***Inquiry Guide with Examples***

**ASKING QUESTIONS AND DEFINING PROBLEMS**

**OBSERVE ~ KNOW ~ QUESTION ~ CLAIM**

**Target Category: physical science**

**Grades: 3-5**

**OBSERVE** – **What did I observe?**

**Example:** Mr. and Mrs. Thomas live in my neighborhood. Their house needs a new roof. I have noticed that there are many different types of roofs on houses in my neighborhood.

**KNOW – What do I know?**

**Example:** My parents and I have talked about roofs on houses. My parents said that roofs are important because roofs protect the house during the hot summer and the cold winter.

**QUESTION – What is my question?**

**Example:** What type of roof is most efficient for helping to keep a house cool in the summer and warm in the winter?

**CLAIM – What is my claim based on my reading about the brain and central nervous system?**

**Example:** Some types of roofing material include terracotta tiles, wooden shingles, slate shingles, and composite shingles made mostly of fiberglass. It is best to use the roofing material that will save the use of energy needed to cool and heat the house.

**With assistance, I will then decide: What is my research question? What is my hypothesis? What are the independent and dependent variables?**

**This topic and problem scenario is based on the work of Catherine Paget and Melissa Thomas in the course 791 STEM Classrooms and Competitions: Asking Questions, and Defining Problems, spring 2016.**

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**OBSERVE ~ KNOW ~ QUESTION ~ CLAIM**

**Target Categories: biochemistry, medicine, health**

**Grades: 9-12**

**OBSERVE** – **What did I observe?**

**Example:** Recently I was watching a basketball game. A player was knocked down and hit his head on the gym floor. The trainer rushed over to him. The player got up and said he was fine. The trainer examined the player and said the player was out for the rest of the game.

**KNOW – What do I know?**

**Example:** I learned in science class that the human brain is an amazing, important organ located in the head. The brain operates the central nervous system. The nervous system is a biological information highway responsible for controlling everything the human body does. The central nervous system talks to all the parts of the body through electrical signals.

**QUESTION – What is my question?**

**Example:** How can the human brain be protected from concussion while playing sports?

**CLAIM – What is my claim based on my reading about the brain and central nervous system and trauma to the brain resulting from playing sports?**

**Example:** A hit on the head called a concussion can cause internal injury to the brain. A concussion can disturb the biological information highway leaving the central nervous system unable to talk to the parts of the body. Playing basketball, and other sports, can cause life threating injury if you fall and hit your head.

**With assistance, I will then decide: What is my research question? What is my hypothesis? What are the independent and dependent variables?**

**This topic and problem scenario is based the work of Melissa Carlson, Josh Lee, and Mandy Kern in the course 791 STEM Classrooms and Competitions: Asking Questions, and Defining Problems, spring 2016.**

***Inquiry Guide for Student Use with Teachers and School Librarians***

**ASKING QUESTIONS AND DEFINING PROBLEMS**

**OBSERVE ~ KNOW ~ QUESTION ~ CLAIM**

**Target Categories:**

**Grade:**

**Instructions:** First, read the provided examples on page 1 and 2. Then, talk about a problem that you have observed and you are interested in with your teachers, school librarian, parents, and/or friends. Your problem may be related to the environment; energy; nutrition; clean water; health and health care. With assistance, determine and write in the target category, your grade, and compete each section (4) below. Once done, you are ready to begin your project using a scientific method to solve a real-life problem. Keep this guide with you. Share it with everyone who assists you. This will help you to stay on track.

**OBSERVE – What did I observe?**

**KNOW – What do I know now?**

**QUESTION – What is my question?**

**CLAIM – What is my claim based on my reading about the brain and central nervous system?**

**With assistance, I will then decide: What is my research question? What is my hypothesis? What are the independent and dependent variables?**

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