

HIGH-ABILITY SERVICES THE FMS RESEARCH PROJECT CLASS

CURRICULUM AND EXPECTATIONS

The curriculum in the middle school research project class is designed to develop critical thinking and problem solving capabilities primarily within the context of science. The activities designed for the children are aligned with the academic standards for their grade levels and generally consist of experiments, research, and completion of an independent project following the scientific method. Some tasks are structured to develop the creative, divergent, and evaluative thinking skills of students and to facilitate the exchange of ideas; others target the refinement of problem solving skills and the cultivation of thinking capabilities. Students receive many opportunities to express their talents in both self-directed and group settings.

As part of the research group, each student will complete an experimental science project over the course of the year. Participants are encouraged to research topics from unique perspectives, and students will enter their work in a competition at Purdue in the spring. Advancement to the state level of competition is possible. A general timeline for completion of this task will be followed throughout the sessions to help students effectively manage this lengthy endeavor. Keep in mind that talented students are apt to become very involved in projects that meet their interests.

Science Sleuths are also common activities in this class. These are science-based mysteries which are presented to the students in video form by a company of professional actors. For each case, students are required to identify the problematic mystery in the given scenario, brainstorm potential explanations for what is happening, analyze and synthesize data presented in several forms (charts, interviews, scientific tests, research...), and select the most logical solution. Through this process, both divergent and convergent thinking skills are exercised.

Besides the projects, concepts such as momentum, buoyant force, displacement, environmental adaptations, inertia, engineering design, and energy transformations may be explored through various applications. These exercises help to build scientific understanding and the capacity for research.