Grade Band Examples: Instructional Strategies

Elementary School (K–5)

Example Instructional Strategies

My instructional approach centers on hands-on inquiry and student exploration. Students regularly participate in investigations where they observe patterns, collect data, and communicate explanations using age-appropriate scientific language.

For example, during a unit on ecosystems, students create terrariums to investigate how plants and organisms interact within environments. Students make observations over several weeks, record changes in science journals, and develop explanations using evidence gathered from their investigations.

To support diverse learners, I incorporate visual supports, sentence stems, collaborative learning groups, and movement-based activities. Literacy and science are integrated through read-alouds, scientific writing, and vocabulary development.

Students engage in engineering design challenges connected to community issues, such as designing water filters or creating pollinator gardens for the school campus. These activities strengthen problem-solving skills while helping students understand science as relevant and meaningful.

Instruction aligns with NGSS by integrating Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas through phenomenon-based learning experiences.

Middle School (6–8)

Example Instructional Strategies

My classroom uses phenomenon-driven instruction to encourage students to think critically and solve real-world problems. Students investigate compelling questions such as: “Why are local weather patterns changing?” or “How does pollution affect our community waterways?”

Students participate in collaborative investigations where they analyze data, develop models, and communicate evidence-based explanations. During a unit on energy transfer, students design insulated devices to reduce heat loss and test prototypes using collected temperature data.

I use structured academic discourse routines, lab investigations, interactive notebooks, and technology tools to support student engagement and differentiation. Students regularly reflect on their learning and revise their thinking based on new evidence.

To ensure equity and access, instruction includes scaffolds for English learners, flexible grouping, modified investigations, and opportunities for student choice. Community partnerships with local environmental organizations and STEM professionals provide authentic learning experiences.

My instructional methods align with NGSS through integration of scientific inquiry, engineering practices, and crosscutting concepts that deepen conceptual understanding and student ownership of learning.

High School (9–12)

Example Instructional Strategies

My instructional methods emphasize inquiry, scientific argumentation, and application of science to contemporary issues. Students engage in laboratory investigations, case studies, engineering challenges, and research projects that require critical analysis and evidence-based reasoning.

In environmental science, students conduct field investigations examining local water quality and analyze how human activity impacts ecosystems. Students collaborate with community partners to develop recommendations and present findings to stakeholders.

In physics and chemistry courses, students participate in problem-based learning tasks where they design experiments, analyze data using digital tools, and revise models based on evidence. Students are expected to communicate scientific ideas through presentations, technical writing, and peer review.

To support diverse learners, I provide multiple pathways for demonstrating understanding, including visual modeling, collaborative investigations, and technology integration. Instruction incorporates culturally relevant examples and real-world applications that reflect students' experiences and future career interests.

My classroom reflects NGSS three-dimensional learning by integrating disciplinary core ideas with science and engineering practices and crosscutting concepts. Students leave the course with strengthened analytical skills, increased confidence in science, and a deeper understanding of how science impacts society.