

## Statement of Philosophy – Science for All Learners

It is the intention of the BHPRSD to graduate all of its students with the scientific knowledge, skills and habits of mind needed to be lifelong-learners, critical thinkers, effective communicators and wise decision-makers.

Students will develop and use the skills necessary for full participation in a world shaped by science and technology.

Our vision is that all students will...

- Be curious about how the world works.
- Be scientifically honest, willing to re-evaluate ideas when new data are presented.
- Respect the world around them and work to protect both the local and global environment.
- Understand that science is not a static body of knowledge but is continually evolving as new information emerges.
- Be able to evaluate scientific ideas from an historical perspective.
- Be adept in the use of electronic technology, choosing the appropriate technology for the problems and tasks with which they are confronted.
- Be able to apply knowledge, skills, and processes from science, math, and technology to solve complex, real-world problems.
- Be tenacious in solving problems.
- Be able to use reason and relevant data to support conclusions and opinions.
- Be able to effectively communicate scientific ideas and information orally, visually, and in writing using a variety of media.
- Be able to work effectively independently and inter-dependently to solve problems.

## Best Instructional Practices in Science

### Effective classroom teachers:

1. Help students develop scientific Habits of Mind.

An effective science experience will **foster student's natural curiosity** about the world around them, encourage students to **be open to new ideas** and promotes **appropriate skepticism**.

2. Help students to use scientific thinking skills.

An essential element for a student to be a scientific investigator is knowing how to **find answers to questions**.

The skills of scientific inquiry include questioning, hypothesizing, observing, experimenting, measuring, interpreting data, drawing conclusions, and communicating findings.

3. Make science part of everyday life in the classroom.

Science isn't a subject that just happens once or twice a week. By making materials available, modeling scientific thinking, and responding to events that occur in the environment, **science is part of everyday life**.

4. Provide materials to encourage scientific exploration.

Include materials that are **interesting to explore** as part of the physical environment to create a setting in which students **spontaneously ask questions and conduct both formal and informal investigations**.

Displays can consist of computer programs, videos, posters, books, newspaper articles, and magazines related to particular topics, creations made by students, and objects collected by the teacher or students.

Live organisms and realia can be a catalyst for ongoing science discussions and observations.

5. Provide tools for scientific investigations.

An important part of science is becoming familiar with the **purposeful use of tools** and beginning to recognize the way tools relate to mathematical and scientific thinking. Tools extend our senses and aid in observation.

6. Serve as scientific role models.

**Model scientific thinking** by being observant and pointing out specific events when they happen. For example, when water forms on a glass, you might ask, “What do you think is happening here? What’s causing the water to form on the glass?” The goal is to encourage students to be curious and consider cause and effect. By inviting students to talk about their experiences or discoveries and encouraging the others to ask questions, teachers help students think like investigators.

7. Select topics for long-term studies in science.

Students learn best by having time for **extensive exploration** of a few topics during the year. It is a good idea to resist the temptation to touch briefly on many topics. Select topics that allow students to conduct first-hand research and use scientific thinking skills. Because you can only do so much, you will also want to consider which topics provide natural linkages to other subjects you will be studying.

8. Have students work in a variety of settings.

The choice of settings – cooperative groups, pairs of students, individuals, and whole groups- depends on the teacher’s objective and the specific content of the lesson. Students should be **exposed to each kind of setting** throughout the year.

9. Design, develop, implement and evaluate digital-age learning experiences and assessments.

For example, use of **classroom technologies** such as interactive whiteboards, projection devices, digital hardware and software.