

Instructional Strategies – Planning and Carrying Out Investigations

An investigation is a systematic way to gather data about the natural world either in the field or in a laboratory setting.

Potential Instructional Strategies for *Planning and Carrying Out Investigations*

1. Put students in small groups to complete investigations. Assign each student a job to do during the investigation. Model the job responsibilities before beginning the investigation so students understand what is expected of them while performing the investigation.
2. Assign groups to specific spaces in the classroom to conduct their investigations. This helps ensure each group has sufficient space to conduct their investigation and that the groups will not disturb each other.
3. Give students sticky notes to use to label materials in an investigation. This can help younger students or students who struggle with writing to show the outcome of an investigation without the demands of recording in a data table.
4. Have students vote on their prediction for the outcome of an experiment. Record predictions on the board. Ask students to revisit their predictions after they have gathered data.
5. Provide a scientific question and have groups of students design an investigation to answer the question. Provide students with a graphic organizer to record the variables (independent, dependent, constants), procedure, materials, and data table.
6. Show students several procedures for investigations that have varying numbers of trials, materials, or types of data tables. Ask students to critique the procedures based on the scientific question being explored.
7. Show students several procedures for investigations in which one only changes 1 variable while the others alter multiple variables at the same time. Ask students to critique the procedures to discuss the idea of a fair test and only changing one variable at a time.
8. Provide a choice of 3-4 scientific questions to explore about a specific topic. Have small groups of students select their question and design and carry out an investigation to answer that question.
9. Provide a general experimental procedure but allow student choice in terms of variables to be manipulated (e.g. materials to test, length of time).

For classroom examples of instruction using this science practice, visit our website at www.sciencepracticesleadership.com and click on the Grade 2 Exemplar and Grade 5 Exemplar under Case Studies.