NORTH SALEM CENTRAL SCHOOL DISTRICT, NORTH SALEM, NY
RUBRIC FOR CREATIVE, DIVERGENT AND CRITICAL CONVERGENT THINKING

Here is our rubric regarding creative, divergent processes; critical, convergent processes; and their interaction of these two processes in authentic problem solving.
Following the rubric is information about the rubric and how it is used. This rubric can be considered a rubric for grade 12 or grades 11-12.
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ASSESSING CREATIVE / DIVERGENT & CRITICAL / CONVERGENT THINKING USED DURING PROBLEM SOLVING
North Salem Central School District, North Salem, NY

	4: Exceptional	**3: Proficient**	**2: Developing**	**1: Beginning**
Creative, Divergent Thinking (divergent, innovative, "out of the box" thinking)	**CREATIVE THINKING / DIVERGENT THINKING PROCESSES:** (adapted from the work of E. Paul Torrance) **Selects and uses types of creative / divergent thinking processes** (see list of sample types) **that work to "open up" the thinking as needed problem solving. The work during the creative / divergent thinking process exhibits the following attributes:** • **Fluent** – easily and quickly produces many, diverse thoughts/ideas/plans/solutions/etc. – "wild and crazy" ideas are OK, does not edit self or others during this process • **Flexible** – flows among various divergent thinking processes* to keep ideas flowing; makes connections between / among ideas, approaches, plans, etc. • **Original** – produces original, unexpected, uncommon ideas and connections – resulting products and/or processes perceived as new and useful -- knocks your socks off! • **Elaborate** – adds diverse and varied details to enrich original ideas/connections; adds complexity (see the list of the types of divergent thinking processes)			
	Exceptional in selecting and using creative / divergent thinking processes that are well-suited to the problem solving task at hand. Uses a rich repertoire of such skills.	Proficient in selecting and using creative thinking processes that are usually well-suited to the problem solving task at hand. Uses a sufficient repertoire of such skills.	Developing skills in selecting and using creative thinking processes for the problem solving task at hand. Uses a limited repertoire of such skills	Beginning to use creative thinking processes
Critical, Convergent Thinking (convergent, focused, analytic thinking)	**CRITICAL THINKING / CONVERGENT THINKING PROCESSES:** **Selects and uses critical / convergent skills to drill down into the task to find the accurate answer, work with precision, be logical, play by the rules, be objective, be analytical – such processes include:** organize, classify, compare/contrast, cause/effect, generalize, make connection(s), infer, predict, analyze, advocate, debate, evaluate, judge, assess, rate			
	Exceptional in selecting using critical thinking processes that are well-suited for the task at hand	Proficient in selecting and using critical thinking processes accurately and with precision that "work" for the task at hand	Developing skills in selecting and using critical thinking processes that usually work for the task at hand	Beginning to use critical thinking processes
Integrating Creative And Critical Thinking In Problem Solving	**PROCESSES OF INTEGRATING CREATIVE / DIVERGENT AND CRITICAL / CONVERGENT THINKING PROCESSES IN PROBLEM SOLVING:** (adapted from the work of Graham Wallas) • Selects and uses the creative / divergent thinking process or the critical / convergent thinking process that is appropriate for the problem solving task at hand. • Flows between creative / divergent thinking and critical / convergent thinking to move the problem solving process along. • Uses sufficient time for the exploration, preparation, and incubation elements of the creative / divergent thinking process. • Recognizes / selects the "illuminated" idea to use for the next stage of problem solving. • Switches to critical / convergent thinking to verify and process the idea selected. • Processes information accurately and efficiently when using critical / convergent processes • Reaches closure on the problem. (see the explanation of the terms, exploration, preparation, incubation, illumination, and verification)			
	Exceptional in selecting and using a mix of creative / divergent and critical / convergent thinking processes for problem solving that results in an original, useful solution which has a strong, positive impact on the audience for the solution to the problem.	Proficient in selecting and using a mix of creative / divergent and critical / convergent thinking processes for problem solving that results in an original, useful solution which has a positive impact on the audience for the solution to the problem.	Developing skills in using a mix of creative / divergent and critical / convergent thinking processes for problem solving that results in a solution which has some impact on the audience for the solution to the problem.	Beginning to use a mix of creative / divergent and critical / convergent thinking processes for problem solving

It could be possible to have gradations within a level, for example, high 4, 4, low 4, etc. There would not be written descriptions of those sub-levels – they could be described / demonstrated through samples of student work, aka benchmarks.

How is the Mission of the North Salem Central School District related to critical and creative thinking?

The one-sentence Mission of the North Salem Central School District is: "Engage students to continuously learn, question, define and solve problems through critical and creative thinking."

This mission integrates critical thinking, creative thinking, collaboration, and communication and also content / conceptual knowledge, individual responsibility, the use of digital technology, and metacognition K-12 across and among all disciplines. This process includes all classroom and non-classroom faculty, coaches and club advisors, parents, and community groups with which our students are involved.

What is a Problem Solving Task and how is related to our Mission?

We create what we call "Problem Solving Tasks (PST)" used in all grade levels 1-12 and all disciplines. We adapt this process through what we call "Problem Solving For Life" which is used in Kindergarten, by non-classroom teachers such as guidance counselors, by sports teams and extracurricular groups, by parents, and by community groups with whom our students are involved. These PSTs are assured, summative, authentic performance tasks which are designed according to common criteria and a common template which include an integration of critical, convergent and creative, divergent processes, an integration of individual and team work, and the communication of the "solution" to an audience. Digital technology improves the productivity and impact of the "work along the way" and the final products or performances. Metacognition is essential for the development of continuously improving, self-reliant learners.

Our approach to creative thinking is to consider it as "divergent thinking." Sr. Kenneth Burns says that "Divergent thinking is not the same as "creativity" but it increases the capacity for creativity." Our PSTs include the integration – flow back and forth -- of critical, convergent and creative, divergent processes.

For more information on these Problem Solving Tasks link to the following edleader21 documents:

Blog by Kenneth Freeston, Superintendent, North Salem Central School District
http://community.edleader21.com/index.php?option=com_content&view=article&id=74:superintendent-kenneth-freestone-on-creativity&catid=1:el21&Itemid=15

4Cs Curriculum Tool by Valeria Greenfield – see page 20 for an example of a Mission-Linked Problem Solving Task (PST)
http://community.edleader21.com/storage/documents/Step_5_Curricula_Overview_FINAL.doc

What are some of the types of creative thinking that we use in Problem Solving Tasks?

Some of the types of creative, divergent thinking that we select and use as authentic processes in authentic problem solving are:

a. **BRAINSTORMING**
   - Generate a lot of ideas regarding a specific topic. Use the research-based "rules and processes" for successful brainstorming

b. **OBSERVING MORE CLOSELY AND IN MORE DETAIL**
   - Use all appropriate senses to find the details that might go un-noticed. Look for connections, patterns, relationships, and hidden information.
   - Observe the "big picture" of the context of what you are observing. Observe the surprising facts – be a cleaver detective – find clues and evidence "hidden in plain sight!"
   - Find important, interesting, relevant information that others did not find from sources that others did not think of using

c. **TAKING A DIFFERENT POINT OF VIEW**
   - Walk in the shoes of another person. Support the view of X different people/groups. Debate from opposing points of view. Take the position of the dissenting group. Argue the merits of X solutions to the problem.

d. **USING DIFFERENT CRITERIA TO MAKE A DECISION**
   - What if the conditions were different? What would happen?
   - What if the criteria for solving the problem or winning the argument were different? What would happen?
   - What if the world was different in this way _____? What would happen?

e. **MAKING NEW CONNECTIONS, FINDING NEW PATTERNS, FINDING NEW RELATIONSHIPS**
   - Connect ideas (concepts) within a discipline or among several disciplines
   - Make connections among events in your own life, the lives of other people, and the elements of human nature
   - Find a pattern that has gone unseen – a pattern that gives us new information
   - Detect a relationship that connects two or more things in a different, useful way

f. **CONSTRUCTING A NEW IDEA OR GENERALIZATION**
  - State a new "big idea" – a generalization-- that gives us something to think about and say, "WOW!"
g. **MAKING SOMETHING THAT WORKS BETTER AND IS MORE APPEALING TO A PARTICULAR AUDIENCE**
  - Find a need for a tool or a machine or a process or a structure etc. and invent and build something new that does a better job and is more attractive to the people who want to use it
  - Find a better way to communicate with your audience so that you have a greater impact on them
h. **TAKING THE ROAD LESS TRAVELED**
  - How to get THERE from HERE on a path that is not the COMMON / USUAL approach – so the TRAVELER / THINKER has a chance of encountering a NEW discovery which might lead to a "break through" – or not! But, unless you take that road less traveled you may not have a chance at finding that break through

We want students to learn how to "think outside the box" in these and other ways so they have a repertoire of creative, divergent thinking strategies to choose from according to the demands of the problem to solve.

What are the attributes of a creative, divergent thinking process?

The part of the rubric focusing on creative, divergent thinking uses the four attributes of creative thinking proposed by E. Paul Torrance.

- **Fluent** – easily and quickly produces many, diverse thoughts/ideas/plans/solutions/etc. – "wild and crazy" ideas are OK, does not edit self or others during this process
- **Flexible** – flows among various divergent thinking processes* to keep ideas flowing; makes connections between / among ideas, approaches, plans, etc.
- **Original** – produces original, unexpected, uncommon ideas and connections – resulting products and/or processes perceived as new and useful -- knocks your socks off!
- **Elaborate** – adds diverse and varied details to enrich original ideas/connections; adds complexity

Student's work on any of the creative, divergent processes can be viewed through one or more of these four attributes. We want students use these attributes to view their work using creative, divergent strategies and to improve their performance.

What are the stages, e.g., life cycle, of a creative, divergent thinking process?

We also have adapted the work of Graham Wallas who explains the stages of creative, divergent processes. Once a decision is made that a creative, divergent process is needed at some point(s) in the problem solving process, the process follows these steps:

- **Exploration** – a general investigation "around" the issues in the problem to be solved – let your exploration take you where it wants to take you – be open to unexpected twists and turns in this research
- **Preparation** – explore the dimensions of the problem, consider a number of alternatives, options, ideas, etc. – play with them, sketch them, write about them, build some possibilities – no editing – the point is to be fluent
- **Incubation** – step away from the problem for a while, do something else, do not consciously think about the problem – let your subconscious "mull them around"
- **Illumination** – one of the collection of options developed during preparation which has been incubating will "light up" – become illuminated – you will select it as the "best of the bunch" – at least for now – this selection may come to you "out of the blue like a bolt of lightning," or be a connection to something else you experience, "Eureka!," or come to you when you sit down to review the options and "walla!"
- **Verification** -- this is the beginning of a critical, convergent thinking process that follows each creative, divergent process – you may find that the "illuminated" idea that you selected was the best and continue to work on that pathway towards – or – through verification, you may find that the idea you selected did not work out so you recycle back to the creative process of finding another idea

We want students to view their work using a creative, divergent process through the lens of these stages and find ways to improve their overall process.

How do we improve teaching and student performance regarding creative, divergent thinking?

When we create PSTs, we build a scaffolding that uses and integrates creative, divergent and critical, convergent processes in ways that are appropriate for the experience level of the students – all the time working to make them more independent so that they use, create, spin with, a process of their own.

The list of the types of creative, divergent thinking, the four attributes of these processes, and the explanation of the "life cycle" of the creative process and its interaction with the critical thinking process helps us provide professional development, engineer tasks, plan and deliver differentiated instruction, use formative assessment to monitor and adjust, and to use the PST as the summative assessment. We "backwards plan" all of this from the PST.

Students consciously learn to use various types of creative, divergent thinking; learn to choose which type works best in a particular situation; assess the quality of their work during the process, and assess the quality of the creative, divergent thinking outcomes.

Do we assess the "work along the way" during a creative, divergent thinking process or just the final product or performance?

The rubric focuses on work "along the way" in problem solving and not just on final products or performances. Therefore, student work samples must represent their production throughout the process to "reveal" – as much as is reasonable and possible – how they are using and integrating creative, divergent and critical, convergent thinking. A scope of work portfolio is a good way to save this work and it helps students "see their process." If we are gong to improve student performance we must focus on the "work along the way" and the final product or performance.

Do final products or performances always appear to be "creative?"

Sir Kenneth Burns says that a creative product or performance is "new and useful." We put this thought in the context of the students who are producing these products and performances. We can assess the quality of the "work along the way" with the rubric. The "creative" quality of the final product or performance is viewed in the context of the student's level of knowledge. We want the final product or performance to be "new" to that student and not a "copy or paraphrase" of another persons' thinking. We want that final product or performance to be "useful" in the context of presenting a reasonable solution to the problem for the audience who what a solution to that problem.

So, physically, a final product can be a simple persuasive letter, a drawing, a model, a plan, a procedure, a presentation supported by digital technology, etc.

Final products or performances can appear simple without "bells and whistles."

How do teachers and students see examples of student work that shows high quality creative, divergent thinking?

We are collecting benchmarks of student work "along the way during" and also final products and performances that show proficient and exceptional creative, divergent thinking. The work will be annotated to point out and explain how the work meets those standards for specific grade levels.