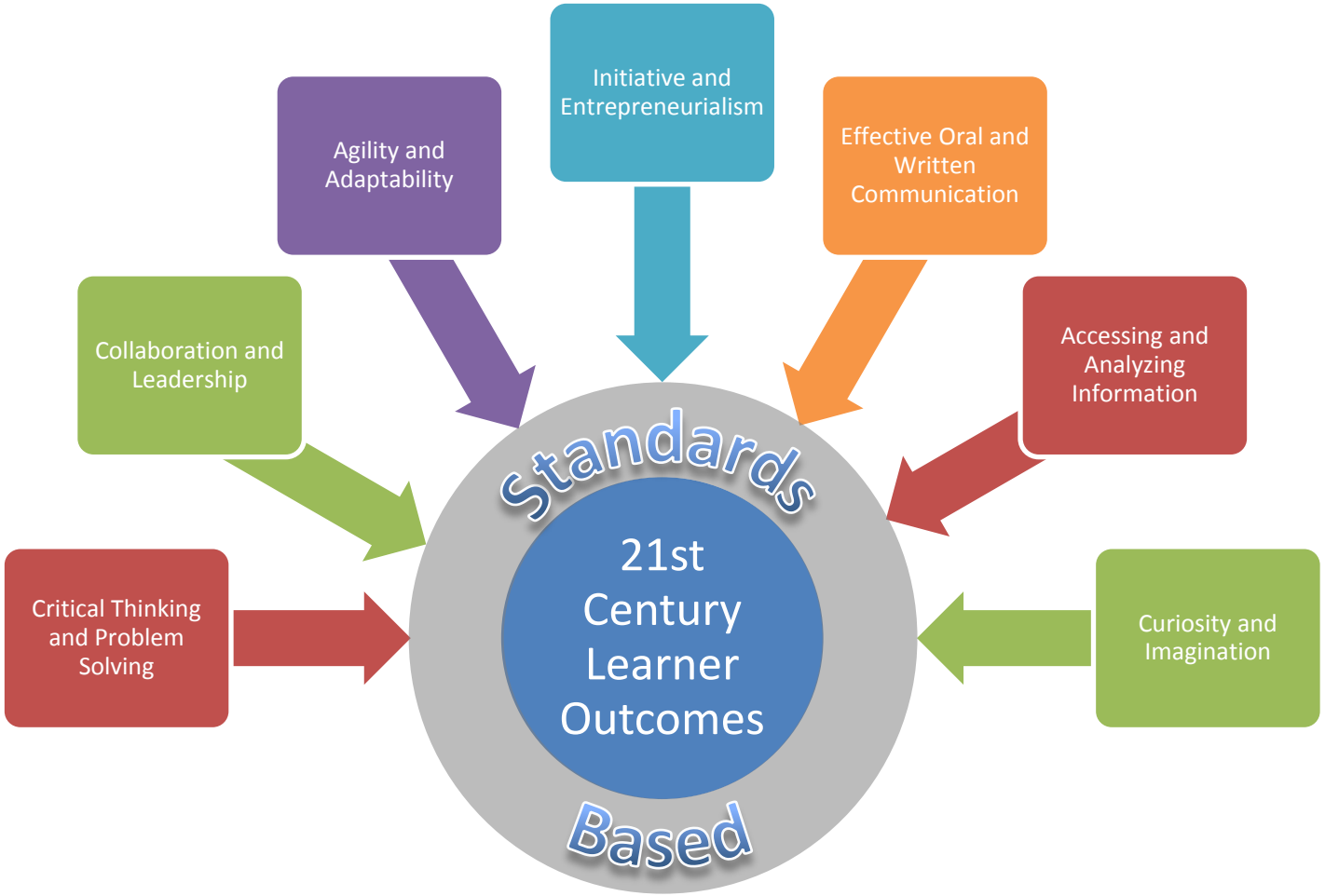
21st Century Skills

21st century skills are the skills that students need to develop in order to live, learn, and thrive in a 21st century environment and to succeed in college and careers. Content knowledge and the 21st century skills combine to create the 21st century learner outcomes. The learner outcomes provide what is to be learned and demonstrated. DoDEA's 21st century skills were adapted from Tony Wagner's Seven Survival Skills. The graphic below shows how the 21st century skills and the content standards work together. The 21st century skills are taught through the standards. Whether educators use the DoDEA content standards or the Common Core State Standards, content and skills together create the 21st century learner outcomes.



Critical Thinking and Problem Solving

Critical Thinking and Problem Solving is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events as well as applying knowledge and skills in practical ways to solve real world problems.

Initiative and Entrepreneurship

Initiative and Entrepreneurship denote creative, inventive and resourceful ways individuals use to solve problems, search out, and strive for new innovations.

Effective Oral and Written Communication

Oral communication is a prepared, purposeful presentation designed to increase knowledge, to foster understanding, or to promote change in the listeners' attitudes, values, beliefs, or behaviors. Written communication is the development and expression of ideas in writing. Written communication involves learning to work in many genres and styles. It can involve working with many different writing technologies, and mixing texts, data, and images. Written communication abilities develop through iterative experiences across the curriculum.

Collaboration across Networks and Leading by Influence

Collaboration across networks is the ability to work together with diverse groups to facilitate the exchange of ideas to achieve a goal, make decisions, and solve problems. Leading with influence is the ability to generate results collaboratively, in a variety of contexts without direct authority.

Agility and Adaptability

Agility and adaptability is being able to constantly adjust to changing demands by using a variety of tools to solve complex problems with responsiveness and flexibility. Handling disruption, rapid transformation, and reorganization of information is necessary for 21st century learning: “Learning to be comfortable with being uncomfortable”.

Accessing and Analyzing Information

Accessing and analyzing information is the ability to know when there is a need for information and how to identify, locate, evaluate and effectively use that information for solving problems.

Curiosity and Imagination

Curiosity and imagination is the capacity to synthesize existing ideas and to work creatively in ways characterized by innovation and divergent thinking.

Reflection and Evaluation

Once the learner outcomes and the 21st century skills are established, they move to the Reflection and Evaluation section of the learning cycle. The learner(s) reflect on what they know by using the Reflection rubrics (teachers and students) or self-assessment tools (leaders).

The Reflection and Evaluation Rubrics

There are seven rubrics that align with the seven 21st century skills. (See below)

The seven Reflection and Evaluation rubrics are designed for teachers and their students to use at the beginning of a lesson design and again at the end of the lesson cycle to evaluate the progress of learners after applying the 21st century skills to their work. Each rubric supports the growth of a student-centered classroom where students become more engaged in the learning process and can apply the learner outcomes (knowledge and skills) to the real world. The reflection section drives the educator's decision for instructional practice professional learning and selection. The goal is to move from the entry level of development of the skills to the ideal/target level for both teachers and students.

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Rubrics adapted from Bionic Teaching
Link: http://bionicteaching.com/?p=1129

CRITICAL THINKING & PROBLEM SOLVING

Students will apply knowledge and skills in practical ways to solve real world problems. The teacher provides the activities, experiences, and feedback needed for students to develop critical thinking and problem solving skills.

Entry	Developing	Approaching	Ideal/Target
Teacher: • disseminates information with limited real world connections. • places little emphasis on helping students think and analytically, make decisions, and solve problems.	**Teacher:** • provides direct instruction on critical thinking and problem solving skills. • creates opportunities for students to solve basic problems.	**Teacher:** . • incorporates problem and project based learning into instruction. • utilizes open-ended questions and emphasizes higher order thinking skills. • guides and encourages the use of appropriate resources to solve authentic problems.	**Teacher:** • provides real-world opportunities for problem solving that utilize multiple solutions. • provides structure that allows students to ask open-ended questions and formulate and articulate solutions to problems. • utilizes a variety of learning activities that allow students to choose and engage in solving authentic, relevant problems.
	Students: • use resources including technology to make decisions and solve problems.	**Students:** • use technology and work independently to solve problems. • engage in open-ended learning experiences that require higher order thinking skills.	**Students:** • use multiple resources to plan, design, and execute real world problems. • use technology to collaborate and solve authentic problems. • develop and answer open-ended questions using higher order thinking skills. • Identifies a problem, opportunity or challenge with a full understanding of level of complexity. • Understands and articulates patterns, cause/effect relationships and critical indicators related to the current situation problem.

INITIATIVE & ENTREPRENEURSHIP

Students will be self-directed in determining ways to seek out new opportunities ideas, and strategies for improvement. Teachers will create a student-centered classroom that provides multiple opportunities for students to be self-directed learners.

Entry	Developing	Approaching	Ideal/Target
Teacher: • disseminates information with limited student engagement. • utilizes primarily traditional instructional methods in the classroom (lecture, direct instruction, etc.).	**Teacher:** • provides instruction to accommodate a range of learning styles, interest and capabilities. • creates limited entry points and avenues for learning.	**Teacher:** • creates student – centered tasks for all students. • provides students opportunities to learn through multiple pathways/entry points.	**Teacher:** • creates student-centered learning experiences through multiple pathways and venues on regular basis. • provides an opportunity for students to use data and self-reflect on their learning, set their own goals and inform their instruction. • provides constructive feedback to students on a continuous basis and allows students opportunities to reflect, modify and improve. • uses entrepreneurship as a real-world context to have students demonstrate the importance of academic content.
	Students: • use their individual learning styles to discover ways to approach problem solving.	**Students:** • begin using creative approaches to problem solving through their individual learning modes.	**Students:** • use data to set learning goals and self-monitor progress. • utilize time and manage workload efficiently. • explore and expand one's own learning and opportunities to gain expertise beyond basic mastery of skills and/or curriculum. • reflect critically on past experiences in order to inform future progress.

EFFECTIVE ORAL & WRITTEN COMMUNICATION

Students will be able to communicate their thoughts clearly and precisely through energy, passion and authentic voice.

<table>
<tr><th>Entry</th><th>Developing</th><th>Approaching</th><th>Ideal/Target</th></tr>
<tr>
<td>Teacher:
initiates communication opportunities.
utilizes primarily traditional instructional methods in the classroom (lecture, direct instruction, etc.).</td>
<td>Teacher:
creates structures for students to articulate thoughts and ideas using oral and nonverbal communication skills in a variety of forms and contexts.
integrates multimedia and technologies.
Students:
communicate using a variety of techniques.
work collaboratively to create products.</td>
<td>Teacher:
models effective communication.
creates structures for students to use communication for a range of purposes.
provides opportunities for students to make connections beyond the classroom.
Students:
communicate with audiences within and beyond the classroom.
frequently collaborate to create products.</td>
<td>Teacher:
models effective communication in multiple ways and for multiple purposes.
provides opportunities for students to make global connections.
creates structures, provides opportunities and assesses student performance.
Students:
initiate communication in real and non-real time.
articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts.
listen effectively to decipher meaning, including knowledge, values, attitudes and intentions.
use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade).
utilize multiple media and technologies, and know how to judge their effectiveness as well as assess their impact.
communicate effectively in diverse environments (including multi-lingual).</td>
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COLLABORATION ACROSS NETWORKS AND LEADING BY INFLUENCE

Students need the ability to learn and work fluidly understanding how collaboration can be most effective and where their skills can most influence the learning task.

Entry	Developing	Approaching	Ideal/Target
Teacher: • provides independent learning experiences for students. • utilizes primarily traditional instructional methods in the classroom (lecture, direct instruction, etc.).	**Teacher:** • creates structures for student to work in groups on products and projects.	**Teacher:** • provides learning opportunities for students to network with diverse teams. • establishes group norms to facilitate effective collaboration.	**Teachers:** • provides opportunities for students to take a leadership role in collaborative projects. • provides opportunities for students to make connections beyond the classroom in multiple pathways.
	Students: • engage in teacher-led collaborative projects. • use decision making and problem solving process but seek teacher guidance often.	**Students:** • collaborate with minimal adult guidance. • identify and frequently use outside community resources to achieve results. • use decision making and problem solving process. Decisions are discussed, evaluated and followed through with minimal teacher guidance. Results are evident.	**Students:** • demonstrate ability to work effectively and respectfully with diverse teams. • exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal. • assume shared responsibility for collaborative work, and value the individual contributions made by each team member. • use decision making and problem-solving skills to influence and guide others toward a goal.

AGILITY AND ADAPTABILITY

In a 21st century classroom, students will think, be flexible and adaptable to change while using a variety of tools to solve problems. Students will understand that there can be multiple solutions to a problem. The teacher will ensure that students receive instruction designed to elicit innovative and creative thinking and problem solving.

Entry	Developing	Approaching	Ideal/Target
Teacher: • initiates independent problem solving opportunities with a singular solution. • provides feedback as needed. • utilizes primarily traditional instructional methods in the classroom (lecture, direct instruction, etc.).	**Teacher:** • provides students with multiple tools and ways to solve problems. • provides frequent, descriptive feedback. • provides opportunities to tackle both simple and complex problems. **Students:** • use a variety of tools and strategies to solve simple and complex problem.	**Teacher:** • creates a variety of learning opportunities that include challenges with and without clear solutions. • encourages students to work collaboratively. • provides deliberate feedback to students during formative and summative assessments. **Students:** • use problem solving strategies that necessitate students to work collaboratively in solving problems with multiple solutions.	**Teacher:** • creates conditions that require student demonstration of adaptability to change. • provides real-world opportunities for problem solving that utilize multiple solutions. • provides ongoing constructive/descriptive feedback that allows for student to self-reflect, modify and improve. **Students:** • adapt to varied roles, jobs responsibilities, schedules and context. • work effectively in a climate of ambiguity and changing priorities. • incorporate feedback effectively • deal positively with praise, setbacks and criticism. • understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments.

ACCESSING AND ANALYZING INFORMATION

Accessing and analyzing information is the ability to know when there is a need for information and how to identify, locate, evaluate and effectively use that information for solving problems. In the 21st Century classroom, students find, navigate through, and evaluate large amounts of information. Teachers provide guided and independent research opportunities for students to make informed decisions and create products.

Entry	Developing	Approaching	Ideal/Target
Teacher: • provides print resources for research and information acquisition. • directs student use of electronic resources.	**Teacher:** • evaluates electronic resources for appropriateness. • utilizes school databases for enhanced research and information acquisitions. **Students:** • locate and acquire information using provided resources.	**Teacher:** . • incorporates problem and project based learning into instruction. • utilizes open-ended questions and emphasizes higher order thinking skills. • guides and encourages the use of appropriate resources to solve authentic problems. **Students:** • develop questions to guide research. • apply research methods to find and evaluate resources. • select information from a variety of digital resources and databases.	**Teacher:** • creates structures that guide student inquiry and facilitates the use of information. • provides opportunities for students to access, evaluate, synthesize and use information effectively and efficiently to conduct research, solve problems and manage projects throughout all content areas. • provides ongoing constructive/descriptive feedback that allows for student to self-reflect, modify and improve. **Students:** • apply varied research skills to find and evaluate resources. • use information and resources to accomplish real-world task. • select appropriate digital tools to assemble, evaluate and utilize information. • make informed decisions to integrate new information to evaluate future materials and formulate solutions to problems.

CURIOSITY AND IMAGINATION

Curiosity and imagination is the capacity to synthesize existing ideas and to work creatively in ways characterized by innovation and divergent thinking. In the 21st Century classroom, students develop original ideas and create products by applying critical thinking, research methods, communication tools and collaborative processes. Teachers provide experiences that allow students to create unique ideas and products.

Entry	Developing	Approaching	Ideal/Target
Teacher: • limits instruction to specific content. • makes connections to existing knowledge.	**Teacher:** • provides instruction to accommodate a range of learning styles, interests and capabilities. • promotes students to identify tends, make predictions and think skillfully.	**Teacher:** . • creates a student-centered environment. • provides opportunities for students to demonstrate collaborating, communication, and critical thinking skills. • establishes group norms to facilitate effective collaboration.	**Teacher:** • creates opportunities for students to elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts collaboratively and independently. • provides ongoing constructive/descriptive feedback that allows for student to self-reflect, modify and improve.
	Students: • make connections to existing knowledge. • produce unique and cogent ideas or products, but only with significant guidance and encouragement.	**Students:** • identify trends and make predictions independently. • apply existing knowledge to create unique and cogent ideas and products with minimum support.	**Students:** • apply critical thinking research methods and communication tools to create original work independently. • collaborate effectively with an audience beyond the classroom to create original work. • demonstrate originality and inventiveness in work and understand the real-world limits to adopting new ideas. • view failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes.

Student Assessment Tools

21st Century Skills assessment
http://www.cae.org/content/pro_collegework.htm

College and Work Readiness Assessment (CWRA)
There is a link to a demonstration task (as well as sample reports and other materials) available at www.collegiatelearningassessment.org/cwrapresentations<http://www.collegiatelearningassessment.org/cwrapresentations>.

Critical Thinking Testing and Assessment (Online test)
The International Critical Thinking Basic Concepts and Understandings Test, developed by leading international authorities on critical thinking, Dr. Linda Elder and Dr. Richard Paul, along with Foundation for Critical Thinking Research Fellow Rush Cosgrove, is the first comprehensive and foundational critical thinking concepts and principles test to be developed and offered for online use.

http://www.criticalthinking.org/pages/critical-thinking-testing-and-assessment/594

Guide http://www.criticalthinking.org/TGS_files/SAM-CT_competencies_2005.pdf

Critical Thinking Rubrics
http://sllo.tamu.edu/sites/sllo.tamu.edu/files/Critical%2520Thinking%2520-%2520Outcomes%25209-5-08.pdf

http://www.teachers.ab.ca/Publications/ATA%20Magazine/Volume-91/Number3/Pages/Criticalthinking.aspx

Assessing and Analyzing Information
http://www.pbl-online.org/PlanTheAssessment/assessmentTools/pdf_files/AssessmentToolsdocs.pdf

Curiosity and Innovation
http://www.metroschools.net/asssets/Rubrics/Creativity%20and%20Innovation%20Rubric.pdf