Professional development is missing – the real software is people
- Create demonstration schools – pilot the next idea now, and provide lots of training.

## Facilities for **21<sup>ST</sup>** Century Learning

*"...THE VISIONING WORKSHOP DID A GREAT JOB OF ARTICULATING A VISION OF 21<sup>ST</sup> CENTURY DDEA SCHOOLS...A MOVE TOWARD AUTHENTIC 21<sup>ST</sup> CENTURY LEARNING AND THE DEVELOPMENT OF LEARNING ENVIRONMENTS THAT ENABLE AND FACILITATE SUCH LEARNING."*

Bob Pearlman





## RESOURCES

### BIBLIOGRAPHY/WORKS CITED

- Sullivan, L. H. (1896, March). The tall office building artistically considered. *Lippincott's Magazine*.
- Partnership for 21st Century Skills. (2002-2009). *Framework for 21st century learning*. Tucson, AZ.
- Gardner, H. (2008). *The 25th anniversary of the publication of Howard Gardner's Frames of Mind: The Theory of Multiple Intelligences*. Retrieved from <http://www.pz.harvard.edu/PIs/Mlat25.pdf>.
- Lippman, P. C. (2010). Evidence-based design of elementary and secondary schools: a responsive approach to creating learning environments. Hoboken, NJ: John Wiley & Sons, Inc.
- International Baccalaureate Organization. (2005-2011). *About the international baccalaureate®*. Retrieved from <http://www.ibo.org/general/who.cfm>.
- The College Board. (2011). *AP Program*. Retrieved from <http://professionals.collegeboard.com/k-12/assessment/ap>.
- WestEd. (n.d.). *US Charter Schools, Overview*. Retrieved from [http://www.uscharterschools.org/pub/uscs\\_docs/index.htm](http://www.uscharterschools.org/pub/uscs_docs/index.htm).
- Bergsagel, Victoria, Best, Tim, Cushman, Kathleen, McConachie, Lorne, Sauer, Wendy & Stephen, David. (2007). *Architecture for achievement: building patterns for small school learning*. Mercer Island, WA: Eagle Chatter Press.
- Hille, R. T. (2011, February). *Modern Schools: A Century of Design for Education*. Wiley.
- Baum, S. (2009, November) Are Too Many Students Going to College? *Chronicle for Higher Education*.
- Johnson, J. (2010, December) *International Education Rankings Suggest Reform Can Lift United States*. U.S. Department of Education Website.
- Ravitch, D. (2010, March) *The Death and Life of the Great American School System*, Basic Books.

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