

# **Strong Nests, Successful Students: Skills & Strategies for 21st Century Learning**



**Annette Lamb    [alamb@eduscapes.com](mailto:alamb@eduscapes.com)  
<http://eduscapes.com/sessions/birds/>**

# Standards and Nesting Materials

<http://www.eduscapes.com/sessions/birds/nesting.htm>

Birds are constantly rebuilding and strengthening their nests. Strong nests provide a nurturing environment for chicks to grow. The introduction of the revised standards allows us a chance to rebuild our teaching and learning nest. Are you building a strong foundation for your students? Explore practical ideas and strategies for addressing the skills needed by 21st century learners. Through collaborations among media specialists, technology coordinators, and classroom teachers, we can motivate and challenge students across the curriculum.

## New Standards

ISTE and AASL have recently updated their student standards. If you're already addressing the old standards, now is your chance to revisit your curriculum and reconnect with the teachers in your building. It's also a great opportunity to infusion Web 2.0 applications and other new technologies across the curriculum.

## Explore the NETS - National Educational Technology Standards from ISTE

1. Creativity and Innovation
2. Communication and Collaboration
3. Research and Information Fluency
4. Critical Thinking, Problem Solving, and Decision Making
5. Digital Citizenship
6. Technology Operations and Concepts

## Explore the Standards for the 21st-Century Learner from AASL

1. Inquire, think critically, and gain knowledge
2. Draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge;
3. Share knowledge & participate ethically and productively as members of our democratic society;
4. Pursue personal and aesthetic growth.



My test for the new standards is whether they could result in motivating young people to go beyond the basics and ask high level questions. Ask Yourself: Will they challenge and engage young people in meaningful activities and assessments? How? Why?

**Favorite Parts.** Both sets of standards do a great job focusing on the following areas:

**Real World Connections.** Emphasis on authentic applications and independent thinking

**Critical Thinking.** Focus on high level thinking, problem solving and decision-making.

**Personal Responsibility.** Emphasis on ethical behavior.

**Research.** Stresses the research process and associated information skills.

## Favorite Parts of ISTE Standards

**Creativity.** Emphasis on creativity and original work.

**Collaboration.** Stresses the importance of working collaboratively with others.

## Favorite Parts of AASL Standards

**Inquiry.** Inquiry is at the core of the standards.

**Multiple Perspectives & Resources.** Focuses on the need for multiple perspectives, resources, and ways of thinking.

**Curiosity, Pleasure, and a Passion for Learning.** Emphasis on personal and aesthetic growth which is great, but difficult to measure in traditional ways.



What kind of nester are you? How will you approach the new standards?  
Will you develop your own program?  
Will you integrate within a single subject area or all areas?  
Will you tackle everything at once or will you work in phases?

## Sensible Nests

<http://www.eduscapes.com/sessions/birds/sensible.htm>

Consider ways to EXPLORE, MODEL, then INTEGRATE each of the following four areas:

**Connect.** Explore ways that technology can be used to make professional, teacher, and student connections; share announcements, documents, calendars; brainstorm, organize, and share ideas.



Brainstorm ways of using Wallwisher, Todaysmeet, or AnswerGarden.

**Communicate.** The ability to communicate with others is one of the primary benefits of technology use. Use social networking tools to design virtual spaces for blogging, information sharing, and discussions.



What three tools will you spend time exploring this summer? Why? How do you see yourself using the tool for communication?

**Collaborate.** Go paperless! One of the most important features of 21st century technology is the ability to easily collaborate online. Team building, peer editing, grant writing, and the synergy that comes from people working together are all examples of the power of collaboration.



What collaboration project will you try in the Fall?  
How tool would be most effective for this collaboration?  
Brainstorm teachers and tools you could connect.

**Create.** From audio and video recording to the production of comics, technology tools provide adults and young people a wide variety of tools for creating and sharing products.



Connect standards to a project-based approach.  
Describe a project that would use research, production, and sharing tools.

# Creative Nesting

<http://www.eduscapes.com/sessions/creativity/>

**Think Different.** Take time to ponder, contemplate, and create. Rather than using a traditional paper thesaurus, think visually and use a visual thesaurus.

**Provide Options.** When vision doesn't equal artistic skills, technology can help by providing options.

**Model Innovative Tools.** By modeling use of the technology, young people can generate ideas for how they might incorporate the tool into their work. (Sea of Trolls)

**Infuse Varied Resources.** Infuse a wide variety of resources into learning materials. (Darwin)

**Scaffold Creativity.** Facilitate learning by providing small steps toward a creative product. (Trickster)

**Creative Teaching.** Combine modeling and scaffolding to jumpstart creative projects. (Brooklyn Nine)



Adapt an idea or resource for your own creative project. Consider how you will provide options, model innovation, provide varied resources, and scaffold creativity.

## Creativity

**Generative...** producing new life or propagating offspring from an initial seed or idea. (Korean War)

**Imaginative...** forming mental images and concepts that are not perceived as real. (Ubiquitous)

**Ingenious...** skilled in achieving a desired end with craft or a clever approach. (Music)

**Innovation...** being ahead of the times and building something never seen before. (Info Graphics)

**Invention....** marked by independence in thought or action. (Vincent Shadow/HowToons)

**Originative...** building something fresh, new, and unusual. (George vs George)

**Productive...** yielding positive, sustainable results in creating goods or services. (DogKu)

**Progressive...** promoting changes and advances in thinking. (Current Events/Invasive Species)



Choose one creativity word. Design your own project that connects to AASL standards and also content area standards. Think about how you will help students EXPLORE, EVALUATE, ENGAGE, and EVOKE.

# Inquiry & 21st Century Nesting

<http://www.eduscapes.com/sessions/birds/inquiry.htm>

Let's explore Callison's components of inquiry including questioning, exploring, assimilating, inferring, and reflecting. Consider how the AASL standards could be addressed within this framework.

## Question

AASL Standards for 21st Century Learners

- 1.1.1 Follow an inquiry-based process in seeking knowledge in curricular subjects, and make the real-world connection for using this process in own life.
- 1.1.2 Use prior and background knowledge as context for new learning.
- 1.1.3 Develop and refine a range of questions to frame the search for new understanding.
- 1.2.1 Display initiative and engagement by posing questions and investigating the answers beyond the collection of superficial facts.
- 1.2.5 Demonstrate adaptability by changing the inquiry focus, questions, resources, or strategies when necessary to achieve success.
- 4.4.1 Identify own areas of interest.



As yourself, "how do I encourage students to ask deep questions rather than surface level questions?" Generate a list of questions about Egyptian mummies. Then, look at photographs from Wikimedia Commons and refine the questions. What's the impact of the visuals on your ability to generate questions? How could audio, video, or animation be used in another situation?

In **Q Tasks** Carol Koechlin and Sandi Zwaan provide questions to get students and teachers thinking about their questions and information to deepen the investigation. Below are some examples.

- What other questions might be useful?
- How are the ideas alike or different?
- How will this information help me answer my questions?
- What would this look like from another perspective?
- What are the causes and effects?
- What are the consequences of?
- What if ..?
- What does this imply about...?
- What evidence supports this argument?
- What do you mean by...?
- What do you see?
- What objects go together? Why?
- Which objects should be separated? Why?
- What would you name this group? How would you describe it?
- In what other ways could these objects be grouped?



Explore a set of photographs and use the questions above to deepen an investigation.

# Explore

## AASL Standards for 21st Century Learners

- 1.1.4 Find, evaluate, and select appropriate sources to answer questions.
- 1.1.5 Evaluate information found in selected sources on the basis of accuracy, validity, appropriateness for needs, importance, and social and cultural context.
- 1.2.2 Demonstrate confidence and self-direction by making independent choices in the selection of resources and information.
- 1.2.3 Demonstrate creativity by using multiple resources and formats.
- 1.2.4 Maintain a critical stance by questioning the validity and accuracy of all information.
- 4.1.1 Read, view, and listen for pleasure and personal growth.
- 4.1.2 Read widely and fluently to make connections with self, the world, and previous reading.
- 4.1.3 Respond to literature and creative expressions of ideas in various formats and genres.
- 4.1.4 Seek information for personal learning in a variety of formats and genres.
- 4.1.5 Connect ideas to own interests and previous knowledge and experience.
- 4.1.6 Organize personal knowledge in a way that can be called upon easily.
- 4.1.8 Use creative and artistic formats to express personal learning.
- 4.2.1 Display curiosity by pursuing interests through multiple resources.
- 4.2.2 Demonstrate motivation by seeking information to answer personal questions and interests, trying a variety of formats and genres, and displaying a willingness to go beyond academic requirements.
- 4.3.2 Recognize that resources are created for a variety of purposes.

In **How To Use Your Eyes**, James Elkins urges us to “stop and consider things that are absolutely ordinary, things so clearly meaningless that they never seemed worth a second thought. Once you start seeing them, the world – which can look so dull, so empty of interest - will gather before your eyes and become thick with meaning.” (p. xi)

Exploring leads back to questioning. Questions may be refined, restated, or new queries may emerge. Encourage inquirers to be risk-takers. Ask:

What can I answer and what new questions do I have?

How can I focus and narrow my questions?

Did we miss anything the first time around?

Are there other ways to think about the same thing?

Are there other points of view that should be considered?

Can I think of unusual approaches or different ways of thinking?



Students often forget that inquiry is recursive rather than linear.

How will you help students remember to address the questions above?

Many students are looking for the quick answer. Encourage students to move from the shallow to the deep end of thinking through supporting cycles of questioning and exploring. In *Info Tasks for Successful Learning*, Koechlin and Zwann (2001) suggest evaluating the quality of student research questions by asking:

**Focus** - Does your question help to focus your research?

**Interest** - Are you excited about your question?

**Knowledge** - Will your question help you learn?

**Processing** - Will your question help you understand your topic better?

# Assimilate

## AASL Standards for 21st Century Learners

- 1.1.7 Make sense of information gathered from diverse sources by identifying misconceptions, main and supporting ideas, conflicting information, and point of view or bias.
- 1.2.6 Display emotional resilience by persisting in information searching despite challenges.
- 1.2.7 Display persistence by continuing to pursue information to gain a broad perspective.
- 1.3.2 Seek divergent perspectives during information gathering and assessment.
- 2.1.1 Continue an inquiry-based research process by applying critical-thinking skills (analysis, synthesis, evaluation, organization) to information and knowledge in order to construct new understandings, draw conclusions, and create new knowledge.
- 2.1.2 Organize knowledge so that it is useful.
- 2.1.4 Use technology and other information tools to analyze and organize information.
- 2.4.1 Determine how to act on information (accept, reject, modify).
- 2.4.3 Recognize new knowledge and understanding.
- 3.3.1 Solicit and respect diverse perspectives while searching for information, collaborating with others, and participating as a member of the community.
- 3.3.2 Respect the differing interests and experiences of others, and seek a variety of viewpoints.

The process of assimilation involves reinforcing and confirming information that is known, altering thinking based on new information, or rejecting information that doesn't match the student's belief system. In an inquiry, assimilation leads to consideration of new options and points of view. (Callison, 2006, p. 7)

Apply the Ds of Evidence to a problem:

<b>Discover</b>	Identify new ideas and ways of thinking about the evidence
<b>Discern</b>	Identify the origins of information and underlying thinking
<b>Detect</b>	Seek out fallacies, flaws, and misinformation along with reasons for these errors.
<b>Deduce</b>	Identify possible conditions and consequences
<b>Divide</b>	Organize information by comparing how people, places, and events are alike and different. Also, classifying information into categories based on commonality
<b>Dictate</b>	Identify themes, patterns, and generalizations
<b>Devise</b>	Build arguments by organizing evidence



Select an image that represents the main idea of an investigation.  
Apply the Ds of Evidence to an image.

Although assimilation occurs deep within our brain, we can use visual activities to build these associations. Marzano, Pickering and Pollock (1997) identified six graphic organizers that correspond to six common information organization patterns:

- Descriptive patterns.** Webs are used to represent facts about people, places, things, and events.
- Time-sequence patterns.** Timelines and cycle diagrams organize events by chronology.
- Process/cause-effect patterns.** Fishbone charts and "how do" diagrams organize information into a causal network or into steps leading to products.
- Episode patterns.** These visuals organize information about specific events including setting, specific people, duration, sequence, and cause and effect.
- Generalization/principle patterns.** Use hierarchies to organize information into general statements and supporting evidence or examples.
- Concept patterns.** Use concept maps to organize classes and categories about people, places, things, and events.

# Infer

## AASL Standards for 21st Century Learners

- 1.1.6 Read, view, and listen for information presented in any format (e.g., textual, visual, media, digital) in order to make inferences and gather meaning.
- 2.1.3 Use strategies to draw conclusions from information and apply knowledge to curricular areas, real-world situations, and further investigations.
- 2.1.5 Collaborate with others to exchange ideas, develop new understandings, make decisions, and solve problems.
- 2.1.6 Use the writing process, media and visual literacy, and technology skills to create products that express new understandings.
- 2.2.1 Demonstrate flexibility in the use of resources by adapting information strategies to each specific resource and by seeking additional resources when clear conclusions cannot be drawn.
- 2.2.2 Use both divergent and convergent thinking to formulate alternative conclusions and test them against the evidence.
- 2.2.3 Employ a critical stance in drawing conclusions by demonstrating that the pattern of evidence leads to a decision or conclusion.
- 2.2.4 Demonstrate personal productivity by completing products to express learning.
- 2.3.2 Consider diverse and global perspectives in drawing conclusions.
- 2.3.3 Use valid information and reasoned conclusions to make ethical decisions.
- 3.1.3 Use writing and speaking skills to communicate new understandings effectively.
- 3.1.4 Use technology and other information tools to organize and display knowledge and understanding in ways that others can view, use, and assess.
- 3.3.4 Create products that apply to authentic, real-world contexts.
- 4.2.3 Maintain openness to new ideas by considering divergent opinions, changing opinions or conclusions when evidence supports the change, and seeking information about new ideas encountered through academic or personal experiences.
- 4.4.4 Interpret new information based on cultural and social context.

Evidence is necessary to support a claim, justify change, or make an informed decision. Students must learn to identify, process, and judge evidence. This begins with looking for patterns of evidence. Ask:

- What evidence is most useful in addressing my questions?
- How does this evidence connect with what I already know?
- How is this evidence relevant for my question?
- What are my assumptions?
- What am I guessing about and what do I know for sure?
- What evidence is from primary versus secondary sources?
- Which sources are bias and which are credible?
- What are all the possible perspectives and viewpoints?
- Why would someone consider one viewpoint better/worse?
- What pieces of evidence support and refute a perspective?
- What are the most important pieces of evidence?
- What are the supporting pieces of evidence?
- What are the patterns of evidence?
- What new questions does this evidence raise?



Rethink an assignment.

Focus on the collecting evidence and building convincing arguments.

Arguments provide evidence to support a claim. To develop useful arguments, inquirers must evaluate evidence, examine different points of view, and determine the most logical approach or meaningful conclusion. Ask:

- How does the evidence fit together?
- What claims and supporting arguments could be made?
- How can the evidence be arranged to support a conclusion?
- What's the core of the argument?
- What pieces of evidence support what perspectives?
- How do the arguments fit with my understandings?
- What is the reasoning behind each argument?
- What are the limitations of these arguments?
- What are the errors in reasoning?
- Where are the holes in the evidence?
- How could this information be misleading?
- What are the problems and barriers?
- How could it be corrected or improved?
- What are the relationships/causes/effect?



Discuss the different perspectives on how wildfires should be managed. Use the questions above as a guide.

When designing persuasive messages, ask:

- Who is my audience and what do they need to know?
- What are examples and nonexamples?
- In what ways can the evidence be presented to communicate the argument?
- How can my messages be shared in an effective, efficient, and appealing way?
- How can my message be conveyed in a number of different ways?
- What parts of the argument are difficult to understand?

With each inquiry cycle, inquirers must revisit questions with an open mind.

- What evidence do I still need to gather?
- What has changed since my last cycle of questioning, exploring, assimilating, and inferring?
- Have I visualized the evidence in many different ways?
- What pieces of information still need to be connected? What's not obvious?
- Are there alternatives I haven't considered? Are there opinions I should seek?
- What are the risks and benefits of each approach?
- What generalizations can I draw based on the evidence?
- Do I have enough information to draw a conclusion or make a decision?
- How do I most effectively present arguments and cite evidence?
- How can graphics be used to better understand the data and my conclusions?



The cycle of assimilating and inferring is often skipped over. What can be done to ensure that this stage gets the time it deserves?

## Reflect

### AASL Standards for 21st Century Learners

- 1.3.4 Contribute to the exchange of ideas within the learning community.
- 1.4.1 Monitor own information-seeking processes for effectiveness and progress, and adapt as necessary.
- 2.3.1 Connect understanding to the real world.
- 2.4.2 Reflect on systematic process, and assess for completeness of investigation.
- 2.4.4 Develop directions for future investigations.
- 3.1.1 Conclude an inquiry-based research process by sharing new understandings and reflecting on the learning.
- 3.1.5 Connect learning to community issues.
- 3.2.1 Demonstrate leadership and confidence by presenting ideas to others in both formal and informal situations.
- 3.2.2 Show social responsibility by participating actively with others in learning situations and by contributing questions and ideas during group discussions.
- 3.3.3 Use knowledge and information skills and dispositions to engage in public conversation and debate around issues of common concern.
- 3.3.5 Contribute to the exchange of ideas within and beyond the learning community.
- 3.3.6 Use information and knowledge in the service of democratic values.
- 3.4.1 Assess the processes by which learning was achieved in order to revise strategies and learn more effectively in the future.
- 3.4.2 Assess the quality and effectiveness of the learning product.
- 3.4.3 Assess own ability to work with others in a group setting by evaluating varied roles, leadership, and demonstrations of respect for other viewpoints.
- 4.3.1 Participate in the social exchange of ideas, both electronically and in person.
- 4.4.5 Develop personal criteria for gauging how effectively own ideas are expressed.
- 4.4.6 Evaluate own ability to select resources that are engaging and appropriate for personal interests and needs.

After rounds of questioning and exploring, assimilating and inferring, ask students to revisit the questions and goals of their inquiry. How did the project evolve? Inquiries may go in different directions depending on the questions. While some inquiries look for answers, others seek solutions. The goal may not be apparent in the first round of the cycle. By encouraging inquirers to reflect throughout the process, inquiry becomes a cycle building deep understandings. Ask:

- Did my question(s) reflect my need or problem?
- Have I been successful in answering my question(s)?
- Were my search strategies flawed?
- Could my information be biased or incorrect?
- Is this the best information to address this question?
- Could I have made incorrect connections?
- Could the inferences identified be flawed?
- Have I addressed the needs of my audience?
- What new questions have arisen from the evidence?
- Have I chosen the best conclusion or decision?
- Am I satisfied with my progress?
- What are my strengths?



How can you encourage products that build in metacognitive aspects and opportunities for reflection?

# Graphic Inquiry

<http://www.eduscapes.com/sessions/graphic/graphicinquiry.htm>

The collage features several book covers: *The Storm in the Barn* by Matt Phelan, *Years of Dust: The Story of the Dust Bowl* by Albert Marrin, *Out of the Dust* by Karen Hesse, *The Dust Bowl Through the Lens* by Martin W. Sandler, and *The Worst Hard Time* by Timothy Egan. A central graphic shows a cycle of eight verbs: **Wondering**, **Webbing**, **Wiggling**, **Weaving**, **Wrapping**, **Waving**, **Wishing**, and **Watching**. The center of the cycle contains the text "questioning & exploration", "task or need", and "reflection assimilation & inference". Surrounding the cycle are small circular icons with the text "task or need".

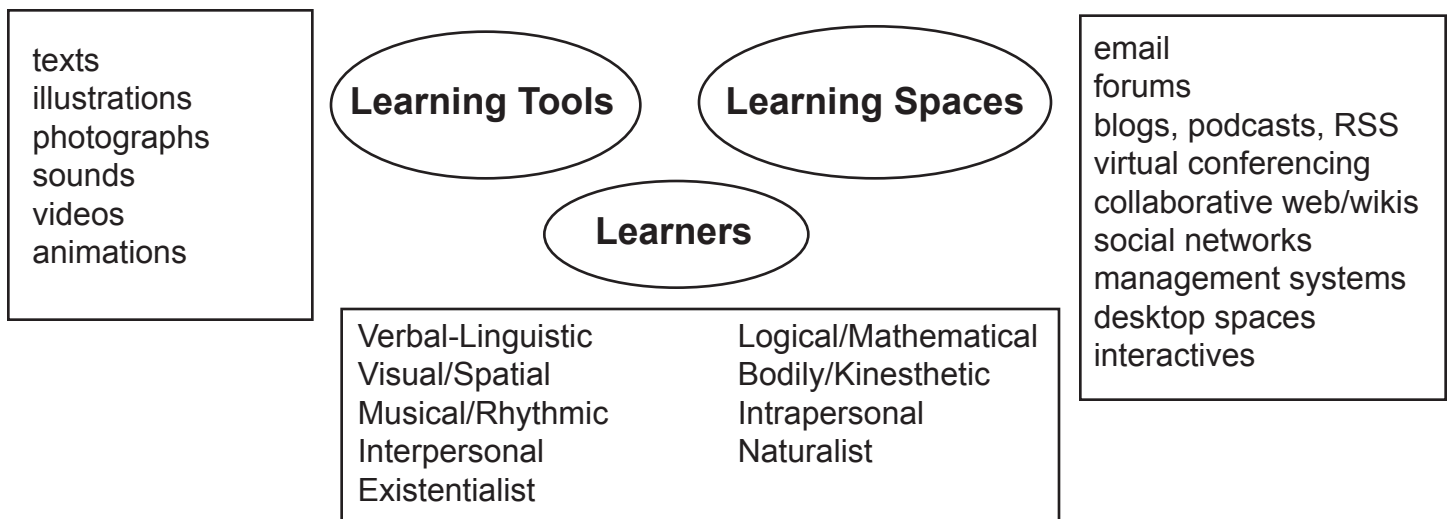
Other elements include a map of the United States, a Flickr page for Dorothea Lange, a video player showing a scene from *The Plow That Broke the Plains*, a comic strip titled "Dustbowl Dinner" by Kaylee R., and various other historical photographs and documents.

# Building Strong Nests: A Dozen Keys

<http://www.eduscapes.com/sessions/birds/building.htm>

- Key 1:** Rediscover the Classics
- Key 2:** Share Useful Resources
- Key 3:** Create a Supportive Atmosphere
- Key 4:** Nurture Technology-Saavy Teachers.
- Key 5:** Encourage Technology that Supports Instruction
- Key 6:** Connect Technology to School Initiatives
- Key 7:** Explore Innovative Applications of Technology Tools
- Key 8:** Create Fabrics, not Quilts
- Key 9:** Create Synergy with Multiple Resources and Tools
- Key 10:** Focus on Digital Citizenship
- Key 11:** Build School-to-Home Connections
- Key 12:** Stress Interdisciplinary, Project-based Approaches

## New Tools for New Standards



## Final Thoughts

- Each child is unique.
- Each teacher is unique.
- Each grade level is unqie.
- Each content area is unique.
- Celebrate differences and learn from each other!