ENVISION 21

DEEP LEARNING • CFSD

CREATIVITY AND INNOVATION RUBRIC GRADES K-2

CATALINA FOOTHILLS SCHOOL DISTRICT

TUCSON, ARIZONA

General Description and Suggestions for Use

The district's strategic plan, Envision21: Deep Learning, forms the basis for a focus on cross-disciplinary skills/proficiencies necessary for preparing our students well for a 21st century life that is increasingly complex and global. These skills, which are CFSD's "deep learning proficiencies" (DLPs) are represented as 5c + s = dlp. They are the 5Cs: (1) Citizenship, (2) Critical Thinking and Problem Solving, (3) Creativity and Innovation, (4) Communication, (5) Collaboration + S: Systems Thinking. CFSD developed a set of rubrics (K-2, 3-5, 6-8, and 9-12) for each DLP.

These rubrics were developed using a backward design process to define and prioritize the desired outcomes for each DLP. They provide a common vocabulary and illustrate a continuum of performance. By design, the rubrics were not written to align to any specific subject area; they are intended to be contextualized within the academic content areas based on the performance area(s) being taught and assessed. In practice, this will mean that not every performance area in each of the rubrics will be necessary in every lesson, unit, or assessment.

The CFSD rubric for **Creativity and Innovation** was designed as a cross-disciplinary tool to support educators in teaching and assessing the performance areas associated with this proficiency:

- **Idea Generation**
- **Idea Design and Refinement**
- **Openness and Courage to Explore**
- **Working Creatively with Others**
- **Creative Production and Innovation**
- **Self-Regulation and Reflection**

This tool is to be used primarily for formative instructional and assessment purposes; it is not intended to generate psychometrically valid, high stakes assessment data typically associated with state and national testing. CFSD provides a variety of tools and templates to support the integration of **Creativity and Innovation** into units, lessons, and assessments. When designing units, teachers are encouraged to create authentic assessment opportunities in which students can demonstrate mastery of content and the deep learning proficiencies at the same time.

The approach to teaching the performance areas in each rubric may vary by subject area because the way in which they are applied may differ based on the field of study. Scientists, mathematicians, social scientists, engineers, artists, and musicians (for example), all collaborate, solve problems, and share their findings or work within their professional communities. However, the way in which they approach their work, the tools used for collaboration, and the format for communicating their findings may vary based on the profession. These discipline-specific expressions of the 5Cs + S may require some level of customization based on the subject area. Each rubric can also be used to provide students with an opportunity to self-assess the quality of their work in relation to the performance areas. Student-friendly language or "I can" statements can be used by students to monitor and self-assess their progress toward established goals for each performance area.

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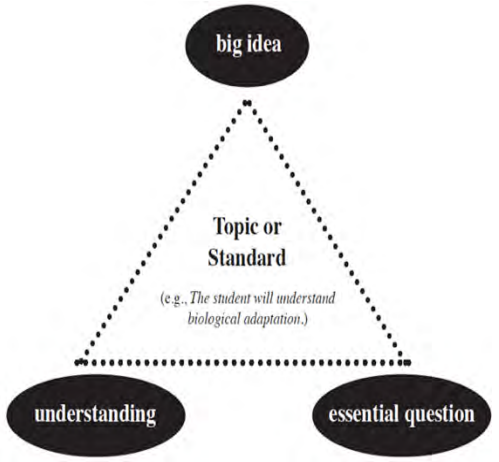
Transfer

CFSD educators prioritize understanding and transfer to ensure that learning extends beyond the school experience. This 2019 version of the DLP, **Creativity and Innovation**, includes long-term **transfer goals** that describe autonomous applications of student learning in college, career, and civic life. "Drill and direct instruction can develop discrete skills and facts into automaticity…but they cannot make us truly able. Understanding is about *transfer*, in other words. To be truly able requires the ability to transfer what we have learned to new and sometimes confusing settings. The ability to transfer our knowledge and skill effectively involves the capacity to take what we know and use it creatively, flexibly, fluently, in different settings or problems, on our own" (Wiggins and McTighe, 2011, p. 40).

Big Ideas

This 2019 version of the DLP, **Creativity and Innovation,** includes a set of Understandings and Essential Questions (UEQs) developed by an interdisciplinary team of K-12 teachers and administrators with guidance from Jay McTighe, author of *Understanding by Design*. These big ideas will guide teachers toward the thoughtful design of assessments, units, and lessons that will facilitate transfer of deep learning. "Because big ideas are the basis of unified and effective understanding, they provide a way to set curriculum and instructional priorities…they illuminate experience; they are the linchpin of transfer…" (Wiggins and McTighe, 2011, p.71). "Understandings are the specific insights, inferences, or conclusions about the big idea you want your students to leave with" (Wiggins and McTighe, 2011, p. 80). "Essential questions make our unit plans more likely to yield focused and thoughtful learning and learners" (McTighe, 2017; McTighe & Wiggins, 2013, p. 17). The figure on the right represents the interrelationship among big ideas, understandings, and essential questions.



The **DLP Understandings** are written for K-12 because they express lasting, transferable goals for student learning. Understandings are meant to be revisited over time and across contexts. The continuity of working toward the same goals will help students deepen their understanding from Kindergarten to 12th grade. Understandings are primarily planning tools for teachers, although teachers may choose to share them with their students, if appropriate. Communicating an Understanding does not give away "the answer," since simply stating an Understanding is not the same as truly grasping its meaning.

The **Essential Questions** are teaching and learning tools that help students unpack the Understandings. They support inquiry and engagement with deep learning and therefore may vary in complexity across grade levels.

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Creativity and Innovation Transfer Goals and UEQs

Transfer Goals	
Students will be able to independently use their learning to. . . • Develop innovative, viable ideas and solutions that meet the needs of various audiences and challenges.	
Understandings	**Essential Questions**
Students will understand that. . .	**Students will keep considering. . .**
1. Creativity is a skill, not an innate ability; creative thinking can be strengthened with deliberate practice.	• What does it mean to be creative? • In what ways am I creative?
2. Creative thinkers develop original and viable solutions to challenges.	• What does it mean to be creative? • What do creative thinkers do? • How do I put my ideas into action? • What is possible?
3. Creative thinkers question accepted boundaries and beliefs.	• What does it mean to be creative? • What do creative thinkers do? • What are the limits and when can I move past them?
4. Creative thinkers persevere when they encounter failed attempts, frustration, or criticism; they shift gears when one approach is not working.	• What does it mean to be creative? • What do creative thinkers do? • What do I do when I get stuck?
5. Creative thinkers consider the needs and interests of an intended audience and the real-world context of their work.	• What does it mean to be creative? • What do creative thinkers do? • How do I know if my ideas will work? • How do I put my ideas into action? • How does my audience affect my creative thinking?

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Self-Regulation and Reflection Transfer Goals and UEQs

Transfer Goals	
Students will be able to independently use their learning to. . . • Improve performance and persevere through challenges by applying deliberate effort, appropriate strategies, and flexible thinking.	
Understandings	**Essential Questions**
Students will understand that. . .	**Students will keep considering. . .**
1. Effective learners set goals, regularly monitor their thinking, seek feedback, self-assess, and make needed adjustments.	• How am I doing? How do I know? What are my next steps? • What is the most effective way to monitor my progress? • How do I know which feedback will help me improve my work? • How can I get useful feedback? • How do I prioritize my work? • How can I maintain focus on areas of influence rather than on factors I cannot influence?
2. We can always improve our performance through deliberate effort and use of strategies.	• How can I keep getting better at creativity and innovation?

The deep learning proficiencies (5c+ s) are highly interconnected. For example, productive collaboration is contingent upon effective communication. Efficient and effective problem solving often requires collaboration skills. Divergent and convergent thinking, traits of Creativity and Innovation, are directly related to critical thinking. Our students will need to use a combination of proficiencies to solve problems in new contexts beyond the classroom. Therefore, it is important to be clear about which proficiency and/or performance area(s) are the focus for student learning, and then to assist students in understanding the connections between them and how they are mutually supportive.

What does Score 1.0 – Score 4.0 mean in the rubrics?

The rubrics are intended to support student progress toward mastering the deep learning proficiencies (DLPs). Four levels of performance are articulated in each rubric: Score 1.0 (Novice), Score 2.0 (Basic), Score 3.0 (Proficient), and Score 4.0 (Advanced). The descriptions follow a growth model to support students in developing their skills in each performance area. Scores 1.0 (Novice) and 2.0 (Basic) describe positive steps that students might take toward achieving Score 3.0 (Proficient) or Score 4.0 (Advanced) performance.

When using the rubrics to plan for instruction and assessment, teachers need to consider the knowledge and skills described in the Score 2.0 column (Basic) to be embedded in the Score 3.0 (Proficient) and 4.0 (Advanced) performance. The Novice level (Score 1.0) indicates that the student does not yet

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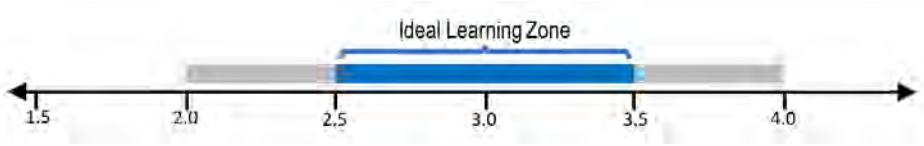
demonstrate the basic skills within the performance area, but that he/she exhibits related readiness skills that are a stepping-stone to a higher level of proficiency. Descriptions at the Novice level also include likely misconceptions that the student might exhibit.

The descriptive rubrics are designed to illustrate students' depth of knowledge/skill at various levels in order to facilitate the instructional and assessment process for all learners. At some performance levels, the indicators may remain the same, but the material under study is more or less complex depending on the grade level band (for example: the complexity of the material at grades 6-8 differs from that of grades 3-5 or 9-12).

The following descriptions explain the four levels on the rubric:

- Score 1.0 (Novice): Describes student performance that demonstrates readiness skills and/or misconceptions and requires significant support.
- Score 2.0 (Basic): Describes student performance that is below proficient, but that demonstrates mastery of basic skills/knowledge, such as terms and details, definitions, basic inferences, and processes.
- Score 3.0 (Proficient): Describes student performance that is proficient – the targeted expectations for each performance area of the DLP.
- Score 4.0 (Advanced): Describes an exemplary performance that exceeds proficiency.

The image below represents the ideal learning zone for students as 2.5 – 3.5.



Glossary

With adult support/guidance: In this rubric, working with adult support or guidance refers to a teacher walking an individual student through the process step-by-step. "With adult support" does not include whole class scaffolding strategies such as graphic organizers, turn and talk, etc.

Resources: In the context of Creativity and Innovation, "resources" can refer to physical materials such as paper, scissors, bolts, wires, artifacts, etc. "Resources" can also refer to less tangible materials such as discipline-specific tools, strategies, or concepts, including textual evidence, imagery, camera angles, color, sentence structures, movement, lighting, sound, use of space, position, etc.

Sources

The following sources directly influenced the revision of CFSD's rubrics:

- Catalina Foothills School District. (2011, 2014, 2015, 2018). Rubrics for 21st century skills and rubrics for deep learning proficiencies. Tucson, Arizona.
- EdLeader21 (2013). 4Cs rubrics. Tucson, Arizona. [Adaptations from 4Cs Rubrics]

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- McTighe, J., & Wiggins, G. P. (2013). Essential questions: opening doors to student understanding. Alexandria, Virginia: ASCD.
- Rhodes, T. L. (Ed.) (2010). Assessing outcomes and improving achievement: Tips and tools for using rubrics. Association of American Colleges and Universities: Washington D.C. [Adaptations from VALUE rubrics, VALUE Project]
- Wiggins, G.P. & McTighe, J. (2011). The understanding by design guide to creating high-quality units. Alexandria, Virginia: ASCD.

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CREATIVITY AND INNOVATION

DLP Performance Area	1.0 (Novice) The student may exhibit the following readiness skills for Score 2.0	2.0 (Basic) When presented with a grade-appropriate task, the student:	3.0 (Proficient) In addition to Score 2.0, the student:	4.0 (Advanced) In addition to Score 3.0, the student may:
Idea Generation	**Definition:** Identifies a problem or challenge in a familiar context or situation. **Ideation:** With adult support, completes basic brainstorming tasks, such as listing or webbing, to generate an idea related to the broad topic. **Creative Investigation:** With adult support, describes others' ideas, solutions to a problem, and/or approaches to meeting a challenge. See possible student misconceptions following the rubric.	**Definition:** Identifies a problem or challenge that requires a creative solution. **Ideation:** Completes basic brainstorming tasks, such as listing or webbing, to generate an idea related to the broad topic. **Creative Investigation:** Describes others' ideas, solutions to a problem, and/or approaches to meeting a challenge.	**Definition:** Describes aspects of the problem or challenge *(for example: context, characteristics, genre, requirements, etc.)*. Identifies information necessary to solve the problem or meet the challenge (*for example: what is known, what is unknown, etc.*). **Ideation:** Uses basic brainstorming tasks, such as listing or webbing, to generate an idea relevant to the problem or challenge. **Creative Investigation:** Generates new ideas when presented with other perspectives.	**Definition:** Explain the significance of a problem or challenge and define its limitations, guidelines, or restrictions. **Ideation:** Generate multiple new ideas or approaches relevant to the problem or challenge, using a provided strategy *(for example: brainstorming, empathy exercises, writing activities, systems thinking analysis, solutions to similar problems from other disciplines)*. **Creative Investigation:** Compare the problem or challenge to other problems, situations, or needs.
Idea Design and Refinement	**Elaboration:** Restates the challenge or problem, and/or a provided solution. **Iteration:** With adult support, creates a representation of an idea *(for example: a sketch, plan, diagram, flow chart, blueprint)* in order to guide the actual production.	**Elaboration:** Provides details or general ideas. **Iteration:** Creates a representation of an idea *(for example: a sketch, plan, diagram, flow chart, blueprint)* in order to guide the actual production. Makes a specific revision to ideas and processes based on directive feedback *(for example:*	**Elaboration:** Provides specific ideas and relevant details. **Iteration:** Creates a working version of an idea *(for example: a model, prototype, pilot study, beta version)* in order to test assumptions and features. Makes simple revisions to ideas and processes in response to feedback.	**Elaboration:** Clearly explain ideas at a level of detail necessary for effective implementation. **Iteration:** Create and test multiple versions (A/B testing, etc.) or aspects of a product or solution.

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	With adult support, makes simple revisions. See possible student misconceptions following the rubric.	*changes the order in a process after being instructed to do so*).		Make effective revisions to ideas and processes in response to feedback. Discard a solution that does not lead to the end product or performance.
OPENNESS AND COURAGE TO EXPLORE	**Curiosity:** Asks questions about the topic. **Challenging Conventions:** Joins others (peers) to use a provided method and/or perspective for producing a product or solution. See possible student misconceptions following the rubric.	**Curiosity:** Asks questions about the task, process, or ideas. **Challenging Conventions:** Uses a provided method and/or perspective for producing a product or solution.	**Curiosity:** Seeks to extend understanding by questioning, trying new approaches to the task, and/or considering new ideas. **Challenging Conventions:** Uses a familiar method and/or perspective for producing a product or solution.	**Curiosity:** Seek and consider unfamiliar ideas with an open mind. **Challenging Conventions:** Propose ideas that might be seen as risky, silly, or unusual, but that relate to the challenge or task, and could be an effective solution.
WORKING CREATIVELY WITH OTHERS (SEE COLLABORATION)	**Integration of Ideas:** Articulates own ideas to others. See possible student misconceptions following the rubric.	**Integration of Ideas:** Summarizes or restates own and others' ideas.	**Integration of Ideas:** Compares others' ideas to own.	**Integration of Ideas:** Combine own ideas with others' ideas.
CREATIVE PRODUCTION AND INNOVATION	**Audience:** Identifies an audience for the task. **Use of Resources:** Uses provided materials/resources (see glossary). **Planning:** With adult support, follows a specific plan. **Production:** With adult support, completes a product.	**Audience:** Identifies the target audience and purpose for the task. **Use of Resources:** Selects materials/resources (see glossary) related to the task. **Planning:** Uses a provided plan that meets the specifications of the task.	**Audience:** Identifies details about the target audience, including needs and interests that will influence the final product or solution. **Use of Resources:** Selects materials/resources (see glossary) that are appropriate to the product or solution.	**Audience:** Shape original ideas into a product that is relevant to the target audience. **Use of Resources:** Effectively integrate materials/resources (see glossary) to develop a product or solution. **Planning:** Analyze components of the product to identify clear,

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	See possible student misconceptions following the rubric.	**Production:** Completes a product.	**Planning:** Provides general steps to meet the requirements of the task. **Production:** Completes the product to meet primary requirements of plan.	specific, and varied details and information in plan. **Production:** Complete the product according to plan and meet all specifications, making changes as necessary.
SELF-REGULATION AND REFLECTION	**Reflection:** With adult support, identifies own strengths and weaknesses in the product and/or process. **Planning:** With adult support, sets personal goals for performance. **Mindset:** Explains the relationship between effort and success *(for example: "The harder I work at this, the better I'll be at it"; "I will work harder in this class from now on.")*. See possible student misconceptions following the rubric.	**Reflection:** Identifies own strengths and weaknesses in the product and/or process. **Planning:** Sets personal goals for performance. **Mindset:** Demonstrates a desire to improve *(for example: employs more practice, sets goals for improvement, asks for help from others instead of giving up)*.	**Reflection:** Assesses the performance and creative process in response to feedback and/or the rubric. **Planning:** Sets goals for performance based on feedback and/or established criteria. **Mindset:** Demonstrates a growth mindset (the belief that he or she can get "smarter" at creative thinking through effective effort) in response to setbacks and challenges *(for example: persists on difficult tasks, takes risks in the learning process, accepts and uses feedback/criticism, is comfortable making mistakes, explains failure from a growth mindset perspective)*.	**Reflection:** Accurately reflect on the quality of the work; use reflection and/or feedback to revise ideas or products. Question and critique own creative process (*for example: dedication of time and effort, exploration of ideas, amount of support needed, etc.*). **Planning:** Seek out, select, and use resources and strategies to achieve goals for improving the creative process. **Mindset:** Proactively improve own areas of weakness by employing effective strategies to increase growth mindset (*for example: perseverance, taking risks, effective decision-making, actively seeking others' feedback, deliberate practice, finding and using external resources [skilled peers, other adult experts] to enrich and extend learning)*.

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Possible Misconceptions: K-2 Creativity and Innovation

The following chart lists possible misconceptions about **Creativity and Innovation**. Understanding student misconceptions can help teachers develop lessons that proactively address these barriers to deep learning and transfer.

Students might exhibit the following misconception, belief, or perception that…		
Idea Generation	**Definition**	• Problem solving happens only in mathematics. • Restating the assignment or task is the same thing as defining the problem or challenge.
	Ideation	• There is only one way to come up with ideas. • If an idea-generation strategy has been successful in one context, it will be successful in any context. • An idea must be original or new to be plausible or effective. • The first idea I come up with is the one I should use.
	Creative Investigation	• If someone else already came up with an idea or solution for the problem or challenge, there is no need for me to come up with another way. • If I thought of an idea, it must original. • There are no original ideas; everything has already been discovered. • A creative idea must be completely original. • The purpose of researching the work of others is to find flaws to fix.

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Students might exhibit the following misconception, belief, or perception that…		
Idea Design and Refinement	**Elaboration**	• All that is needed to solve a problem or meet a challenge is an idea. • As long as I know what I mean, I don't need to explain my ideas.
	Iteration	• If it's a good idea, I don't need multiple drafts. • Good ideas don't need revision; an idea is bad if it needs to be revised. • Letting go of an idea that is not working means I've failed. • My idea is fine the way it is. • I should concentrate on "easy" refinements; if a revision will be time-consuming or difficult, it's not worth the effort. • If I can't make it work right away, I should abandon that idea. • If someone critiques my idea, I should discard it. • If I need to discard an idea or change my focus, it means I'm not smart enough or capable enough.
Openness and Courage to Explore	**Curiosity**	• Asking questions shows lack of understanding or knowledge. • If I can't make it work right away, it isn't a valid idea. • The first idea I come up with is the one I should use.
	Challenging Conventions	• A creative idea must be completely original. • If it hasn't been done before, it can't be done. • Challenging conventions means proposing lofty, silly, or outlandish ideas. • Challenging conventions means breaking the rules. • Risk-taking always means doing something foolish or embarrassing. • If I take risks, I will fail; easier is safer.

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Students might exhibit the following misconception, belief, or perception that…		
Working Creatively with Others	**Integration of Ideas**	• Ideas must be used as is - two ideas can't be integrated. • My ideas are more important than others' ideas. • Other people's ideas are worth more than mine. • Sharing ideas is a formality because everyone will just want to use their own. • Combining ideas weakens the original ideas.
Creative Production and Innovation	**Audience**	• An audience is a large group of people who are viewing an event. It is tangible and seen. • Considering an audience stifles my creativity. • I like my work, therefore, everyone else will too.
	Use of Resources	• Materials must be physical (glue, poster, etc.). • Any materials I use will be fine. • If I don't have the exact materials I want to use, I can't bring my idea to fruition.
	Planning	• As long as I have an idea, I can get started. • I don't need a plan; I know what I'm doing. • A plan isn't helpful for me; it is a series of steps to help the teacher keep track of my work.
	Production	• Once the product is created or the solution has been found, I'm done. • If it's done, it's good enough. • It doesn't matter if I followed my plan as long as the work is finished.

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Possible Misconceptions: K-2 Self-Regulation and Reflection

The following chart lists possible misconceptions about **Self-Regulation and Reflection.** Understanding student misconceptions can help teachers develop lessons that proactively address these barriers to deep learning and transfer.

Students might exhibit the following misconception, belief, or perception that…		
Self-Regulation and Reflection	**Reflection**	• Reflection is all about what I think; other people's perspectives don't matter. • Only the teacher's perspective matters when it comes to identifying strengths and weaknesses. • I don't have any weaknesses. • I don't have any strengths. • All weaknesses affect my performance in the same way. • Reflection is a waste of time; I don't need to reflect to improve.
	Planning	• A goal is the same thing as a plan. • Any goal is a worthy goal. • Short-term goals aren't important. • I don't need a plan; if I set a goal, I will achieve it. • I should set goals in areas where I am already successful. • I should set the same goal over and over. • Someone else will give me resources and ideas about how to improve.
	Mindset	• Creativity and innovation are talents and not skills; I am as good at them as I'll ever be. • If I'm really good at something, I won't encounter any challenges. • If I experience a setback, I've failed. • Others' feedback can't help me. • Mistakes are bad; smart people don't make mistakes. • The safe route leads to guaranteed success.

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CREATIVITY AND INNOVATION RUBRIC

GRADES 3-5

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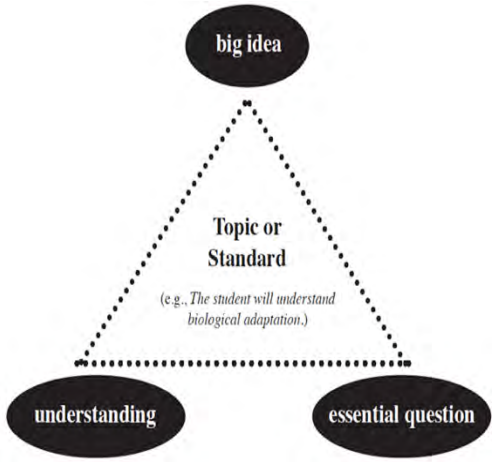

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Understandings	**Essential Questions**
Students will understand that. . .	**Students will keep considering. . .**
1. Creativity is a skill, not an innate ability; creative thinking can be strengthened with deliberate practice.	• What does it mean to be creative? • In what ways am I creative?
2. Creative thinkers develop original and viable solutions to challenges.	• What does it mean to be creative? • What do creative thinkers do? • How do I put my ideas into action? • What is possible?
3. Creative thinkers question accepted boundaries and beliefs.	• What does it mean to be creative? • What do creative thinkers do? • What are the limits and when can I move past them?
4. Creative thinkers persevere when they encounter failed attempts, frustration, or criticism; they shift gears when one approach is not working.	• What does it mean to be creative? • What do creative thinkers do? • What do I do when I get stuck?
5. Creative thinkers consider the needs and interests of an intended audience and the real-world context of their work.	• What does it mean to be creative? • What do creative thinkers do? • How do I know if my ideas will work? • How do I put my ideas into action? • How does my audience affect my creative thinking?

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Self-Regulation and Reflection Transfer Goals and UEQs

Transfer Goals	
Students will be able to independently use their learning to. . . • Improve performance and persevere through challenges by applying deliberate effort, appropriate strategies, and flexible thinking.	
Understandings	**Essential Questions**
Students will understand that. . .	**Students will keep considering. . .**
1. Effective learners set goals, regularly monitor their thinking, seek feedback, self-assess, and make needed adjustments.	• How am I doing? How do I know? What are my next steps? • What is the most effective way to monitor my progress? • How do I know which feedback will help me improve my work? • How can I get useful feedback? • How do I prioritize my work?
2. We can always improve our performance through deliberate effort and use of strategies.	• How can I keep getting better at creativity and innovation?

The deep learning proficiencies (5c+ s) are highly interconnected. For example, productive collaboration is contingent upon effective communication. Efficient and effective problem solving often requires collaboration skills. Divergent and convergent thinking, traits of Creativity and Innovation, are directly related to critical thinking. Our students will need to use a combination of proficiencies to solve problems in new contexts beyond the classroom. Therefore, it is important to be clear about which proficiency and/or performance area(s) are the focus for student learning, and then to assist students in understanding the connections between them and how they are mutually supportive.

What does Score 1.0 – Score 4.0 mean in the rubrics?

The rubrics are intended to support student progress toward mastering the deep learning proficiencies (DLPs). Four levels of performance are articulated in each rubric: Score 1.0 (Novice), Score 2.0 (Basic), Score 3.0 (Proficient), and Score 4.0 (Advanced). The descriptions follow a growth model to support students in developing their skills in each performance area. Scores 1.0 (Novice) and 2.0 (Basic) describe positive steps that students might take toward achieving Score 3.0 (Proficient) or Score 4.0 (Advanced) performance.

When using the rubrics to plan for instruction and assessment, teachers need to consider the knowledge and skills described in the Score 2.0 column (Basic) to be embedded in the Score 3.0 (Proficient) and 4.0 (Advanced) performance. The Novice level (Score 1.0) indicates that the student does not yet demonstrate the basic skills within the performance area, but that he/she exhibits related readiness skills that are a stepping-stone to a higher level of proficiency. Descriptions at the Novice level also include likely misconceptions that the student might exhibit.

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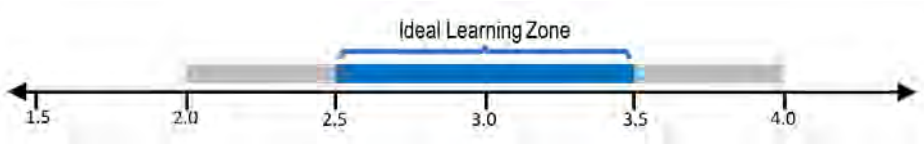
The descriptive rubrics are designed to illustrate students' depth of knowledge/skill at various levels in order to facilitate the instructional and assessment process for all learners. At some performance levels, the indicators may remain the same, but the material under study is more or less complex depending on the grade level band (for example: the complexity of the material at grades 6-8 differs from that of grades 3-5 or 9-12).

The following descriptions explain the four levels on the rubric:

- Score 1.0 (Novice): Describes student performance that demonstrates readiness skills and/or misconceptions and requires significant support.
- Score 2.0 (Basic): Describes student performance that is below proficient, but that demonstrates mastery of basic skills/knowledge, such as terms and details, definitions, basic inferences, and processes.
- Score 3.0 (Proficient): Describes student performance that is proficient – the targeted expectations for each performance area of the DLP.
- Score 4.0 (Advanced): Describes an exemplary performance that exceeds proficiency.

The image below represents the ideal learning zone for students as 2.5 – 3.5.



Glossary

Resources: In the context of Creativity and Innovation, "resources" can refer to physical materials such as paper, scissors, bolts, wires, artifacts, etc. "Resources" can also refer to less tangible materials such as discipline-specific tools, strategies, or concepts, including textual evidence, imagery, camera angles, color, sentence structures, movement, lighting, sound, use of space, position, etc.

Sources

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- McTighe, J., & Wiggins, G. P. (2013). Essential questions: Opening doors to student understanding. Alexandria, Virginia: ASCD.
- Rhodes, T. L. (Ed.) (2010). Assessing outcomes and improving achievement: Tips and tools for using rubrics. Association of American Colleges and Universities: Washington D.C. [Adaptations from VALUE rubrics, VALUE Project]
- Wiggins, G.P. & McTighe, J. (2011). The understanding by design guide to creating high-quality units. Alexandria, Virginia: ASCD.

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CREATIVITY AND INNOVATION

DLP PERFORMANCE AREA	1.0 (Novice) The student may exhibit the following readiness skills for Score 2.0:	2.0 (Basic) When presented with a grade-appropriate task, the student:	3.0 (Proficient) In addition to Score 2.0, the student:	4.0 (Advanced) In addition to Score 3.0, the student may:
IDEA GENERATION	**Definition:** Identifies a problem or challenge in a familiar context or situation. **Ideation:** Completes basic brainstorming tasks, such as listing or webbing, to generate an idea generally related to the challenge. **Creative Investigation:** Describes others' ideas, solutions to a problem, and/or approaches to meeting a challenge. See possible student misconceptions following the rubric.	**Definition:** Identifies a problem or challenge that requires a creative solution. **Ideation:** Uses basic brainstorming tasks, such as listing or webbing, to generate an idea relevant to the problem or challenge. **Creative Investigation:** Generates new ideas when presented with other perspectives.	**Definition:** Describes aspects of the problem or challenge (*for example: context, characteristics, genre, requirements, etc.*). Identifies information necessary to solve the problem or meet the challenge (*for example: what is known, what is unknown, specifications, etc.*). **Ideation:** Generates multiple new ideas or approaches relevant to the problem or challenge, using a provided strategy *(for example: brainstorming, metaphorical thinking, empathy exercises, writing activities, systems thinking analysis, solutions to similar problems from other disciplines)*. **Creative Investigation:** Researches others' ideas, solutions to the problem, and/or approaches to meeting the challenge. Compares the problem or challenge to other problems, situations, or needs.	**Definition:** Explain the significance of a problem or challenge and define its requirements. **Ideation:** Generate multiple, plausible ideas relevant to problem or challenge. **Creative Investigation:** Ask and answer "what if?" questions in order to propose new solutions or better understand the problem.

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IDEA DESIGN AND REFINEMENT	**Elaboration:** Articulates details or general ideas. **Iteration:** Creates a representation of an idea *(for example: a sketch, plan, diagram, flow chart, blueprint)* in order to guide the actual production. Makes revisions to ideas and processes based on directive feedback *(for example: changes the order in a process after being instructed to do so*). See possible student misconceptions following the rubric.	**Elaboration:** Articulates specific ideas and relevant details. **Iteration:** Creates a working version of an idea *(for example: a model, prototype, pilot study, beta version)* in order to test assumptions and features. Makes revisions to ideas and processes based on feedback.	**Elaboration:** Clearly articulates ideas at a level of detail necessary for effective implementation. **Iteration:** Creates and tests multiple versions (A/B testing, etc.) or aspects of a product or solution. Makes effective revisions to ideas and processes based on feedback. Discards a solution that does not lead to the end product or performance.	**Elaboration:** Articulate ideas and identify specific areas of ambiguity, or possible obstacles (*for example: create contingency plans*). **Iteration:** Analyze variables and patterns of success, failure, and/or unintended consequences across iterations to inform decisions about next steps. Make complex revisions or subtle refinements in response to broad/general feedback or criteria.
OPENNESS AND COURAGE TO EXPLORE	**Curiosity:** Asks questions about the topic. **Challenging Conventions:** Uses a provided method and/or perspective for producing a product or solution. See possible student misconceptions following the rubric.	**Curiosity:** Asks questions about the task, process, or ideas. **Challenging Conventions:** Uses a familiar method and/or perspective for producing a product or solution.	**Curiosity:** Seeks to extend understanding by questioning, trying new approaches to the task, and/or considering new ideas. **Challenging Conventions:** Proposes ideas that might be seen as risky, silly, or unusual, but that relate to the challenge or task and could lead to effective solutions.	**Curiosity:** Seek and consider unfamiliar ideas with an open mind. Suspend evaluation of ideas until they are thoroughly explored. **Challenging Conventions:** Take risks by purposefully challenging existing boundaries, limits, or ideas tied to norms or conventions *(for example: challenging the idea that a classroom environment has to be indoors, with desks, and led by one teacher).*

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WORKING CREATIVELY WITH OTHERS (SEE COLLABORATION)	**Integration of Ideas:** Summarizes or restates own and others' ideas. See possible student misconceptions following the rubric.	**Integration of Ideas:** Compares others' ideas to own ideas.	**Integration of Ideas:** Combines own ideas with others' ideas.	**Integration of Ideas:** Make connections between and build upon others' ideas to generate new and unique insights. Facilitate the integration of ideas throughout the creative process.
CREATIVE PRODUCTION AND INNOVATION	**Audience:** Identifies the target audience for the task. **Use of Resources:** Uses provided materials (see glossary). **Planning:** Describes the specifications of the task. **Production:** Completes a product. See possible student misconceptions following the rubric.	**Audience:** Identifies details about the target audience, including needs and interests. **Use of Resources:** Selects materials/resources (see glossary) needed for the task. **Planning:** Follows a provided plan that meets the specifications of the task. **Production:** Completes the product to meet the primary requirements of the plan.	**Audience:** Shapes original ideas into a product that is relevant to the target audience. **Use of Resources:** Selects materials/resources (see glossary) that are appropriate to the product or solution. **Planning:** Provides general steps to meet the specifications of the task. **Production:** Completes the product according to plan and meets all specifications, making changes as necessary.	**Audience:** Effectively shape original ideas into a product that meets the needs or interests of the target audience. **Use of Resources:** Effectively integrate materials/resources (see glossary) to develop a product or solution. **Planning:** Analyze components of the product to identify clear, specific, and varied details and information in plan. **Production:** Improve the product beyond the original plan.
SELF-REGULATION AND REFLECTION	**Reflection:** Identifies own strengths and weaknesses in the product and/or process. **Planning:** Sets personal goals for performance. **Mindset:** Explains the relationship between effort and success *(for example: "The harder I work at this, the better I'll be at*	**Reflection:** Assesses the performance and creative process in response to feedback and/or established criteria. **Planning:** Sets goals for performance based on feedback and/or established criteria. **Mindset:** Demonstrates a desire to improve *(for example: employs more practice, sets goals for*	**Reflection:** Accurately reflects on the quality of the work; uses reflection and/or feedback to revise ideas or products. Questions and critiques own creative process (*for example: dedication of time and effort, exploration of ideas, amount of support needed, etc.*).	**Reflection:** Analyze patterns and trends in own creative process and product. Evaluate creative thinking throughout the process. Seek out and act on feedback from peers, teacher, and experts to improve. **Planning:** Analyze patterns and prior performances to set new

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	it"; "I will work harder in this class from now on."). See possible student misconceptions following the rubric.	*improvement, asks for help from others instead of giving up)*.	**Planning:** Seeks out, selects, and uses resources and strategies to achieve goals for improving the creative process. **Mindset:** Demonstrates a growth mindset (the belief that he or she can get "smarter" at creative thinking through effective effort) in response to setbacks and challenges *(for example: persists on difficult tasks, takes risks in the learning process, accepts and uses feedback/criticism, is comfortable making mistakes, explains failure from a growth mindset perspective)*.	goals for creative thinking; revise goals in response to ongoing reflection. **Mindset:** Proactively improve own areas of weakness by employing effective strategies to increase growth mindset (*for example: perseverance, taking risks, effective decision-making, actively seeking others' feedback, deliberate practice, finding and using external resources [skilled peers, other adult experts] to enrich and extend learning)*.

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Possible Misconceptions: 3-5 Creativity and Innovation

The following chart lists possible misconceptions about **Creativity and Innovation**. Understanding student misconceptions can help teachers develop lessons that proactively address these barriers to deep learning and transfer.

Students might exhibit the following misconception, belief, or perception that…		
Idea Generation	**Definition**	• Problem solving happens only in mathematics. • Restating the assignment or task is the same thing as defining the problem or challenge.
	Ideation	• There is only one way to come up with ideas. • If an idea-generation strategy has been successful in one context, it will be successful in any context. • An idea must be original or new to be plausible or effective. • The first idea I come up with is the one I should use.
	Creative Investigation	• If someone else already came up with an idea or solution for the problem or challenge, there is no need for me to come up with another way. • If I thought of an idea, it must original. • There are no original ideas; everything has already been discovered. • A creative idea must be completely original. • The purpose of researching the work of others is to find flaws to fix.

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Students might exhibit the following misconception, belief, or perception that…		
Idea Design and Refinement	**Elaboration**	• All that is needed to solve a problem or meet a challenge is an idea. • As long as I know what I mean, it doesn't matter if other people understand my idea.
	Iteration	• If it's a good idea, I don't need multiple drafts. • Good ideas don't need revision; an idea is bad if it needs to be revised. • Letting go of an idea that is not working means I've failed. • My idea is fine the way it is. • I should concentrate on "easy" refinements; if a revision will be time-consuming or difficult, it's not worth the effort. • If I can't make it work right away, I should abandon that idea. • If someone critiques my idea, I should discard it. • If I need to discard an idea or change my focus, it means I'm not smart enough or capable enough.
Openness and Courage to Explore	**Curiosity**	• Asking questions shows lack of understanding or knowledge. • If I can't make it work right away, it isn't a valid idea. • The first idea I come up with is the one I should use.
	Challenging Conventions	• A creative idea must be completely original. • If it hasn't been done before, it can't be done. • Challenging conventions means proposing lofty, silly, or outlandish ideas. • Challenging conventions means breaking the rules. • Risk-taking always means doing something foolish or embarrassing. • If I take risks, I will fail; easier is safer.

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Students might exhibit the following misconception, belief, or perception that…		
Working Creatively with Others	**Integration of Ideas**	• Ideas must be used as is - two ideas can't be integrated. • My ideas are more important than others' ideas. • Other people's ideas are worth more than mine. • Sharing ideas is a formality because everyone will just want to use their own. • Combining ideas weakens the original ideas.
Creative Production and Innovation	**Audience**	• An audience is a large group of people who are viewing an event. It is tangible and seen. • Considering an audience stifles my creativity. • I like my work, therefore, everyone else will too.
	Use of Resources	• Materials must be physical (glue, poster, etc.). • Any materials I use will be fine. • If I don't have the exact materials I want to use, I can't bring my idea to fruition.
	Planning	• As long as I have an idea, I can get started. • I don't need a plan; I know what I'm doing. • A plan isn't helpful for me; it is a series of steps to help the teacher keep track of my work.
	Production	• Once the product is created or the solution has been found, I'm done. • If it's done, it's good enough. • It doesn't matter if I followed my plan as long as the work is finished.

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Possible Misconceptions: 3-5 Self-Regulation and Reflection

The following chart lists possible misconceptions about **Self-Regulation and Reflection.** Understanding student misconceptions can help teachers develop lessons that proactively address these barriers to deep learning and transfer.

Students might exhibit the following misconception, belief, or perception that…		
Self-Regulation and Reflection	**Reflection**	• Reflection is all about what I think; other people's perspectives don't matter. • Only the teacher's perspective matters when it comes to identifying strengths and weaknesses. • I don't have any weaknesses. • I don't have any strengths. • All weaknesses affect my performance in the same way. • Reflection is a waste of time; I don't need to reflect to improve.
	Planning	• A goal is the same thing as a plan. • Any goal is a worthy goal. • Short-term goals aren't important. • I don't need a plan; if I set a goal, I will achieve it. • I should set goals in areas where I am already successful. • I should set the same goal over and over. • Someone else will give me resources and ideas about how to improve.
	Mindset	• Creativity and innovation are talents and not skills; I am as good at them as I'll ever be. • If I'm really good at something, I won't encounter any challenges. • If I experience a setback, I've failed. • Others' feedback can't help me. • Mistakes are bad; smart people don't make mistakes. • The safe route leads to guaranteed success.

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ENVISION 21

DEEP LEARNING • CFSD

CREATIVITY AND INNOVATION RUBRIC

GRADES 6-8

CATALINA FOOTHILLS SCHOOL DISTRICT

TUCSON, ARIZONA

General Description and Suggestions for Use

The district's strategic plan, Envision21: Deep Learning, forms the basis for a focus on cross-disciplinary skills/proficiencies necessary for preparing our students well for a 21st century life that is increasingly complex and global. These skills, which are CFSD's "deep learning proficiencies" (DLPs) are represented as 5c + s = dlp. They are the 5Cs: (1) Citizenship, (2) Critical Thinking and Problem Solving, (3) Creativity and Innovation, (4) Communication, (5) Collaboration + S: Systems Thinking. CFSD developed a set of rubrics (K-2, 3-5, 6-8, and 9-12) for each DLP.

These rubrics were developed using a backward design process to define and prioritize the desired outcomes for each DLP. They provide a common vocabulary and illustrate a continuum of performance. By design, the rubrics were not written to align to any specific subject area; they are intended to be contextualized within the academic content areas based on the performance area(s) being taught and assessed. In practice, this will mean that not every performance area in each of the rubrics will be necessary in every lesson, unit, or assessment.

The CFSD rubric for **Creativity and Innovation** was designed as a cross-disciplinary tool to support educators in teaching and assessing the performance areas associated with this proficiency:

- **Idea Generation**
- **Idea Design and Refinement**
- **Openness and Courage to Explore**
- **Working Creatively with Others**
- **Creative Production and Innovation**
- **Self-Regulation and Reflection**

This tool is to be used primarily for formative instructional and assessment purposes; it is not intended to generate psychometrically valid, high stakes assessment data typically associated with state and national testing. CFSD provides a variety of tools and templates to support the integration of **Creativity and Innovation** into units, lessons, and assessments. When designing units, teachers are encouraged to create authentic assessment opportunities in which students can demonstrate mastery of content and the deep learning proficiencies at the same time.

The approach to teaching the performance areas in each rubric may vary by subject area because the way in which they are applied may differ based on the field of study. Scientists, mathematicians, social scientists, engineers, artists, and musicians (for example), all collaborate, solve problems, and share their findings or work within their professional communities. However, the way in which they approach their work, the tools used for collaboration, and the format for communicating their findings may vary based on the profession. These discipline-specific expressions of the 5Cs + S may require some level of customization based on the subject area. Each rubric can also be used to provide students with an opportunity to self-assess the quality of their work in relation to the performance areas. Student-friendly language or "I can" statements can be used by students to monitor and self-assess their progress toward established goals for each performance area.

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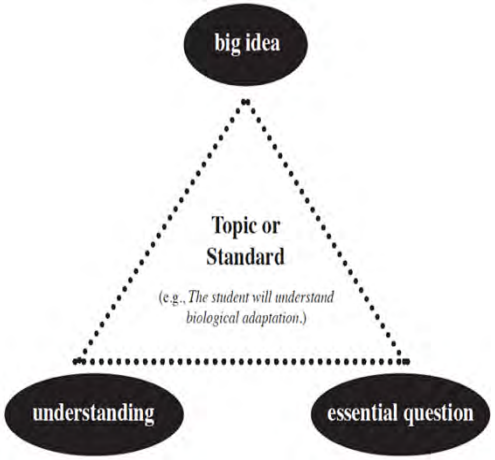
Transfer

CFSD educators prioritize understanding and transfer to ensure that learning extends beyond the school experience. This 2019 version of the DLP, **Creativity and Innovation**, includes long-term **transfer goals** that describe autonomous applications of student learning in college, career, and civic life. "Drill and direct instruction can develop discrete skills and facts into automaticity…but they cannot make us truly able. Understanding is about *transfer*, in other words. To be truly able requires the ability to transfer what we have learned to new and sometimes confusing settings. The ability to transfer our knowledge and skill effectively involves the capacity to take what we know and use it creatively, flexibly, fluently, in different settings or problems, on our own" (Wiggins and McTighe, 2011, p. 40).

Big Ideas

This 2019 version of the DLP, **Creativity and Innovation,** includes a set of Understandings and Essential Questions (UEQs) developed by an interdisciplinary team of K-12 teachers and administrators with guidance from Jay McTighe, author of *Understanding by Design*. These big ideas will guide teachers toward the thoughtful design of assessments, units, and lessons that will facilitate transfer of deep learning. "Because big ideas are the basis of unified and effective understanding, they provide a way to set curriculum and instructional priorities…they illuminate experience; they are the linchpin of transfer…" (Wiggins and McTighe, 2011, p.71). "Understandings are the specific insights, inferences, or conclusions about the big idea you want your students to leave with" (Wiggins and McTighe, 2011, p. 80). "Essential questions make our unit plans more likely to yield focused and thoughtful learning and learners" (McTighe, 2017; McTighe & Wiggins, 2013, p. 17). The figure on the right represents the interrelationship among big ideas, understandings, and essential questions.



The **DLP Understandings** are written for K-12 because they express lasting, transferable goals for student learning. Understandings are meant to be revisited over time and across contexts. The continuity of working toward the same goals will help students deepen their understanding from Kindergarten to 12th grade. Understandings are primarily planning tools for teachers, although teachers may choose to share them with their students, if appropriate. Communicating an Understanding does not give away "the answer," since simply stating an Understanding is not the same as truly grasping its meaning.

The **Essential Questions** are teaching and learning tools that help students unpack the Understandings. They support inquiry and engagement with deep learning and therefore may vary in complexity across grade levels.

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Creativity and Innovation Transfer Goals and UEQs

Transfer Goals	
Students will be able to independently use their learning to. . . • Develop innovative, viable ideas and solutions that meet the needs of various audiences and challenges.	
Understandings	**Essential Questions**
Students will understand that. . .	**Students will keep considering. . .**
1. Creativity is a skill, not an innate ability; creative thinking can be strengthened with deliberate practice.	• What does it mean to be creative? • In what ways am I creative?
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5. Creative thinkers consider the needs and interests of an intended audience and the real-world context of their work.	• What does it mean to be creative? • What do creative thinkers do? • How do I know if my ideas will work? • How do I put my ideas into action? • How does my audience affect my creative thinking?

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2. We can always improve our performance through deliberate effort and use of strategies.	• How can I keep getting better at creativity and innovation?

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The descriptive rubrics are designed to illustrate students' depth of knowledge/skill at various levels in order to facilitate the instructional and assessment process for all learners. At some performance levels, the indicators may remain the same, but the material under study is more or less complex depending on the grade level band (for example: the complexity of the material at grades 6-8 differs from that of grades 3-5 or 9-12). The following descriptions explain the four levels on the rubric:

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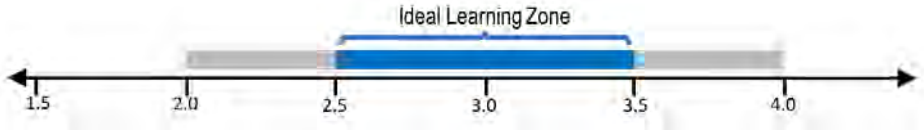

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CREATIVITY AND INNOVATION

DLP Performance Area	1.0 (Novice) The student may exhibit the following readiness skills for Score 2.0:	2.0 (Basic) When presented with a grade-appropriate task, the student:	3.0 (Proficient) In addition to Score 2.0, the student:	4.0 (Advanced) In addition to Score 3.0, the student may:
Idea Generation	**Definition:** Identifies a problem or challenge that requires a creative solution. **Ideation:** Uses basic brainstorming tasks, such as listing or webbing, to generate an idea relevant to the problem or challenge. **Creative Investigation:** Describes others' ideas, solutions to a problem, and/or approaches to meeting a challenge. See possible student misconceptions following the rubric.	**Definition:** Describes aspects of the problem or challenge (*for example: context, characteristics, genre, parameters, etc.*). Identifies information necessary to solve the problem or meet the challenge (*for example: what is known, what is unknown, specifications, etc.*). **Ideation:** Generates multiple new ideas or approaches relevant to the problem or challenge, using a provided strategy *(for example: brainstorming, metaphorical thinking, empathy exercises, writing activities, systems thinking analysis, solutions to similar problems from other disciplines).* **Creative Investigation:** Generates new ideas when presented with other perspectives.	**Definition:** Explains the significance of a problem or challenge and defines its parameters. **Ideation:** Generates multiple, plausible ideas relevant to problem or challenge. **Creative Investigation:** Researches others' ideas, solutions to the problem, and/or approaches to meeting the challenge. Compares the problem or challenge to other problems, situations, or needs.	**Definition:** Describe the problem or challenge in depth by examining it through various lenses *(for example: ethical, cultural, social, political, economic, systems thinking, or the perspectives of different stakeholders, etc.)* or by identifying multiple facets of the topic. Reframe the problem or challenge in a different way (*for example: looking at it from a different perspective, starting from a different point in the process*). **Ideation:** Use a variety of strategies to generate multiple, distinct ideas that are closely related to the creative challenge at hand and that are sufficient to spark a creative process. **Creative Investigation:** Ask and answer "what if?" questions in order to propose new solutions or better understand the problem.
	Elaboration: Articulates details or general ideas.	**Elaboration:** Articulates specific ideas and relevant details.	**Elaboration:** Clearly articulates ideas at a level of detail	**Elaboration:** Articulate ideas and identify specific areas of

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IDEA DESIGN AND REFINEMENT	**Iteration:** Creates a representation of an idea *(for example: a sketch, plan, diagram, flow chart, blueprint)* in order to guide the actual production. Makes simple revisions to ideas and processes based on specific, directive feedback *(for example: changes the order in a process after being instructed to do so*). See possible student misconceptions following the rubric.	**Iteration:** Creates a working version of an idea *(for example: a model, prototype, pilot study, beta version)* in order to test assumptions and features. Makes effective revisions to ideas and processes based on specific feedback.	necessary for effective implementation. **Iteration:** Creates and tests multiple versions (A/B testing, etc.) or aspects of a product or solution. Makes complex revisions or subtle refinements in response to broad/general feedback or criteria. Discards a solution that does not lead to the end product or performance.	ambiguity or possible obstacles (*for example: create contingency plans*). **Iteration:** Analyze variables and patterns of success, failure, and/or unintended consequences across iterations to inform decisions about next steps. Seek targeted feedback to make revisions that improve the quality and quantity of ideas.
OPENNESS AND COURAGE TO EXPLORE	**Curiosity:** Asks questions about the task, process, or ideas. **Challenging Conventions:** Uses a familiar method and/or perspective for producing a product or solution. See possible student misconceptions following the rubric.	**Curiosity:** Seeks to extend understanding by questioning, trying new approaches to the task, and/or considering new ideas. **Challenging Conventions:** Proposes ideas that might be seen as risky, silly, or unusual, but that relate to the challenge or task and could be an effective solution.	**Curiosity:** Seeks and considers unfamiliar ideas with an open mind. Suspends evaluation of ideas until they are thoroughly explored. **Challenging Conventions:** Takes risks by purposefully challenging existing boundaries, limits, or ideas tied to norms or conventions *(for example: challenging the idea that a classroom environment has to be indoors, with desks, and led by one teacher).*	**Curiosity:** Seek out and explore new and contradictory ideas, unanswered questions, and complex situations or solutions. **Challenging Conventions:** Challenge own assertions, assumptions, or beliefs. Propose plausible ideas that challenge existing boundaries, limits, or ideas tied to norms or conventions (*for example: writing a poem rather than an essay to make an argument; the 6th grader who proposed a font change to save money in his school and at the federal government*).
	Integration of Ideas: Compares others' ideas to own ideas.	**Integration of Ideas:** Combines own ideas with others' ideas.	**Integration of Ideas:** Makes connections between and builds upon others' ideas to generate new and unique insights.	**Integration of Ideas:** Synthesize ideas and capitalize on the different strengths and perspectives of individual group

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Working Creatively with Others (See Collaboration)	See possible student misconceptions following the rubric.			members to develop an original, cohesive product or performance.
Creative Production and Innovation	**Audience:** Identifies details about the target audience, including needs and interests that will influence the final product or solution. **Use of Resources:** Identifies materials/resources (see glossary) needed for the task. **Planning:** Describes the specifications of the task. **Production:** Completes a product. See possible student misconceptions following the rubric.	**Audience:** Shapes original ideas into a product that is relevant to the target audience. **Use of Resources:** Selects materials/resources (see glossary) that are appropriate to the product or solution. **Planning:** Provides general steps to meet the specifications of the task. **Production:** Completes the product to meet primary requirements of the plan.	**Audience:** Effectively shapes original ideas into a product that meets the needs or interests of the target audience. **Use of Resources:** Effectively integrates materials/resources (see glossary) to develop a product or solution. **Planning:** Analyze components of the product to identify clear, specific, and varied details and information in plan. **Production:** Completes the product according to plan and meets all specifications, making changes as necessary.	**Audience:** Consider multiple audience perspectives; adapt ideas to suit multiple audiences with varied needs and interests. **Use of Resources:** Adapt materials/resources (see glossary) to develop an innovative product or solution; use materials in new or unexpected ways. **Planning:** Anticipate potential problems or obstacles; plan effectively to circumvent, overcome, or recover from setbacks. **Production:** Improves the product beyond the original plan.
Self-Regulation and Reflection	**Reflection:** Identifies own strengths and weaknesses in the product and/or process. **Planning:** Sets personal goals for performance. **Mindset:** Explains the relationship between effort and success *(for example: "The harder I work at this, the better I'll be at it"; "I will work harder in this class from now on.").*	**Reflection:** Assesses the performance and creative process in response to feedback and/or established criteria. **Planning:** Sets goals for performance based on feedback and/or established criteria. **Mindset:** Demonstrates a desire to improve *(for example: employs more practice, sets goals for improvement, asks for help from others instead of giving up).*	**Reflection:** Accurately reflects on the quality of the work; uses reflection and/or feedback to revise ideas or products. Questions and critiques own creative process (*for example: dedication of time and effort, exploration of ideas, amount of support needed, etc.*). **Planning:** Seeks out, selects, and uses resources and strategies to	**Reflection:** Analyze patterns and trends in own creative process and product. Evaluate creative thinking throughout the process. Seek out and act on feedback from peers, teacher, and experts to improve. **Planning:** Analyze patterns and prior performances to set new goals for creative thinking;

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	See possible student misconceptions following the rubric.		achieve goals for improving the creative process. **Mindset:** Demonstrates a growth mindset (the belief that he or she can get "smarter" at creative thinking through effective effort) in response to setbacks and challenges *(for example: persists on difficult tasks, takes risks in the learning process, accepts and uses feedback/criticism, is comfortable making mistakes, explains failure from a growth mindset perspective).*	revise goals in response to ongoing reflection. **Mindset:** Proactively improve own areas of weakness by employing effective strategies to increase growth mindset (*for example: perseverance, taking risks, effective decision-making, actively seeking others' feedback, deliberate practice, finding and using external resources [skilled peers, other adult experts] to enrich and extend learning).*

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Possible Misconceptions: 6-8 Creativity and Innovation

The following chart lists possible misconceptions about **Creativity and Innovation**. Understanding student misconceptions can help teachers develop lessons that proactively address these barriers to deep learning and transfer.

Students might exhibit the following misconception, belief, or perception that…		
Idea Generation	**Definition**	• Problem solving happens only in mathematics. • Restating the assignment or task is the same thing as defining the problem or challenge.
	Ideation	• There is only one way to come up with ideas. • If an idea-generation strategy has been successful in one context, it will be successful in any context. • An idea must be original or new to be plausible or effective. • The first idea I come up with is the one I should use.
	Creative Investigation	• If someone else already came up with an idea or solution for the problem or challenge, there is no need for me to come up with another way. • If I thought of an idea, it must original. • There are no original ideas; everything has already been discovered. • A creative idea must be completely original. • The purpose of researching the work of others is to find flaws to fix.

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Possible Misconceptions: 6-8 Creativity and Innovation

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Students might exhibit the following misconception, belief, or perception that…		
Idea Design and Refinement	**Elaboration**	• All that is needed to solve a problem or meet a challenge is an idea. • As long as I know what I mean, I don't need to explain my ideas.
	Iteration	• If it's a good idea, I don't need multiple drafts. • Good ideas don't need revision; an idea is bad if it needs to be revised. • Letting go of an idea that is not working means I've failed. • My idea is fine the way it is. • I should concentrate on "easy" refinements; if a revision will be time-consuming or difficult, it's not worth the effort. • If I can't make it work right away, I should abandon that idea. • If someone critiques my idea, I should discard it. • If I need to discard an idea or change my focus, it means I'm not smart enough or capable enough.
Openness and Courage to Explore	**Curiosity**	• Asking questions shows lack of understanding or knowledge. • If I can't make it work right away, it isn't a valid idea. • The first idea I come up with is the one I should use.
	Challenging Conventions	• A creative idea must be completely original. • If it hasn't been done before, it can't be done. • Challenging conventions means proposing lofty, silly, or outlandish ideas. • Challenging conventions means breaking the rules. • Risk-taking always means doing something foolish or embarrassing. • If I take risks, I will fail; easier is safer.

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Possible Misconceptions: 6-8 Creativity and Innovation

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Students might exhibit the following misconception, belief, or perception that…		
Working Creatively with Others	**Integration of Ideas**	• Ideas must be used as is - two ideas can't be integrated. • My ideas are more important than others' ideas. • Other people's ideas are worth more than mine. • Sharing ideas is a formality because everyone will just want to use their own. • Combining ideas weakens the original ideas.
Creative Production and Innovation	**Audience**	• An audience is a large group of people who are viewing an event. It is tangible and seen. • Considering an audience stifles my creativity. • I like my work, therefore, everyone else will too.
	Use of Resources	• Materials must be physical (glue, poster, etc.). • Any materials I use will be fine. • If I don't have the exact materials I want to use, I can't bring my idea to fruition.
	Planning	• As long as I have an idea, I can get started. • I don't need a plan; I know what I'm doing. • A plan isn't helpful for me; it is a series of steps to help the teacher keep track of my work.
	Production	• Once the product is created or the solution has been found, I'm done. • If it's done, it's good enough. • It doesn't matter if I followed my plan as long as the work is finished.

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Possible Misconceptions: 6-8 Self-Regulation and Reflection

The following chart lists possible misconceptions about **Self-Regulation and Reflection.** Understanding student misconceptions can help teachers develop lessons that proactively address these barriers to deep learning and transfer.

Students might exhibit the following misconception, belief, or perception that…		
Self-Regulation and Reflection	**Reflection**	• Reflection is all about what I think; other people's perspectives don't matter. • Only the teacher's perspective matters when it comes to identifying strengths and weaknesses. • I don't have any weaknesses. • I don't have any strengths. • All weaknesses affect my performance in the same way. • Reflection is a waste of time; I don't need to reflect to improve.
	Planning	• A goal is the same thing as a plan. • Any goal is a worthy goal. • Short-term goals aren't important. • I don't need a plan; if I set a goal, I will achieve it. • I should set goals in areas where I am already successful. • I should set the same goal over and over. • Someone else will give me resources and ideas about how to improve.
	Mindset	• Creativity and innovation are talents and not skills; I am as good at them as I'll ever be. • If I'm really good at something, I won't encounter any challenges. • If I experience a setback, I've failed. • Others' feedback can't help me. • Mistakes are bad; smart people don't make mistakes. • The safe route leads to guaranteed success.

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ENVISION 21

DEEP LEARNING • CFSD

CREATIVITY AND INNOVATION RUBRIC

GRADES 9-12

CATALINA FOOTHILLS SCHOOL DISTRICT

TUCSON, ARIZONA

General Description and Suggestions for Use

The district's strategic plan, Envision21: Deep Learning, forms the basis for a focus on cross-disciplinary skills/proficiencies necessary for preparing our students well for a 21st century life that is increasingly complex and global. These skills, which are CFSD's "deep learning proficiencies" (DLPs) are represented as 5c + s = dlp. They are the 5Cs: (1) Citizenship, (2) Critical Thinking and Problem Solving, (3) Creativity and Innovation, (4) Communication, (5) Collaboration + S: Systems Thinking. CFSD developed a set of rubrics (K-2, 3-5, 6-8, and 9-12) for each DLP.

These rubrics were developed using a backward design process to define and prioritize the desired outcomes for each DLP. They provide a common vocabulary and illustrate a continuum of performance. By design, the rubrics were not written to align to any specific subject area; they are intended to be contextualized within the academic content areas based on the performance area(s) being taught and assessed. In practice, this will mean that not every performance area in each of the rubrics will be necessary in every lesson, unit, or assessment.

The CFSD rubric for **Creativity and Innovation** was designed as a cross-disciplinary tool to support educators in teaching and assessing the performance areas associated with this proficiency:

- **Idea Generation**
- **Idea Design and Refinement**
- **Openness and Courage to Explore**
- **Working Creatively with Others**
- **Creative Production and Innovation**
- **Self-Regulation and Reflection**

This tool is to be used primarily for formative instructional and assessment purposes; it is not intended to generate psychometrically valid, high stakes assessment data typically associated with state and national testing. CFSD provides a variety of tools and templates to support the integration of **Creativity and Innovation** into units, lessons, and assessments. When designing units, teachers are encouraged to create authentic assessment opportunities in which students can demonstrate mastery of content and the deep learning proficiencies at the same time.

The approach to teaching the performance areas in each rubric may vary by subject area because the way in which they are applied may differ based on the field of study. Scientists, mathematicians, social scientists, engineers, artists, and musicians (for example), all collaborate, solve problems, and share their findings or work within their professional communities. However, the way in which they approach their work, the tools used for collaboration, and the format for communicating their findings may vary based on the profession. These discipline-specific expressions of the 5Cs + S may require some level of customization based on the subject area. Each rubric can also be used to provide students with an opportunity to self-assess the quality of their work in relation to the performance areas. Student-friendly language or "I can" statements can be used by students to monitor and self-assess their progress toward established goals for each performance area.

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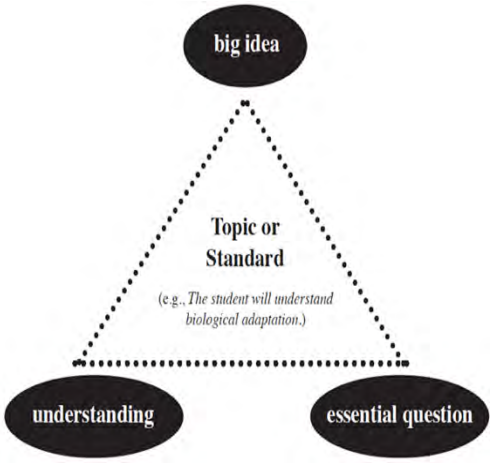
Transfer

CFSD educators prioritize understanding and transfer to ensure that learning extends beyond the school experience. This 2019 version of the DLP, **Creativity and Innovation**, includes long-term **transfer goals** that describe autonomous applications of student learning in college, career, and civic life. "Drill and direct instruction can develop discrete skills and facts into automaticity…but they cannot make us truly able. Understanding is about *transfer*, in other words. To be truly able requires the ability to transfer what we have learned to new and sometimes confusing settings. The ability to transfer our knowledge and skill effectively involves the capacity to take what we know and use it creatively, flexibly, fluently, in different settings or problems, on our own" (Wiggins and McTighe, 2011, p. 40).

Big Ideas

This 2019 version of the DLP, **Creativity and Innovation,** includes a set of Understandings and Essential Questions (UEQs) developed by an interdisciplinary team of K-12 teachers and administrators with guidance from Jay McTighe, author of *Understanding by Design*. These big ideas will guide teachers toward the thoughtful design of assessments, units, and lessons that will facilitate transfer of deep learning. "Because big ideas are the basis of unified and effective understanding, they provide a way to set curriculum and instructional priorities...they illuminate experience; they are the linchpin of transfer…" (Wiggins and McTighe, 2011, p.71). "Understandings are the specific insights, inferences, or conclusions about the big idea you want your students to leave with" (Wiggins and McTighe, 2011, p. 80). "Essential questions make our unit plans more likely to yield focused and thoughtful learning and learners" (McTighe, 2017; McTighe & Wiggins, 2013, p. 17). The figure on the right represents the interrelationship among big ideas, understandings, and essential questions.



The **DLP Understandings** are written for K-12 because they express lasting, transferable goals for student learning. Understandings are meant to be revisited over time and across contexts. The continuity of working toward the same goals will help students deepen their understanding from Kindergarten to 12th grade. Understandings are primarily planning tools for teachers, although teachers may choose to share them with their students, if appropriate. Communicating an Understanding does not give away "the answer," since simply stating an Understanding is not the same as truly grasping its meaning.

The **Essential Questions** are teaching and learning tools that help students unpack the Understandings. They support inquiry and engagement with deep learning and therefore may vary in complexity across grade levels.

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Creativity and Innovation Transfer Goals and UEQs

Transfer Goals	
Students will be able to independently use their learning to. . . • Develop innovative, viable ideas and solutions that meet the needs of various audiences and challenges.	
Understandings	**Essential Questions**
Students will understand that. . .	**Students will keep considering. . .**
1. Creativity is a skill, not an innate ability; creative thinking can be strengthened with deliberate practice.	• What does it mean to be creative? • In what ways am I creative?
2. Creative thinkers develop original and viable solutions to challenges.	• What does it mean to be creative? • What do creative thinkers do? • How do I put my ideas into action? • What is possible?
3. Creative thinkers question accepted boundaries and beliefs.	• What does it mean to be creative? • What do creative thinkers do? • What are the limits and when can I move past them?
4. Creative thinkers persevere when they encounter failed attempts, frustration, or criticism; they shift gears when one approach is not working.	• What does it mean to be creative? • What do creative thinkers do? • What do I do when I get stuck?
5. Creative thinkers consider the needs and interests of an intended audience and the real-world context of their work.	• What does it mean to be creative? • What do creative thinkers do? • How do I know if my ideas will work? • How do I put my ideas into action? • How does my audience affect my creative thinking?

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Self-Regulation and Reflection Transfer Goals and UEQs

Transfer Goals	
Students will be able to independently use their learning to. . . • Improve performance and persevere through challenges by applying deliberate effort, appropriate strategies, and flexible thinking.	
Understandings	**Essential Questions**
Students will understand that. . .	**Students will keep considering. . .**
1. Effective learners set goals, regularly monitor their thinking, seek feedback, self-assess, and make needed adjustments.	• How am I doing? How do I know? What are my next steps? • What is the most effective way to monitor my progress? • How do I know which feedback will help me improve my work? • How can I get useful feedback? • How do I prioritize my work? • How can I maintain focus on areas of influence rather than on factors I cannot influence?
2. We can always improve our performance through deliberate effort and use of strategies.	• How can I keep getting better at creativity and innovation?

The deep learning proficiencies (5c+ s) are highly interconnected. For example, productive collaboration is contingent upon effective communication. Efficient and effective problem solving often requires collaboration skills. Divergent and convergent thinking, traits of Creativity and Innovation, are directly related to critical thinking. Our students will need to use a combination of proficiencies to solve problems in new contexts beyond the classroom. Therefore, it is important to be clear about which proficiency and/or performance area(s) are the focus for student learning, and then to assist students in understanding the connections between them and how they are mutually supportive.

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What does Score 1.0 – Score 4.0 mean in the rubrics?

The rubrics are intended to support student progress toward mastering the deep learning proficiencies (DLPs). Four levels of performance are articulated in each rubric: Score 1.0 (Novice), Score 2.0 (Basic), Score 3.0 (Proficient), and Score 4.0 (Advanced). The descriptions follow a growth model to support students in developing their skills in each performance area. Scores 1.0 (Novice) and 2.0 (Basic) describe positive steps that students might take toward achieving Score 3.0 (Proficient) or Score 4.0 (Advanced) performance.

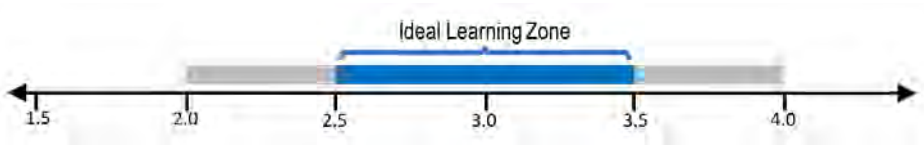
When using the rubrics to plan for instruction and assessment, teachers need to consider the knowledge and skills described in the Score 2.0 column (Basic) to be embedded in the Score 3.0 (Proficient) and 4.0 (Advanced) performance. The Novice level (Score 1.0) indicates that the student does not yet demonstrate the basic skills within the performance area, but that he/she exhibits related readiness skills that are a stepping-stone to a higher level of proficiency. Descriptions at the Novice level also include likely misconceptions that the student might exhibit.

The descriptive rubrics are designed to illustrate students' depth of knowledge/skill at various levels in order to facilitate the instructional and assessment process for all learners. At some performance levels, the indicators may remain the same, but the material under study is more or less complex depending on the grade level band (for example: the complexity of the material at grades 6-8 differs from that of grades 3-5 or 9-12).

The following descriptions explain the four levels on the rubric:

- Score 1.0 (Novice): Describes student performance that demonstrates readiness skills and/or misconceptions and requires significant support.
- Score 2.0 (Basic): Describes student performance that is below proficient, but that demonstrates mastery of basic skills/knowledge, such as terms and details, definitions, basic inferences, and processes.
- Score 3.0 (Proficient): Describes student performance that is proficient – the targeted expectations for each performance area of the DLP.
- Score 4.0 (Advanced): Describes an exemplary performance that exceeds proficiency.

The image below represents the ideal learning zone for students as 2.5 – 3.5.



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Glossary

Resources: In the context of Creativity and Innovation, "resources" can refer to physical materials such as paper, scissors, bolts, wires, artifacts, etc. "Resources" can also refer to less tangible materials such as discipline-specific tools, strategies, or concepts, including textual evidence, imagery, camera angles, color, sentence structures, movement, lighting, sound, use of space, position, etc.

Sources

The following sources directly influenced the revision of CFSD's rubrics:

- Catalina Foothills School District. (2011, 2014, 2015). Rubrics for 21st century skills and rubrics for deep learning proficiencies. Tucson, Arizona.
- EdLeader21 (2013). 4Cs rubrics. Tucson, Arizona. [Adaptations from 4Cs Rubrics]
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CREATIVITY AND INNOVATION

DLP Performance Area	1.0 (Novice) The student may exhibit the following readiness skills for Score 2.0:	2.0 (Basic) When presented with a grade-appropriate task, the student:	3.0 (Proficient) In addition to Score 2.0, the student:	4.0 (Advanced) In addition to Score 3.0, the student may:
Idea Generation	**Definition:** Identifies a problem or challenge that requires a creative solution. **Ideation:** Uses basic brainstorming tasks, such as listing or webbing, to generate an idea related to the problem or challenge. **Creative Investigation:** Describes others' ideas, solutions to a problem, and/or approaches to meeting a challenge. See possible student misconceptions following the rubric.	**Definition:** Describes aspects of the problem or challenge (*for example: context, characteristics, genre, parameters, etc.*). Identifies information necessary to solve the problem or meet the challenge (*for example: what is known, what is unknown, specifications, etc.*). **Ideation:** Generates multiple new ideas or approaches relevant to the problem or challenge, using a provided strategy *(for example: brainstorming, metaphorical thinking, empathy exercises, writing activities, systems thinking analysis, solutions to similar problems from other disciplines).* **Creative Investigation:** Researches others' ideas, solutions to the problem, or approaches to meeting the challenge.	**Definition:** Identifies the scope of the problem or challenge, including structures, constraints, and limitations. Defines the problem or challenge by examining it through various lenses (*for example: ethical, cultural, social, political, economic, systems thinking, or the perspectives of different stakeholders, etc.*) or by identifying multiple facets of the topic. **Ideation:** Generates multiple, plausible ideas using a variety of strategies *(for example: brainstorming, metaphorical thinking, empathy exercises, writing exercises, systems thinking analysis, solutions to similar problems from other disciplines, etc.).* **Creative Investigation:** Researches precedents to evaluate the viability of newly generated ideas.	**Definition:** Reframe the problem or challenge, using a metaphor or analogy to yield a clear direction regarding how to approach the task (*for example: "a personal music player is jewelry" metaphor sparked creativity in the idea generation phase that led to the iPod*). Redefine the scope or parameters of the problem or challenge. **Ideation:** Strategically select and effectively employ idea generation strategies. Use comparison or analogy to form new or unique connections, making the strange familiar, or the familiar strange. **Creative Investigation:** Ask sophisticated, open-ended questions about other problems or approaches that lead to the generation of original ideas.

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IDEA DESIGN AND REFINEMENT	**Elaboration:** Articulates details or general ideas. **Iteration:** Creates a representation of an idea *(for example: a sketch, plan, diagram, flow chart, blueprint)* in order to guide the actual production. Makes simple revisions to ideas and processes based on specific, directive feedback (*for example: changes the order in a process after being instructed to do so*). See possible student misconceptions following the rubric.	**Elaboration:** Articulates specific ideas and relevant details. **Iteration:** Creates a working version of an idea *(for example: a model, prototype, pilot study, beta version)* in order to test assumptions and features. Makes effective revisions to ideas and processes based on specific feedback.	**Elaboration:** Clearly articulates ideas at a level of detail necessary for effective implementation. **Iteration:** Creates and tests multiple versions (A/B testing, etc.) or aspects of a product or solution. Makes complex revisions or subtle refinements in response to broad/general feedback or criteria. Discards a solution that does not lead to the end product or performance.	**Elaboration:** Articulate ideas and identify specific areas of ambiguity or possible obstacles (*for example: create contingency plans*). **Iteration:** Analyze variables and patterns of success, failure, and/or unintended consequences across iterations to inform decisions about next steps. Strategically seek and integrate targeted feedback from multiple audiences or contexts on specific aspects of an idea *(for example: surveys, trials, experiments, test runs, expert opinion, panel, user interview).*
OPENNESS AND COURAGE TO EXPLORE	**Curiosity:** Asks questions about the task, process, or ideas. **Challenging Conventions:** Uses a familiar method and/or perspective for producing a product or solution. See possible student misconceptions following the rubric.	**Curiosity:** Seeks to extend understanding by questioning, trying new approaches, and/or considering new ideas. **Challenging Conventions:** Proposes ideas that might be seen as risky, silly, or unusual, but that relate to the challenge or task and could lead to an effective solution.	**Curiosity:** Seeks and considers unfamiliar ideas with an open mind. Suspends evaluation of ideas until they are thoroughly explored. **Challenging Conventions:** Takes risks by purposefully challenging existing boundaries, limits, or ideas tied to norms or conventions *(for example: challenging the idea of driving on the right side of the road in the U.S.).*	**Curiosity:** Seek out and explore new and contradictory ideas, unanswered questions, and complex situations or solutions. **Challenging Conventions:** Challenge own assertions, assumptions, or beliefs. Propose plausible ideas that challenge existing boundaries, limits, or ideas tied to norms or conventions (*for example: staging* Macbeth *with the gender roles reversed; increasing voter turnout by charging a fine for people who don't vote*).

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WORKING CREATIVELY WITH OTHERS (SEE COLLABORATION)	**Integration of Ideas:** Summarizes or restates others' ideas; articulates own ideas to others. See possible student misconceptions following the rubric.	**Integration of Ideas:** Combines own ideas with others' ideas.	**Integration of Ideas:** Makes connections between and builds upon others' ideas to generate new and unique insights.	**Integration of Ideas:** Synthesize ideas and capitalize on the different strengths and perspectives of individual group members to develop an original, cohesive product or performance.
CREATIVE PRODUCTION AND INNOVATION	**Audience:** Identifies details about the target audience, including needs and interests, that will influence the final product or solution. **Use of Resources:** Identifies materials/resources (see glossary) needed for the task. **Planning:** Describes the specifications of the task. **Production:** Completes a product. See possible student misconceptions following the rubric.	**Audience:** Shapes original ideas into a product that is relevant to the target audience. **Use of Resources:** Selects materials/resources (see glossary) that are appropriate to the product or solution. **Planning:** Provides general steps to meet the specifications of the task. **Production:** Completes a product to meet primary requirements of the plan.	**Audience:** Effectively shapes original ideas into a product that meets the needs or interests of the target audience. **Use of Resources:** Effectively integrates materials/resources (see glossary) to develop a product or solution. **Planning:** Analyzes components of the product to identify clear, specific, and varied details and information in plan. **Production:** Completes a product according to plan and meets all specifications, making changes as necessary.	**Audience:** Consider multiple audience perspectives; adapt ideas to suit multiple audiences with varied needs and interests. **Use of Resources:** Adapt materials/resources (see glossary) to develop an innovative product or solution; use materials in new or unexpected ways. **Planning:** Anticipate potential problems or obstacles; plan effectively to circumvent, overcome, or recover from setbacks. **Production:** Improves the product beyond the original plan.
SELF-REGULATION AND REFLECTION	**Reflection:** Identifies own strengths and weaknesses in the product and/or process. **Planning:** Sets personal goals for performance.	**Reflection:** Assesses the quality of the performance and creative process in response to feedback and/or established criteria.	**Reflection:** Accurately reflects on the quality of the work; uses reflection and/or feedback to revise ideas or products. Questions and critiques own creative process (*for example:*	**Reflection:** Analyze patterns and trends in own creative process and product. Evaluate creative thinking throughout the process.

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	Mindset: Explains the relationship between effort and success *(for example: "The harder I work at this, the better I'll be at it"; "I will work harder in this class from now on.")*. See possible student misconceptions following the rubric.	**Planning:** Sets goals for performance based on feedback and/or established criteria. **Mindset:** Demonstrates a desire to improve *(for example: employs more practice, sets goals for improvement, asks for help from others instead of giving up)*.	*dedication of time and effort, exploration of ideas, amount of support needed, etc.*). Describes the learning that resulted from the creative process. **Planning:** Seeks out, selects, and uses resources and strategies to achieve goals for improving the creative process. **Mindset:** Demonstrates a growth mindset (the belief that he or she can get "smarter" at creative thinking through effective effort) in response to setbacks and challenges *(for example: persists on difficult tasks, takes risks in the learning process, accepts and uses feedback / criticism, is comfortable making mistakes, explains failure from a growth mindset perspective)*.	Seek out and act on feedback from peers, teacher, and experts to improve. **Planning:** Analyze patterns and prior performances to set new goals for creative thinking; revise goals in response to ongoing reflection. **Mindset:** Proactively improve own areas of weakness by employing effective strategies to increase growth mindset (*for example: perseverance, taking risks, effective decision-making, actively seeking others' feedback, deliberate practice, finding and using external resources [skilled peers, other adult experts] to enrich and extend learning)*.

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Possible Misconceptions: 9-12 Creativity and Innovation

The following chart lists possible misconceptions about **Creativity and Innovation**. Understanding student misconceptions can help teachers develop lessons that proactively address these barriers to deep learning and transfer.

Students might exhibit the following misconception, belief, or perception that…		
Idea Generation	**Definition**	• Problem solving happens only in mathematics. • Restating the assignment or task is the same thing as defining the problem or challenge.
	Ideation	• There is only one way to come up with ideas. • If an idea-generation strategy has been successful in one context, it will be successful in any context. • An idea must be original or new to be plausible or effective. • The first idea I come up with is the one I should use.
	Creative Investigation	• If someone else already came up with an idea or solution for the problem or challenge, there is no need for me to come up with another way. • If I thought of an idea, it must original. • There are no original ideas; everything has already been discovered. • A creative idea must be completely original. • The purpose of researching the work of others is to find flaws to fix.

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Idea Design and Refinement	**Elaboration**	• All that is needed to solve a problem or meet a challenge is an idea. • As long as I know what I mean, it doesn't matter if other people understand my idea.
	Iteration	• If it's a good idea, I don't need multiple drafts. • Good ideas don't need revision; an idea is bad if it needs to be revised. • Letting go of an idea that is not working means I've failed. • My idea is fine the way it is. • I should concentrate on "easy" refinements; if a revision will be time-consuming or difficult, it's not worth the effort. • If I can't make it work right away, I should abandon that idea. • If someone critiques my idea, I should discard it. • If I need to discard an idea or change my focus, it means I'm not smart enough or capable enough.
Openness and Courage to Explore	**Curiosity**	• Asking questions shows lack of understanding or knowledge. • If I can't make it work right away, it isn't a valid idea. • The first idea I come up with is the one I should use.
	Challenging Conventions	• A creative idea must be completely original. • If it hasn't been done before, it can't be done. • Challenging conventions means proposing lofty, silly, or outlandish ideas. • Challenging conventions means breaking the rules. • Risk-taking always means doing something foolish or embarrassing. • If I take risks, I will fail; easier is safer.

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Students might exhibit the following misconception, belief, or perception that…		
Working Creatively with Others	**Integration of Ideas**	• Ideas must be used as is - two ideas can't be integrated. • My ideas are more important than others' ideas. • Other people's ideas are worth more than mine. • Sharing ideas is a formality because everyone will just want to use their own. • Combining ideas weakens the original ideas.
Creative Production and Innovation	**Audience**	• An audience is a large group of people who are viewing an event. It is tangible and seen. • Considering an audience stifles my creativity. • I like my work, therefore, everyone else will too.
	Use of Resources	• Materials must be physical (glue, poster, etc.). • Any materials I use will be fine. • If I don't have the exact materials I want to use, I can't bring my idea to fruition.
	Planning	• As long as I have an idea, I can get started. • I don't need a plan; I know what I'm doing. • A plan isn't helpful for me; it is a series of steps to help the teacher keep track of my work.
	Production	• Once the product is created or the solution has been found, I'm done. • If it's done, it's good enough. • It doesn't matter if I followed my plan as long as the work is finished.

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Possible Misconceptions: 9-12 Self-Regulation and Reflection

The following chart lists possible misconceptions about **Self-Regulation and Reflection.** Understanding student misconceptions can help teachers develop lessons that proactively address these barriers to deep learning and transfer.

Students might exhibit the following misconception, belief, or perception that…		
Self-Regulation and Reflection	**Reflection**	• Reflection is all about what I think; other people's perspectives don't matter. • Only the teacher's perspective matters when it comes to identifying strengths and weaknesses. • I don't have any weaknesses. • I don't have any strengths. • All weaknesses affect my performance in the same way. • Reflection is a waste of time; I don't need to reflect to improve.
	Planning	• A goal is the same thing as a plan. • Any goal is a worthy goal. • Short-term goals aren't important. • I don't need a plan; if I set a goal, I will achieve it. • I should set goals in areas where I am already successful. • I should set the same goal over and over. • Someone else will give me resources and ideas about how to improve.
	Mindset	• Creativity and innovation are talents and not skills; I am as good at them as I'll ever be. • If I'm really good at something, I won't encounter any challenges. • If I experience a setback, I've failed. • Others' feedback can't help me. • Mistakes are bad; smart people don't make mistakes. • The safe route leads to guaranteed success.

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