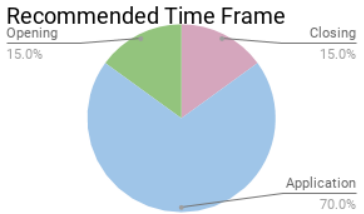
TLA Science Instructional Framework



Must be included in each lesson: **engagement** and **evaluation**. Each day **additionally** include one or more of the other E's:

- Engagement
- Exploration
- Explanation
- Elaboration
- Evaluation

Engage-Phenomenon/ Engineering Problem

Phenomena or Engineering Problem in the Next Generation Science Standards engage the students in making observations to raise questions and brainstorm ideas for investigation of questions relating to their observations. The activity should make connections between past and present learning experiences, expose prior conceptions, and organize students' thinking toward the learning outcomes of current activities. They are introduced in the "engage the learner" section of the lessons.

What is the **teacher** doing?	What are the **students** doing?
Teacher anchors instruction in complex and puzzling natural events.	Students analyze, comment on, compare, and share their thinking about science through learning-focused "talk".
Teacher intentionally uses science terms and concepts when explaining natural events.	Students engage in multiple rounds of creating and revising scientific models, explanations and evidence-based arguments.
Teacher engages students in thinking about science concepts and ideas.	Students prompt each other to engage in sense-making talk during investigations and other activities
Teacher models sharing their thinking aloud about science and models how his/her thinking changes based on new learning.	Students make their thinking visible through drawing and writing.
Teacher asks questions of varying difficulty to promote learning around science.	Students engage in a varity of activities to promote learning of science ideas such as: hands-on work with materials, using

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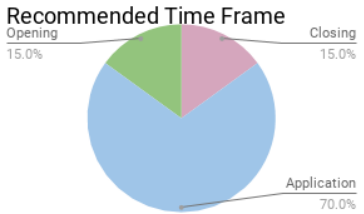

	computer simulations, conducting observations of phenomena, designing experiments, or collecting and analyzing different types of data
Teacher scaffolds students' efforts to analyze and synthesize science ideas and press for evidence based explanation.	Students ask questions to clarity their thinking and speak up about what information or experiences they need to move their thinking forward.

Exploration- Modeling & Engineering Tasks

Exploration experiences provide students with a common base of activities within which current concepts (i.e., misconceptions), processes, and skills are identified and conceptual change is facilitated. Learners will complete engineering and modeling activities that help them use prior knowledge to generate new ideas, explore questions and possibilities, and design and conduct a preliminary investigation.

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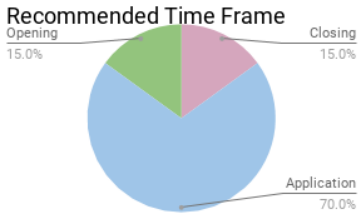

	computer simulations, conducting observations of phenomena, designing experiments, or collecting and analyzing different types of data.
Teacher uses a variety of discourse strategies with students to get them to think deeply and to respond to each other's thinking.	Students share their thinking in class and also share when their thinking is changing based on new learning.
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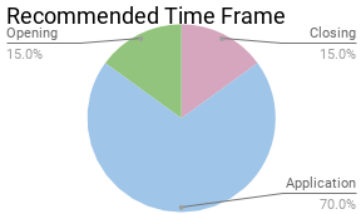

Explanation-Science Talks & Journaling

The explanation phase focuses students' attention on a particular aspect of their engagement and exploration experiences and provides opportunities to demonstrate their conceptual understanding, process skills, or behaviors. This phase also provides opportunities for teachers to directly introduce a concept, process, or skill. Learners explain their understanding of the concept. An explanation from the teacher may guide them toward a deeper understanding, which is a critical part of this phase. "The significant aspect of this phase is that explanation follows experience."Short, interactive, whole group direct instruction using a variety of texts, teaching specific skills and strategies that proficient readers use where teachers model and students practice.

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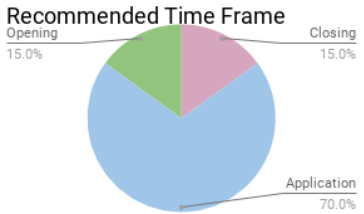

Elaboration-Science Talks & Journal

Students reading to self and others, self-selected text at their independent level with individualized goals, based ongoing formative assessment.

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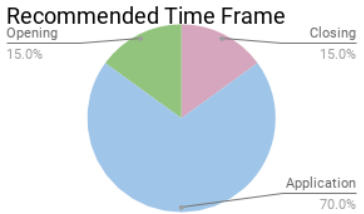

Evaluation- Pre Test, Post Test, & Formative

The evaluation phase encourages students to assess their own understanding and abilities and provides opportunities for teachers to evaluate student progress toward achieving educational objectives.

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