

DESIGN
PRINCIPLES
& PRACTICES
AN INTERNATIONAL
JOURNAL

Volume 4, Number 4

Eco Literacy: An Eco Web Greening Public
Imagination

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DESIGN PRINCIPLES AND PRACTICES: AN INTERNATIONAL JOURNAL
<http://www.Design-Journal.com>

First published in 2010 in Champaign, Illinois, USA by Common Ground Publishing LLC
www.CommonGroundPublishing.com.

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ISSN: 1833-1874
Publisher Site: <http://www.Design-Journal.com>

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Typeset in Common Ground Markup Language using CGCreator multichannel typesetting system
<http://www.commongroundpublishing.com/software/>

Eco Literacy: An Eco Web Greening Public Imagination

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Abstract: www.NEXT.cc, an art + design + environment eco web, introduces what design is, what it does, and why it is important to the design denied public. www.NEXT.cc connects personal choices with local place based information, object, experience, and environmental design activities linked with global museums, institutions, and contemporary practices effectively changing consumers into creators. Children, teachers, and families access the world of ideas and innovation through writing, speaking, drawing, graphics and modeling moving between computer, community and the world. www.NEXT.cc's one hundred+ journeys/one thousand+ resources/one million+ users find consilience of scales- nano, pattern, object, space, architecture, neighborhood, urban, regional, and global. Eco web learning grows a community of eco literacy connections expanding opportunities for our sustainable future.

Keywords: Design, Design Thinking, Design Education, Design Economy, Digital Literacy, Ethical Imagination, Creativity, Sustainability, K12

Designing K12 Design Education: Eco Web Teaching and Learning



Figure 1: Consilience of Scales from Eco Web of NEXT.cc

The Nature of Design

IT IS THE nature of design to redesign. American K-12 education requires redesign in response to the complexities of evolving economic, social, technological, and political needs of the 21st century-educated person (Figure 1). Children are future leaders and education serves to assist them for lives of purpose in today's world. The traditional three "Rs" -reading, writing, and arithmetic-no longer alone equip children for the challenges of today. Children are called upon to recycle, re-use, rethink, relate and respond in new ways. In a world that changes faster than the mind can comprehend, education needs to redesign delivery and content to best prepare children to be adaptable and creative citizens. American K-12 education needs design education to instill ethical imagination, to raise focus and relevancy, to introduce failure and fun.

Design combines science and art and mediates diverse information across natural and artificial systems. It offers processes that open complex interactions and morally charged decision making in relationships with each other, with the built world and the world we encounter. Design facilitates relationships between the physical and social environment; the advent of sustainable design practices proposes solutions to social problems, provides conscientious living strategies and creates local and global ecological perspectives. Eco Web Teaching and Learning is a 21st century strategic network of information, object, experience and environmental design resources and practices that mandates eco literacy and digital fluency in design education. Eco Web Teaching and Learning greens imagination.

An ecologically literate person has a basic comprehension of ecology, human ecology and the concepts of sustainability (Orr, 2006). Digital literacy involves critical engagement with technology and development of social awareness of how technology can be used to convey information and meaning (Hague & Payton, 2010). As Future LAB writes, to be digitally literate is to have access to a broad range of practices and cultural resources so as to make and share meaning in different modes and formats and to create, collaborate and communicate effectively (2010). Eco literacy and digital literacy introduce design thinking and making; ethics of sustainability introduce current cultural issues and understandings while media fluency encourages best information assessment, management and communication of ideas. Inclusion of design education transforms learning standards to those that best prepare students for 21st century careers. As nature learns from diverse approaches, so too does the K-12 education system need to learn from other educational models and environmental practices. Introduction of design thinking and design principles assists in creating relevant and applied curriculum (Figure 2). Eco Web teaching and learning provides 24/7 access to tools and resources. Teaching for creativity encourages social and emotional connections to information, raises attention, focus and confidence and motivates learning.

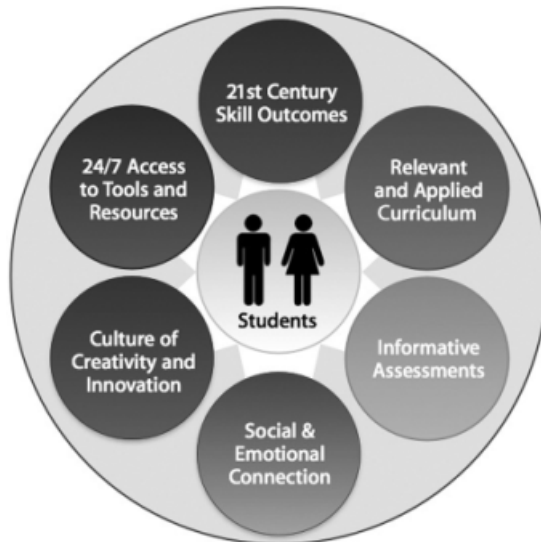


Figure 2: Six Design Principles for Schools (ACOT, 2006)

Student Designers

The American K-12 education system needs graduates to be designers and creative problem solving individuals. Dr. Howard Gardener's Five Minds for the Future include "the disciplined mind, the synthesizing mind, the creating mind, the respectful mind and the ethical mind" (2006). Disciplined minds continue to develop expertise in discrete subjects. Synthesizing minds activate ideas from different disciplines and systems and integrate diverse approaches. Creating minds encounter new contexts and situations and strategize new opportunities. Respectful minds are open to different points of views and cultures. Ethical minds develop purpose for individual contributions to society. The designing mind works best when integrating all of these minds together.

Children and young adults are the future. We must allow all of them opportunities to interact with the world and engage with the world in propositional ways- ways that when tested have the potential to fail as well as to succeed. As an alternative to struggling standardized testing, design pedagogy opens up diverse solutions and creates objectives of relational value. Ken Robinson agrees we must not let "the classroom kill creativity" (2001). Creativity is a 21st century necessity for students to discover the connections between themselves, their talent and their ability to contribute to the world.

Design Education and Diversity

According to the 2000 census, by 2025 what are considered minority populations are predicted to be 40 percent of the U.S. population; by 2050 minority populations are predicted to reach 50% (Grant, 2009). This K-12, 40% design denied student population in the U.S. is also 41% impoverished (U.S. Department of Education, 2009). Yet creativity knows no race or income level; children need to have natural inquisitiveness, curiosity and exuberant points of view supported and encouraged in the classroom. Children need to be better informed about design practices at an earlier age to enable them, college bound or not, to make better choices about the built environment and their interactions with it.

In the meantime, the racial/ethnic groups that are the least educated are the fastest growing (National Center for Public Policy and Higher Education, 2010). Designers need to design education for the population their professions deem to serve. The American Institute of Architects recognized that of the 192,860 architects in the United States only 15% were of minority population: 20.3% women, 2.7% Black, 5.6% Hispanic, 6.3% Asian and .3% American Indian (U.S. Census 2000). Nearly one-third of all public high school students, and nearly one-half of all African American, Hispanic, and Native American students, fail to graduate with their class (ACOT, 2006). These at-risk students, many not exposed to art, are under served and therefore not proportionately represented in university design programs or in the professional design workforce. According to a 2002 survey by the Committee for Economic Development, 30 percent of large U.S. businesses believe that a "provincial, monolingual workforce" had cost them global business opportunities (McGray, 2006). Education is one most effective interventions for improving social and economic futures: for individuals, communities, states and countries. As design practices develop new methods of research, new knowledges and new practices, it is critical that the under served, majority approaching population, be introduced to design career possibilities through K12 design education opportunities.

Diversity as an educational issue does not just mean reaching minority populations, it means reaching diverse learner types and learning from diverse approaches. As only a small percentage of college students study abroad during their college experience, new global paradigms and practices need to be brought to teachers and students. Only one in three American 7th to 12th graders study a foreign language; in elementary school, that number is just one in 20 (McGray, 2006). Discrete topic learning doesn't provide opportunities to engage learning from other approaches. Schools continue to struggle to meet minimum testing standards and standardized testing does not measure imagination. Pedagogy is focused on teaching knowledge, comprehension and application with success measured on being correct. Students are not given the opportunity to learn from failure, revision or given the chance to rethink in propositional ways. With new research about how the brain learns, how it reconfigures and how it innovates, teachers need to modify instruction to address diverse ways of learning and offer open ended outcomes.

Design Intelligences

Teachers and standardized assessments typically stress linguistic and logical-mathematical learners. Gardener expands types of intelligence: linguistic, logical-mathematical, musical, bodily kinesthetic, spatial, intrapersonal and interpersonal. These "intelligences" need different supports to encourage and to motivate their natural inclinations. The arts work to nurture music, dance, painting, sculpture, drama and cultural engagements. Intrapersonal and interpersonal are considered "personal intelligences" and affect how we think of ourselves, how we relate to others, and how we see ourselves in the world (Gardener, 1999). Gardener recently added natural intelligence, or understanding of ecological systems of nature, spiritual and existential intelligence (1999). This breadth of potential in our children is not standardized and is not considered to be testable with current assessment methods (Infed, 2010).

The U.S. Department of Labor's "Characteristics of a 21st Century Leader" lists skills that students need to succeed as learners, workers, and citizens: innovation and creativity, flexibility and adaptability, collaboration and working as a member of a team, problem solving, critical thinking, and communication (2000). The educated person in the 21st century needs to recognize excellence, be able to listen, be able to solve complex problems and be prepared for jobs that do not yet exist. Benjamin S. Bloom's Taxonomy starts with remembering at the bottom of the ladder and climbs up with understanding, application, analyzing, evaluating (Overbaugh & Schultz). A revised taxonomy presents lower order thinking aimed at memorization and higher level thinking aimed at innovation and creativity (Figure 3). Interestingly, the current, one-size-fits-all teacher-centered delivery of information only delivers the lower orders of thinking.

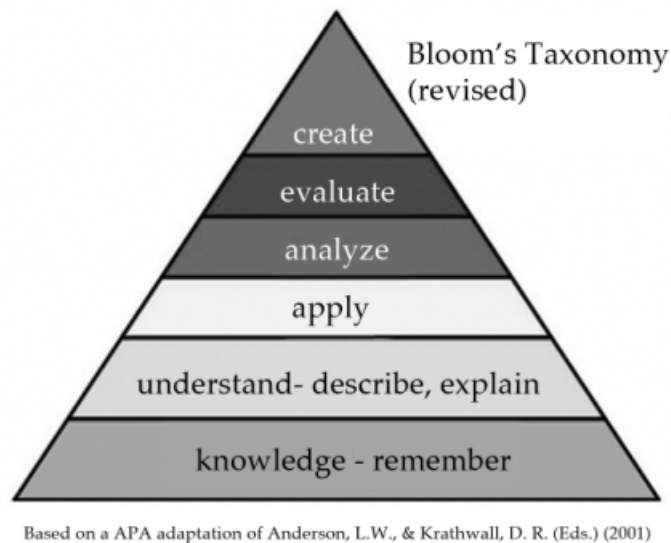


Figure 3: Bloom's Taxonomy Revised by Anderson, L.W.

The design revolution reinventing college curriculum, new practices and new research innovation centers, needs to cross over to the design denied K-12 population of teachers, children and their families. Introducing design thinking (observing, analyzing, evaluating, imagining) and design making (envisioning, conceptualizing, proposing) as agencies for innovation and creativity across the K-12 landscape is critical to our sustainable future. Eco Web teaching and learning provides a variety of creative resources and communication tools. "It's not about the world of design, but design of the world (Mau, 2007).

Design Imagination and New Entrepreneurial Economies

New ways of learning and new ways of knowing start new economies. New learning tools and new skills remake the context between consumer, creator and producer. 86% of voters believe that encouraging children to be creative and develop their imagination is necessary to maintain our creative edge and ensure that we do not fall behind other countries (OWP/P, VS Furniture & Mau, 2010). By championing art that is linked with science, engineering and math, creativity that is linked with research, design can become a powerful vehicle for transforming a learning environment. If you create a system where initiative and creativity is valued and rewarded, then you'll get change from the bottom up (OWP/P, VS Furniture & Mau, 2010).

Design education lays the seeds for imagination and establishes a foundation for future entrepreneurial economies. Merriam Webster's Unabridged Dictionary defines an entrepreneur as "the organizer of an economic venture" and "one that organizes, promotes, or manages an enterprise or activity of any kind" (2010). Dr. Edward L. Glaeser, Harvard Department of Economics and Dr. William C. Strange, Rotman School of Management University of Toronto, believe entrepreneurs to be dynamic agents of change (Glaeser, Rosenthal & Strange,

2009). They report that entrepreneurs often seem to have been significantly influenced by features of their local economies; they are affected by the environment they grow up in, and in turn, they have a place based influence on those economies.

The current lack of design education, lack of active project learning and schools not wired for use of digital technology in the United States, diminish our country's innovative contributions to what many are calling the new design economy. US Secretary of Education, Arne Duncan, reports that only 47% of our schools offer visual arts instruction to eighth graders, and art budgets, arguably the most important programs to stimulate imagination, are the first to be cut (Duncan, 2009). Annual budget cuts in schools around the nation range from \$125-\$130 million dollars. (Academy of Art on the Internet, 2010). "Most schools will see cut backs in all departments but a past time trend that was hoped to be overruled is now coming back into play - eliminating the arts. In the 1970's the arts, from theater to fine arts to music were seen as an "extra expense" to most public schools and when times got hard these programs got cut. As research and studies developed on the importance of art education, elimination of these programs became an error of the past and schools began to make the arts a necessary part of their well-rounded educational program" (Academy of Art on the Internet, 2010). Current data show that high school graduates in jobs requiring the highest degree of innovative thinking earn more than 50 percent more than those in jobs requiring the least innovation. For college graduates, the difference is 135% (Uhalde, Ray & Strohl, Jeff. 2006).

Design Education and the Importance of Art

Canada and the United Kingdom have been mandating K-12 design education since 1995, yet only three U.S. states (MI, WI, NJ) have added design standards to art standards. Declared basically non-existent in the United States (Davis, 1998), teaching of design changes STEM (Science + Technology+ Engineering + Math) learning to STEEAM (Science + Technology + Engineering + *Environment* + *Art* + Math). Compared to other nations, the math and science achievement of U.S. pupils and the rate of STEM degree successes appear inconsistent with a nation who considers itself the world leader in scientific innovation. "In a recent international assessment of 15-year-old students, the U.S. ranked 28th in math literacy and 24th in science literacy" (Kuenzi, 2008). Changing STEM to STEEAM learning champions creativity and ethical responsibility by integrating art and environment with science, technology, engineering and math. Art experiences teach children about qualitative relationships. Art outcomes champion diverse approaches and solutions. Children learn from and celebrate multiple perspectives. Art experiences help children develop unique perspectives and assist children in visualizing and materializing ideas (Eisner, 2002). STEEAM teaching and learning offers ethical and propositional thinking to the mix in rethinking how the "built" world impacts the environmental world. STEEAM design standards introduce critical thinking, strategic research and propositional skills that value creativity in improving human interaction with other living systems. Victor Margolin calls such design imagination the "Ecology of the Artificial"(2002).

Design Education and the Importance of the Environment

Although we are more aware of global threats to the environment, children's full sensory immediate experience with nature is fading (Louv, 2005). In addition, students' experience

and understanding of nature has changed radically. Taking learning out of the classroom onto the school grounds uses the outdoors as an immediate learning laboratory and enriches the learning experience. The critical addition of “the environment” as a place to learn is a foundational relationship that needs to be integrated into education. (Orr, 2005). If nature is introduced as an everyday engagement rather than as a scientific abstraction, children will become aware of the value being placed on building a relationship with the outdoors. Opposed to the extracted relationships of the industrialized revolution, Janine Benyus asks for a “Biomimic revolution” to learn from nature (1998). Biomimetic research discovers what works in the natural world and perhaps even more importantly, what lasts (Benyus, 1998). Standards for environmental education have been established, “No Child Left Inside,” with four learning strands:

- Strand 1: Questioning, Analysis and Interpretation Skills;
- Strand 2: Knowledge of Environmental Processes and Systems;
- Strand 3: Skills for Understanding and Addressing Environmental Issues including the earth, living systems, humans and their societies and interactions between humans and the environment.
- Strand 4: Personal and Civic Responsibility.

(North American Association Environmental Education, 2010). All four strands parallel design thinking and making objectives of sharpening research, understanding environmental impact of human productions, and developing social responsibility and advocacy for more sustainable living practices. NAAEE publishes a State Environmental Literacy Plan that encourages schools to introduce environmental content based instruction. Current STEM teaching (Science + Technology + Engineering + Math) aims to support students with the necessary skills to prepare them for the career challenges of the 21st century. Introducing design as an active practice learning from the world, engaging the world and improving the world to K-12 teaching transforms STEM objectives into STEEAM teaching (Science + Technology + Engineering + Environment + Art + Math).

Students who use the outdoors as a learning lab are more likely to connect the well being of the environment to their personal well being (Orr, 2005). Studying natural and artificial systems opens understanding of environmental ecology as integral to human ecology and encourages rational thought. Students can experiment and learn through observational trial and error more freely than by traditional pedagogical methods and standardized tests. The study of natural systems links traditional science standards, while the study of artificial systems (roads, parking lots, power grids, water supplies, buildings, green spaces, etc.) connect science and math. The term built environment represents any material intervention with the natural world originating from human needs for protection and survival as well as social integration and aesthetic pleasure (Langdon, in Guilfoil & Sandler, 1995). Within the context of the built environment, design refers to the way in which any built structures, landscape architecture, public art pieces, or urban spaces, including the layout of towns and cities and their streets and parks, are planned and created. Moving the classroom outdoors and into the community offers opportunities for rethinking what we have created in our built environment. Students become empowered through their ability to contribute ideas that improve the school’s environment. This learning experience empowers students with the knowledge that they are responsible agents of change.

Design Education and the Importance of Place Based Education

Design education is a socially constructed landscape that connects teachers and students with their immediate communities. Because everything is designed in the classroom, around the school campus and in the school’s community, students need to learn to experience the wonder of their immediate natural and built world. This is an important first step in engaging with a place and creating a place-based learning experience. Understanding principles of ecology and experiencing them helps students acquire a sense of place (Capra, 2006). Today most school students have been introduced to notions of rainforest or glacier depletion; yet most of these students could not name the grasses, trees, bird or insects on their school grounds nor tell where the food in their lunch came from or water in their local watershed. While most states study local culture in response to 4th grade standards, students do not necessarily re-engage local culture to learn local economies. Placemaking is a design tool that creates a sense of ownership in a public place by attracting and connecting people to a specific location. While *space* is defined as an area, a *place* is an attraction and a destination. Without public space there is no public life. Most cities are defined by their public spaces. Public spaces often grow to symbolize a community, a city or an entire society’s identity. Integration of place making design projects allows students to learn from their immediate surroundings and connects them to a specific location at a specific time. Placemaking offers an array of investigative tools - activity and behavior mapping, interviewing, counting and tracking of use. (Figure 4). Architecture and landscape projects involve environmental mapping of and investigation of local sites. Design tools are excellent vehicles for making students more aware of their surroundings and connecting them to their communities.



Figure 4: Project for Public Spaces Place Making Game, www.pps.org

Design of the World

As almost three fourths of the world's population moves into urban environments, we surround ourselves with designed objects and designed environments (Population Reference Bureau, 2000). Contemporary design principles pivot on the notion that the value of an idea exists in its consequences just as much as its inheritance. We must re-examine and redesign our world if we wish to create short-term comfort and long-term success. Design is taught at the university level, and less than 20% of U.S. 25 year olds have completed a bachelor's degree (U.S. Department of Labor, 2000). "The general public was/is not cognizant of the benefits of design and planning; they do not know what to ask or how to ask for it. It is obvious that a broader audience has to be educated about the benefits that good design fosters in creating healthy communities" (Graves, 1999, p.195).

Organizations such as the Center for the Built Environment in Britain (CABE), serve to connect schools with their local communities. Students learn from what has been designed, what is positive and negative, what is wondrous and what is wasted. By observing, analyzing and evaluating, students develop critical awareness and an ability to place value on their surroundings. Placing value develops an ethic of care. Armed with these types of experiences, students better conceptualize the need for change and can gain confidence in imagining meaningful alternatives to that which exists or could exist.

Design Education and the Digital Divide

There are design problems inside the classroom as well. Current 19th century classrooms have not kept up with new modes of teaching and learning with expanding access to information. 21st century teaching and learning positions students as Digital Natives vs. teachers as Digital Immigrants (Churches, 2008). Digital Natives are those students who, through consistent exposure to multiple media, social networks and international search engines, are engaged, motivated and learn by the use of accessible technologies (Figure 5).

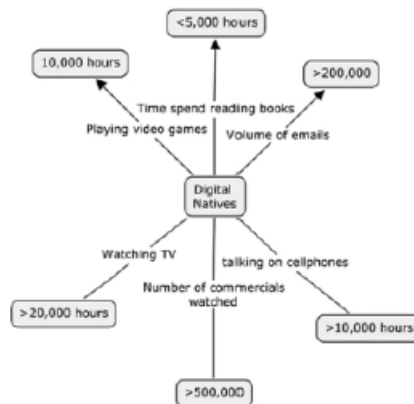


Figure 5: Students as Digital Natives

21st Century Pedagogy Churches, A. 2008

In fact, students spend much more time on anytime, anywhere, with anyone learning than on teacher directed learning. Access to technology across core subjects addresses current cultural issues and builds digital literacy. Digital literacy assists students and teachers in seamless use of technology, access to information collection, assessment and selection. Digital technology in the classroom keeps both the teacher and the students constantly learning new design tools, developing new skills, new career understandings while accessing images, text, video and sound from multiple media sources (Figure 6). Digital fluency equips students with the necessary professional skills to express themselves and to communicate ideas to other audiences.

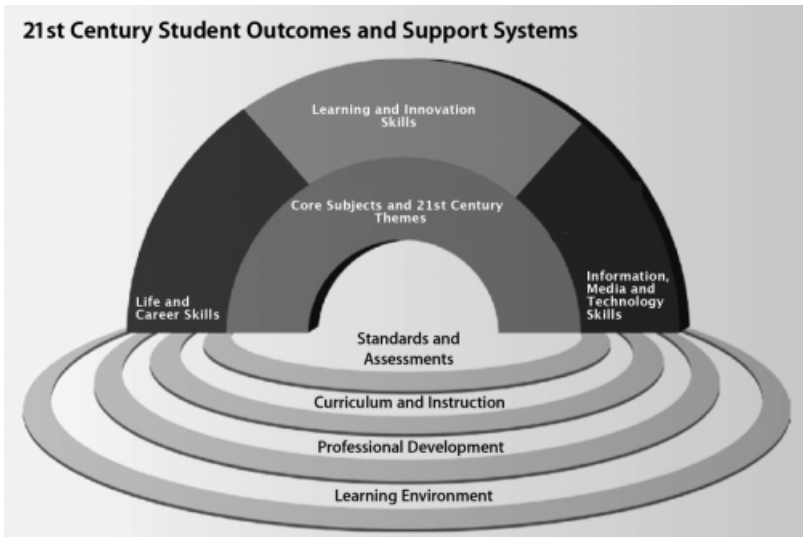


Figure 6: Framework for 21st Century Skills Apple’s APCOT 2

<http://ali.apple.com/acot2/skills/>

Digitally adept students spend hours daily on learning that is self-directed, visual, media rich, relevant and fun! Authors such as Clayton Christiansen in *Disrupting the Classroom* project that half of all high school learning will be on-line in ten years (2008).

In 2003, the United States Department of Education reported all 3.9 million teachers introduced to computers through professional development programs... at least once (National Educational Technology Trends Study, 2008). Yet the time required to learn complex computer programs, research appropriate on-line resources and establish responsive curriculum isn't readily available to overworked, under served teachers. Nearly half of all of the schools in the U.S. lack the basic electrical wiring to support computers, modems and other telecommunication technology (OWP/P, V Furniture & Mau, B., 2010, p.8). Encouraging teachers to use fun, facile and friendly resources with their students is an essential introduction to use of technologies and plays a critical role in future design employment choices. Teachers need professional training and development to integrate accessible digital technology in creative ways in their classrooms. Teachers need design education.

Teachers as Design Educators

Introducing design concepts into the minds of children begins with teaching what design is, what design does and why design is important to their teachers. Teacher design education programs are critical professional development programs designed to help teachers reach the millions of students in this country and equip them with creative thinking, digital collaboration and communication skills. Design colleges and universities constantly restructure curricula and redefine their ideas about the designer of the future in response to current cultural issues and expanding digital practices. Teacher education programs also must redesign programs to include current concerns of eco-literacy, digital literacy and local and global collaborations. Teachers, experts in their schools, in the needs of their students and in the pedagogical techniques required to support learning, need design support. Teaching teachers to shift from traditional literacy to eco literacy integrates design and understandings of human ecology intertwined with our sustainable future. Introducing design introduces teachers to life long learning.

Designing K-12 Design Education: Eco Web Teaching and Learning

Traditional reading, writing and arithmetic, and discreet subject introduction no longer establish the foundation from which children engage fluidly across disciplines and combine ethical evaluations with complex multifaceted issues surrounding local and global urbanism. Just as design goals of early industrialists did not see design as part of a larger system, so too, our standardized educational with all of its good intentions, struggles to provide relational relevancy (McDonough 2002). The consilience of information and access to knowledge along with our growing understanding of how the brain builds knowledge and wisdom, cries out for changes in the fundamentals of pedagogy (Wilson, 1998). The very nature of learning has evolved so rapidly that the means of delivering information and the types of information that need be delivered now demand different instructional methodologies. “One serious problem for designers is that, even with a systems approach, there are few tools in existence that wrap these issues together. Instead, designers must learn to match together a series of disparate approaches, understandings, and frameworks in order to build a complete solution” (Shedroff, 2009). As knowledge is becoming accessible in the most generous sharing of information and ideas that the human race has ever experienced, learning is 24/7 and lifelong. Design education as creative, relational learning needs to engage teachers, students and parents as something essential, attractive, useful and desired. It must raise appreciation of and advocacy for the role it inevitably plays in our relationship with the rapidly changing world (Figure 7).

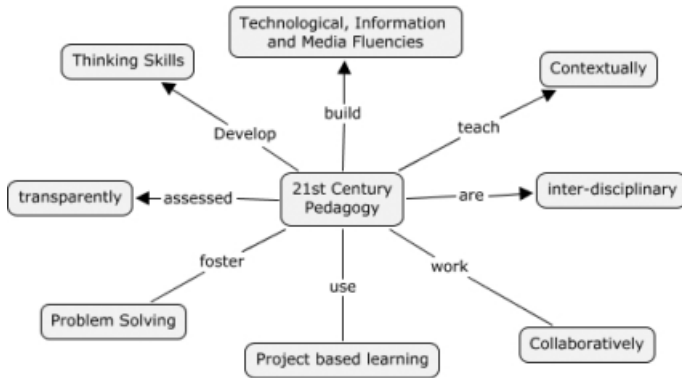


Figure 7: 21st Century Pedagogy Churches, A. 2008

The multifaceted approach to 21st century education that STEEAM or design requires transforms discrete subject introduction in schools to project based motivational learning. U.S. Green Charter Schools are one example of new schools that stress the environment as a priority across the curriculum with active learning. New charter schools in design like the SUPAR School for Urban Planning and Architecture stress urban engagement weaving ‘in the city’ student directed projects across traditional core subjects (Figure 8). Students use diverse media to study, conceptualize, and engage their city communities. New charter schools are open to new teaching and learning platforms that stress transdisciplinary activities, multiple outcomes and student directed learning.

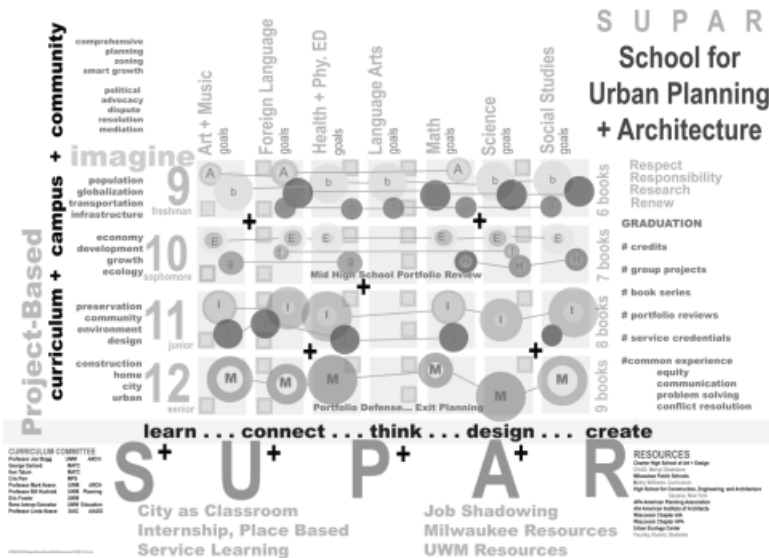


Figure 8: SUPAR Curriculum Poster Mark and Linda Keane <http://www.studio1032.com/main5.html>

Combining environmental strands suggested by the NAAEE with design education creates 21st century STEEAM teaching with a new platform, the Eco Web.

Eco Web Teaching and Learning: Greening Imagination

Eco Web teaching and learning is an on-line, open source, knowledge-growing environment for design education for teachers, students and their families. The Eco Web of www.NEXT.cc is a resource created to bridge the digital divide with access to on-line imaging, modeling, animation and graphic design programs. Eco Web learning introduces teachers and students to the range of design scales from nano to pattern, object, space, architecture, neighborhood, urban, region and the world (Figure 9). Eco Web learning introduces teachers and students to the world of design for design of the world; interactive journeys introduce ideas and concepts linked with museum exhibits, interactive programs, and contemporary global practices. Eco web teaching brings design of the world into remote classrooms and introduces design thinking to teachers not trained as designers. Through the Eco Web, students and teachers share art and design research and knowledge integrated with environmental and material processes. They communicate ideas and proposals about current issues and developments. Eco web learning empowers digital and environmental literacy through design opportunities.

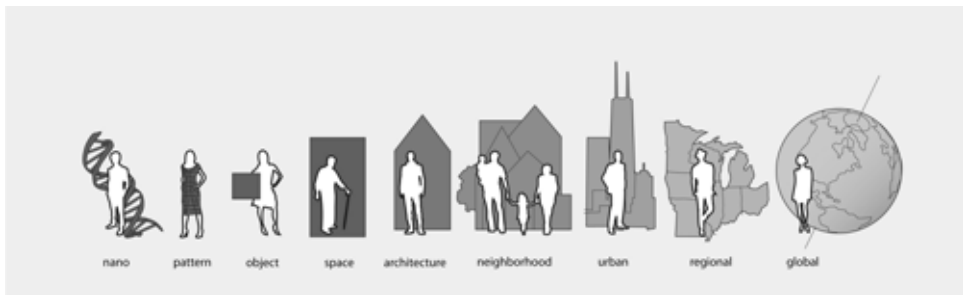


Figure 9: [www. NEX.T.cc](http://www.NEXT.cc) Nine Scales of Design

Eco Web Learning is inquiry-based: it introduces what design is, what design does, and why design is important. Eco literacy and the development of the ethical imagination demand that interdisciplinary thinking connect with local community interaction and engagement. Individual project based learning raises awareness of local conditions that affect choice. This includes: local place-making, urban agriculture projects, history lessons, science activities, historic neighborhoods and more. Moving the education experience between local place based projects and global resources crosses cultural and physical divides, encourages sharing and learning from diverse sources with unique approaches and creates an Eco Web network that connects administrators, teachers, students and schools with each other and with global museums, institutions and practices working to make the built environment better.

NEXT.cc Eco Web Resource

Eco Web learning requires teachers to be collaborators and life long learners along with their students. Maximizing and categorizing resources available on the web, empowers teachers

with time saving research at their fingertips. Establishing an open source resource allows teachers and students to become part of an extended community and to build a valuable network of design principles and practices. The Eco Web of NEXT.cc offers free access to over 130 three-part journeys providing tools, language, discovery, and design adventures.

TOOLS deliver key investigative instruments used by scientists, artists, designers and environmentalists to collect and evaluate observations and findings.

LANGUAGES introduce systems of ideas such as climate, pattern, shelter, energy, food culture and geometry.

DISCOVERY journeys introduce the complexities of multiple interactions between systems such as buildings and nature and buildings and bodies.

DESIGN offers challenges to rethink, re-envision and re-proposition humans' relationships with their surroundings (Figure 10).



Figure 10: TOOLS, LANGUAGES, DISCOVERY, DESIGN Journeys of www.NEXT.cc

Teachers explore the Eco Web thematically (art/design/environment), activity based (research/writing/visualizing/modeling), as traditional curriculum (language arts/social studies/science/math/health), or randomly individualizing STEEAM learning. Teachers use the Eco Web for enrichment clubs, after school programs, weekly homeroom sessions, career introduction, special academies and design curriculum in the classroom and community. As Dr. Kirk Harris, founder of the new charter school, SUPAR, reports “I find NEXT.cc to be a powerful, intuitive and disarmingly engaging learning platform for students. It (Eco Web Learning and Teaching) has been a great vehicle for supporting student directed exploration and discovery. As a project-based high school, we value learning opportunities that engage

our students in ways that require them to take leadership for their learning. NEX.T.cc supports our pedagogical objectives very well. The modular nature of the NEX.T.cc platform allows for the scaffolding of knowledge building, thus rewarding students by promoting their increased level of content competency, while encouraging them by giving them opportunities to demonstrate their increased capacity to apply what they know. That said, NEX.T.cc is a robust learning platform that could be applied in various education settings where creativity, global thinking and student-center learning is valued” (2010).

Sean S. Miller, Director of Education Earth Day Network, writes “NEX.T.cc is a brilliant concept encouraging our students to be active in their communities as architects and educators. It introduces environmental issues and inspires design and education as ethical practices” (2009).

Design is a process that encourages engagement with the unknown and the unrealized. It is a critical skill for today’s generation of children and builds upon their natural abilities and their inherent generosity of ideas. Design needs to be introduced to teachers of children in the American K-12 education system to support innovation and to engage children to contribute to the world in a creative way. The understanding that ideas have consequences and that all creative acts are connected to other systems, rather than operating in isolation, are essential relational understandings of the eco-literate individual. Examples of other necessary 21st century skills include global awareness, financial and entrepreneurial literacy, information and media literacy, civic literacy and health literacy (ACOT2, 2006). Human possibilities continue to expand as we learn anew how to interact with the world, engage the world and improve our existence. Digital literacy supports this process of young people becoming active meaning-makers (Hague & Payton, 2010, p.5). Rather than preventing young people from engaging with technology in the classroom, concentration on digital literacy expands self expression and assists development of understanding of the complexities of design work. Digital literacy supports students to become independent, critical learners and narrows the difference between children’s lived experiences inside and outside of school. Digital literacy extends the students’ relationship to learning in families as they take new media skills back home. Digital literacy empowers children to direct their learning when and how and where they choose, raising motivation. Daniel Pink writes, “We might not all be Dali or Degas, but we all must be designers” (2005).

Eco web learning diversifies learning objectives and outcomes by connecting learning to the real world and providing students multiple entries to engage with the world. It expands structured learning to make connections between diverse fields and diverse approaches to those fields. Eco Web learning encourages reflective discussion and critique amongst students and between teachers and students and outward between students and their communities.

NEX.T.cc’s eco web is a collaborative project to initiate K-12 design education by introducing teachers, students and their communities to design opportunities. Partners to the Eco Web since its inception have included the Cooper-Hewitt, National Design Museum, the Association of Collegiate Schools of Architecture (ACSA), A+DEN, Architecture and Design Educators Network and Chicago’s Burnham 100 Educational Outreach Program. Supported in part by National Endowment for the Arts, The Graham Foundation, The School of the Art Institute of Chicago, and the University of Wisconsin- Milwaukee, NEX.T.cc received a United States Green Building Council Excellence in Green Building Award, American Architectural Foundation Merit Awards, and a City of Chicago Green Works Nomination. Eco Web learning presents design education workshops in museums, schools and libraries

reaching teachers, students and their families with positive learning experiences that improve outcomes cross the K12 educational landscape.

Acknowledgement

Authors would like to acknowledge assistance in editing to John Keane, Emerson College 2011, Kevin Hinz, UWM 2010, and Sheila Smith.

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Linda Keane, AIA, NCARB, Professor of Architecture, Department of Architecture, Interior Architecture and Designed Objects at the School of the Art Institute of Chicago combines teaching, research and practice in architecture, animation and environmental urbanism. Partner in STUDIO 1032, she collaborates with diverse communities in identity tuning, idea generation, visualization, place making, and design education. As architects, artists, and filmmakers, STUDIO 1032 pioneers architecture practice with Internet, video, and film media for general public awareness of the importance of design of the environment. Keane's public projects are socially constructed landscapes rooted in nature with artistic, environmental, educational, and entertaining intentions. Involved with building curriculum for new graduate programs at SAIC, Keane co-created www.NEXT.cc, a not for profit art + design + environment eco web promoting stewardship of the environment. Her work has been supported and recognized by the AIA, ACSA, NEA, NIAE, PBS, and the Graham Foundation. She has been honored with AIA School Medals, AIC Chairman's Award, Presidential Urban

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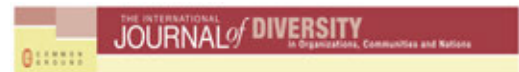
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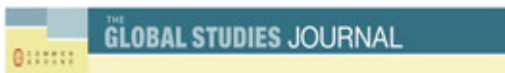
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