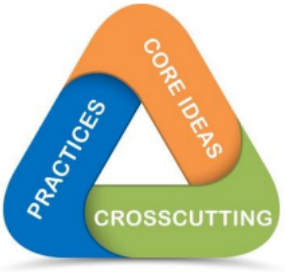
DEPARTMENT OF DEFENSE EDUCATION ACTIVITY

Aligning the Elementary Classroom Teacher Performance Elements to the College and Career Ready Standards for Science

A DoDEA Elementary Administrator Job-Aid



PERFORMANCE ELEMENT 1: PLANNING AND PREPARATION

1. Use/analyze data from a variety of assessments to determine techniques/tools/strategies to improve learning/guide instruction.
2. Use data to backwards plan for standards-based instruction Align assessment methodology to instructional goals.
3. Incorporate appropriate instructional/program materials/technology to reinforce/extend skills.
4. Accommodate learning styles & match instructional objectives to include targeted interventions/enrichment.
5. Align/implement adopted DoDEA CCR standards, curriculum/written lesson plans, to include differentiated activities, posted objectives, learning activities/assessment.
6. Construct lessons to include research-based instructional strategies that promote authentic learning.
7. Design units/lessons following DoDEA's Instructional Framework 20-60-20. (Click here to see the 20-60-20 Model for Science.)
8. Design, sequence & interrelate instruction that supports cross-disciplinary learning.
9. Demonstrate comprehensive knowledge of CCR standards, DoDEA approved curriculum & broad knowledge of effective pedagogical approaches that results in student achievement as described/measured by relevant rubrics/IEPs/other pertinent source, not limited to:
    - Lesson/unit plans that bring together concepts & skills;
    - Goals;

- Interest/knowledge survey – pre/post instruction;
- Description of strategies employed;
- Formative/summative assessments;
- Clear/accurate answers to student questions;
- Feedback to students that furthers learning; displays knowledge of different concepts in the subject & the way they relate to one another.

POSSIBLE DISCUSSION QUESTIONS FOR ELEMENT 1

- Indicator 1: What **assessment techniques/tools/strategies** have you used to improve science learning and guide instruction?
    - The FOSS Assessment System provides the following three-dimensional assessments to *guide instruction* and *measure student progress*:
        - Science notebook entries (K-5th)
        - Observation checklists for three-dimensional learning. (K-5th)
        - Performance Assessments (K-5th)
        - I-checks for each investigation (1st-5th)
        - Post-test for each module (3rd-5th)
- Indicator 2: In what ways do you use data and evidence of student learning to backwards plan your science instruction?
    - FOSS provides several "Next Step Strategies" teachers can use to facilitate the process of self-assessment and encourage students to build deeper scientific knowledge and enhance their practice.
- Indicator 5: How have you adapted your science instruction to incorporate the **vision/shifts of the CCRSS**?
    - Students conducting investigations, solving problems, and engaging in discussions with teachers' guidance
    - Students discuss open-ended questions that focus on the strength of the evidence used to generate claims
    - Multiple investigations driven by students' questions with a range of possible outcomes that collectively lead to a deep understanding of established core scientific ideas
    - Facts/terminology learned as needed while developing explanations and designing solutions supported by evidence- based arguments and reasoning.
- Indicator 9: Share how you address the **three-dimensions** within each science lesson.
    - All science investigations, assessments, and activities are designed to be three-dimensional. In addition to

three-dimensional overviews of each module and investigation, the three- dimension are highlighted throughout the FOSS Investigation Guide where they should be emphasized with students.

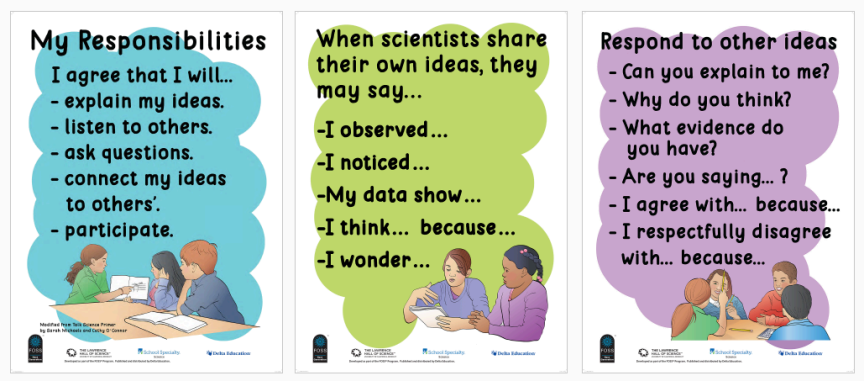
- The three-dimensions of CCRSS include **Disciplinary Core Ideas**, **Science and Engineering Practices**, and **Crosscutting Concepts**.

PERFORMANCE ELEMENT 2: CLASSROOM ENVIRONMENT

1. Maintains courteous and respectful classroom environment that continuously enhances student learning and promotes positive student behavior.
2. Promotes positive student-student, student-educator, educator-educator, educator-parent relationships encouraging high expectations and achievement for each student.
3. Makes accommodations for individual differences.
4. Provides every student with opportunities for active involvement and creative thinking.
5. Displays student work with effective feedback which includes, at minimum, identification of the deficiency/incorrect answer and a recommended correction.
6. Establishes appropriate common classroom rules/routines/expectations that reinforce positive student behavior consistently.
7. Demonstrates respect, empathy, fairness, consistency and firmness in handling student problems utilizing appropriate intervention strategies in managing behavior.
8. Follows established procedures for parent communication and administrator referral.
9. Conducts smooth transitions between student tasks to enhance time-on-task.
10. Arranges classroom and procedures to support quality learning activities; successful arrangements may be demonstrated by materials and resources, such as copies of management procedures, photographs of classroom, posted rules, parent notes, schedules.

POSSIBLE DISCUSSION QUESTIONS FOR ELEMENT 2

- Indicator 1 & 2: How do you facilitate **sense-making discussions** to encourage student discourse within a courteous and respectful classroom environment?
    - Sense-making discussions help students review and confirm information accrued from the active investigation and organize information for processing. It is more than just sharing what they did or observed; more importantly, it is analysis—finding connections and relationships in the data in an effort to construct conceptual knowledge.
    - Second, sense-making discussions help students organize and communicate their thinking in collaboration with their peers. The sense-making discussion allows all students to develop conceptual models about phenomena and prepares them to respond to the FOSS focus question.



- Indicator 9 & 10: What are your strategies for **managing active science investigations** to maximize student engagement?
    - Materials management - Science kit materials are organized/distributed to engage all students in active investigation (as opposed to teacher demonstration).
    - Each investigation is written (and materials supplied) for collaborative groups of four students. Working in

groups allows students to observe others, compare, share, and cooperate.
- Allow sufficient time for students to deeply engage in investigation, data collection & analysis, communicate information, etc.

PERFORMANCE ELEMENT 3: INSTRUCTION

1. Communicate CCR criteria to students throughout the instructional process, clearly stating & modeling expectations for quality/quantity of student work.
2. Employ effective instructional techniques to promote successful student learning aligned with CCR standards.
3. Engage all students in active learning with real world context & prior learning.
4. Differentiate instruction for all students using multi-sensory materials.
5. Challenge students to explain their thinking while allowing them to make decisions regarding learning & behavior.
6. Questions & assessments used demonstrate evidence of student learning & guide teaching.
7. Provide timely, accurate, constructive feedback to students; returns necessary feedback to afford students the opportunity to demonstrate improvement.
8. Facilitate lessons where learning activities follow a coherent sequence, are aligned to the learning goals, & designed to engage student in high-cognitive activities while integrating approved/available technology.
9. Consistently communicates the connection to the instructional objectives, CCR standards, & purpose for the lesson.
10. Assess learner progress in relation to adopted CCR standards on a continuous basis while checking for understanding throughout the lesson; examples of success include student work, samples of feedback to students, copies of assessments and rubrics.

11. Monitor individual student progress toward meeting school improvement goals & district expectations.

POSSIBLE DISCUSSION QUESTIONS FOR ELEMENT 3

- Indicator 2: Which **instructional techniques** have been most successful when aligning your science instruction to the CCRSS? Which technique(s) would you like to refine/enhance/ learn more about?
    - FOSS Instructional Design elements include:
        - Active Investigation – Active investigations in collaborative groups allow students to have firsthand experiences with phenomena in the natural and designed worlds.
        - Science Notebooks
        - Formative Assessment
        - Sense-making Discussions
        - Science-Centered Language Development (vocab)
        - Taking FOSS Outdoors
- Indicators 1 & 9: How have you used the **focus question** to consistently communicate instructional objectives and CCR criteria to students throughout your science investigations?
    - Each part of a FOSS investigation includes a focus question.
    - The focus question should be posted and students should be engaged in answering it in their notebook by collecting data, engaging in argument from evidence, etc.
- Indicators 5 & 6: How have you used **science notebooks** to challenge students to explain their thinking and demonstrate evidence of student learning?
    - Science notebooks help students organize observations and data, process their data, maintain a record of their learning for future reference, and communicate their thinking.
    - Science Notebooks: Writing About Inquiry says that there are three goals for using science notebooks:
        - It allows student to build and reveal their thinking about science content.
        - It replicates the work of scientists.

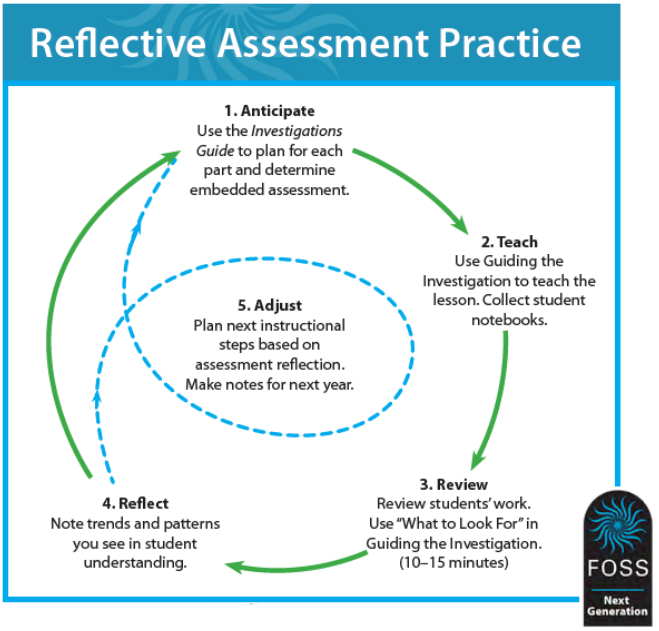
- It serves as a tool to develop and exercise literacy skills by providing a vehicle in which students write and organize information and thoughts. It is used as a resource when speaking to peers and as a reference to access prior experiences and make connections across investigations.

PERFORMANCE ELEMENT 4: PROFESSIONAL RESPONSIBILITIES

1. Maximize use of resources and materials by collaborating with colleagues, school-based specialists, resource personnel and community persons as appropriate for increased student achievement.
2. Actively participate in grade level/department collaboration/Focused Collaboration and professional development for continuous improvement and professional growth.
3. Keeps supervisor informed of status, student concerns, and outcomes by providing updates/feedback using communication protocols agreed upon with the supervisor each grading period (e.g. email, conversation, report, work product copies).
4. Adhere to all DoD and DoDEA regulations, procedures and instructions for the receipt, storage, and disposal of records, including attendance, discipline, emergency contact info, coursework transcripts, Focused Collaboration minutes, PGP, communication logs and electronic gradebook.
5. Continuously and accurately document student progress in the electronic grading platform and any other applicable required record keeping systems. Entries should be updated at least weekly.

POSSIBLE DISCUSSION QUESTIONS FOR ELEMENT 4

- Indicator 1: How do you maximize use of science resources to ensure **increased student achievement**?
    - Teachers need evidence about each student's progress to effectively guide them to deeper understanding. The Reflective Assessment Practice protocol allows teachers to gather evidence of student learning from their notebook entries and/or embedded assessments.



- Indicator 5: How do you maintain accurate **documentation of student progress** in a retrievable record-keeping system?
    - There are several three-dimensional assessment tools available to document student progress:
        - I-check data (1st- 5th)
            - 1st - 2nd: paper and pencil
            - 3rd - 5th: online FOSSmap reports and analysis tools
        - Interims (2nd - 5th)
            - 2nd & 5th - Pearson Access

        - 3rd & 4th - FOSSmap Post-test
    - Performance Assessment Checklists (K-5)
    - Narrative Report (K)
    - Student Portfolio Checklists (3-5)

PERFORMANCE ELEMENT 5: PROMOTING DIVERSITY AND EQUITY

1. Create a climate conducive to the promotion of positive student involvement, self-concept & achievement, and practicing education equity in the classroom.
2. Recognize student diversity & demonstrate sensitivity & responsiveness to personal ideas, needs, interests & feelings of students.
3. Demonstrate respect for each student's background experience & culture. Acknowledge & encourage achievement for each student.
4. Make accommodations for individual differences. Provide every student with opportunities for active involvement & creative thinking.
5. Elicit responses from volunteers & non-volunteers.
6. Promote positive student-student, student-educator, educator-educator, and educator-parent relationships.
7. Demonstrate high expectations for all students. State clearly & model the expectations for quality & quantity of student work.

POSSIBLE DISCUSSION QUESTIONS FOR ELEMENT 5

- Indicator 1: How do you create a **classroom climate** that helps all **students see themselves as scientists**?
    - When provided with equitable learning opportunities, all students are capable of engaging in science practices and constructing meaning in both science classrooms and informal settings.
- Indicator 4: How do you ensure **all students** (gifted, Spec. Ed., ESOL, etc.) get **equitable access** to quality science instruction?
    - FOSS is built on the assumptions that understanding of core scientific knowledge and how science functions is essential for citizenship; that all teachers can teach science; and that all students can learn science.
    - Active investigation equalizes the playing field for all students, regardless of their previous life experiences, and creates common experiences that serve as the basis for science learning and collaboration.
- Indicator 6: How do you promote positive **student-student, student-educator, educator-educator, and educator-parent interactions** throughout your science instruction?
    - The first goal of FOSS is scientific literacy for all students. We believe that all students deserve access to science to build a deeper understanding and appreciation for the world around them. This goal cannot be reached by instructional materials alone. It requires teachers, schools, and community to not only connect with students, but to take deliberate action to promote equity and access with science. F6
- Indicator 7: How do you demonstrate **high expectations** for science for ALL students?
    - The investigations are designed with access points for all students with the expectation that all ethnically, culturally, and linguistically diverse students can be successful. Ways to scaffold the instruction are

indicated in the margins of the *Investigations Guide* (i.e. teaching notes and English learner notes). These strategies do not decrease the rigor of the lessons, but instead model and encourage a "growth mindset" that values effort and resilience. F12

The ***purpose*** of this document is to help administrators link the classroom teacher performance elements to DoDEA's College and Career Ready Standards for Science (CCRSS) in order to facilitate discussions with teachers regarding excellent science instruction.

On the left side of the page, the Classroom Teacher Performance Elements have been separated into several indicators. On the right side of the page are possible questions administrators could ask teachers. Each question references one or more indicators and includes one possible response that is based on CCRSS professional learning and our DoDEA-adopted science curriculum for kindergarten – 5th grade (FOSS Next Generation).

Whatever questions are asked, and answers given, our greatest hope is that this tool will help administrators ask pertinent, science-based questions that will allow teachers to highlight their intentional planning and three-dimensional science instruction as we all work together to help our students become scientifically literate citizens as they actively engage in the science and engineering practices and apply the crosscutting concepts to deepen their understanding of the core ideas.

Three Dimensional Learning: A Framework for K-12 Science Education describes a vision of what it means to be proficient in science.

Dimension 1: Science and Engineering Practices (SEPs)	• Asking questions and defining problems • Developing and using models • Planning and carrying out investigations • Analyzing and interpreting data • Using mathematics and computational thinking • Constructing explanations and designing solutions • Engaging in argument from evidence • Obtaining, evaluating, and communicating information	
Dimension 2: Crosscutting Concepts	• Patterns • Cause and Effect • Scale, Proportion and Quantity • Systems and System Models	• Energy and Matter • Structure and Function • Stability and Change
Dimension 3: Disciplinary Core Ideas (DCIs)	Disciplinary core ideas are grouped in four domains: • Physical Sciences • Life Sciences • Earth and Space Sciences	

	• Engineering, Technology and Applications of Science

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