

## Watershed Integrated Program

All year, 14 hours per week.

### WHAT IS WATERSHED?

WATERSHED is a multi-award winning 7<sup>th</sup> grade program that has been running successfully for 21 years in Pennsylvania and is a model for integrated whole-learning programs in the U.S. It has been endorsed by The National Middle School Association (NMA) and is a feature program in professional development courses for middle school teachers. WATERSHED covers skills and concepts through an integrative, thematically oriented combination of classroom and on-site learning experiences. Skills and concepts taught in traditional disciplines are integrated and focused on the comprehensive examination of specific watersheds. Elements and processes from English, math, science, social studies, history, reading, writing, art, music, drama, dance, and physical education are included. **It should be noted that, in addition students study mathematics, Spanish, PE, and exploratory as separate courses.**

Watershed meets all and in some instances exceeds the standards and benchmarks set out in the seventh grade curriculum. By its very design, it also caters for individual learning style and needs, providing challenges for students who need them while setting attainable goals.

The students' classroom activities, among others, involve:

- conducting laboratory tests on water and soil samples
- studying the dynamics of a stream's flow and its effects on the surrounding landscape
- keeping writing and reading journals
- focusing on place/setting in literature
- examining the geological history and resultant topography of the watershed
- interviewing local residents re connection to watershed
- identifying and classifying the plants and animals found in local watershed
- researching the stream's role in the agriculture, industry, history and culture of the region
- analyzing topographical, planning, and geopolitical maps of the area to ascertain interrelationships
- studying the history and culture of the people in the watershed
- learning to draw and build topographical maps
- learning the first aid, safety, and hiking skills needed for safe and successful stream exploration
- examining the students' personal role now and in the future as members of

a watershed community.

Classroom experiences are augmented and enhanced by guest speakers who share their expertise in specific areas germane to the watershed being studied.

WATERSHED students also participate in numerous field trips to historical sites, resources management facilities, farms, and industries related to the stream, along with an on-going series of field study trips to the stream being studied. On these field study trips the students put to first-hand use the skills and concepts acquired in the classroom. Students measure and map selected portions of the stream; perform chemical, physical and biotic measurement tests; observe and describe the flora and fauna encountered; and then record their results, observations and experiences in writing, art and film. Students will also interview long time residence of the watershed to record the oral history of the area.

All of these experiences in and out of the classroom provide an opportunity for students to see the interrelated nature of learning. They also provide the students with an opportunity to see their own connection with that learning, because the skills and concepts taught are immediately reinforced by practical application. This important relationship is further enhanced by the daily exposure to and increased reliance on first-hand, primary resources in addition to traditional secondary sources (e.g. textbooks). Learning takes on personal meaning for the students, and this increases their abilities to retain, apply and communicate their experiences.

## **THE PHILOSOPHICAL FOUNDATIONS**

The ultimate goal of the WATERSHED program is to promote the students' abilities to gather, retain, interrelate, apply and communicate information; and to foster within each student a positive sense of responsibility for and pride in the improvement of those abilities.

The materials, methods and procedures employed in the program to achieve this ultimate goal all stem directly from the following philosophical tenets underlying the WATERSHED program.

1. Primary learning skills are processes, not sets of facts. These processes, which are used to handle information, are more important than any particular set of facts.
2. Integrated learning methods more closely match natural learning styles because they focus the learner's attention directly onto relationships, higher level thinking skills and processes of applications.

3. Methods involving hands-on and first-hand learning through self-motivated discovery and a reliance on primary resource materials are more effective than second-hand methods.
4. Successful learning is directly tied to the students' senses of self-investment and self-discipline, their commitment, and their willingness to accept responsibility.
5. The characteristics listed in number four above are most readily achieved when students are permitted the opportunity to practice them within a supportive atmosphere of encouragement teamed with high expectations.
6. Traditional letter grade systems alone cannot adequately reflect the WATERSHED program's emphasis on processes. We seek to deemphasize letter grades, as they too often become an end in themselves without concern for the learning that is the true aim of education. Therefore, we use proficiency based assessment, student-self assessment and teacher comments on a bi-weekly basis to describe the students' on-going development and achievements. These provide useful information which specifically recognizes and praises the students' accomplishments while delineating areas that need further attention and improvement.

### **THE BASIC OBJECTIVES**

1. To create a learning environment in which the students accept responsibility for their learning.
2. To provide students with an awareness of the relevance of learning and of their personal connections with the materials covered, and to demonstrate the interrelatedness of all learning.
3. To emphasize the importance of fundamental thinking and communication skills, and to encourage learning from both primary and secondary (e.g. textbook) sources.
4. To create a learning environment this promotes cooperative rather than competitive learning.
5. To illustrate that education is best achieved when it is a cooperative venture shared by teachers, students, and parents; and, to that end, to maximize the parental involvement in the learning process.
6. To demonstrate that effective learning is a life-long pursuit which transcends the limits of the classroom's walls.

7. To emphasize the ecological, historical, economical, political and cultural importance of watersheds.

### AN OVERVIEW OF THE WATERSHED YEAR

The WATERSHED experience begins with an emphasis on the *Sense of Place*. During the first semester months of the school year students become familiar with the physical boundaries and conditions of their watershed. The students concentrate on mapping skills as they explore the geology, the topography and the climate of the region. They develop research and writing skills as they study the water cycle, the carbon-oxygen cycle, the nitrogen cycle, food webs, and the plants and animals which share the watershed. Among other activities, the students imagine themselves as a drop of water and chronicle their adventures down the length of the stream; they stage “Rock Concerts” to share their knowledge of local geology; and they construct a three-dimensional relief map of the watersheds that we study. Through out this unit, the literature focuses on setting in order to broaden their understanding of how a ‘Sense of Place’ is established.

To make all this class work more tangible, the class visits the watersheds numerous times during these early months. We travel the entire length of each watershed from headwaters to mouth at least once, and we visit selected sites along the stream and conduct our field study procedures. These procedures include taking the stream’s physical measurements (width, average depth, average velocity, flow, turbidity, conductivity, and temperature); completing chemical tests on dissolved oxygen, pH, nitrates and alkalinity; and calculating a biotic index of benthic macro invertebrates. After each of these trips the students write about their experiences and summarize their results in a snapshot.

Watershedders are also part of a wider community of G.L.O.B.E. (Global Learning and Observation to Benefit Earth) students who collect and record atmospheric and hydrology data and post that data on the G.L.O.B.E website to be used by N.A.S.A. scientists and other students worldwide.

As the semester closes the students direct their attention to the ***Sense of Time*** and a look at the people who once inhabited in the watershed. The 3<sup>rd</sup> term includes visits by various resource persons and trips to historical sites which will provide information for the students’ research in the history of the area and the cultural and religious practices of the various peoples. To share their findings students will hold a native Carib purification ceremony and demonstrate dance movements reflective of the varied ethnicities. In each case, while the most apparent emphasis is on history, the connections between human activities of the past and the natural features of the watershed are always emphasized. Students will investigate how rivers change over time and therefore how

organisms evolve over time. This remains true as the students continue to trace the development of our region through the nineteenth and into the twentieth century.

Throughout our look at the ***Sense of Time*** the students write Trinidadian Diaries in which they describe a day in the life of a young person living in each of the eras we study. The students also create a newspaper summarizing the events of a selected period in the twentieth century. This newspaper includes national and world news articles, feature articles, an editorial, maps and illustrations. In addition, groups of students present Trinidadian Origins projects in which they tell the rest of the class about immigrant experiences. Finally, the students conduct interviews and present an oral history project on a twentieth century topic of their choosing. Each of these activities brings out important information which we relate directly to our watershed.

In the 4<sup>th</sup> Quarter, the students are ready to apply all they have learned about the physical, cultural and historical conditions of the watershed to an investigation of present day conditions. The emphasis now shifts to the ***Sense of Quality***.

As the new round of field testing continues, the students use their classroom time to study various systems which affect the quality our lives. We begin with a look at the systems which make up the human body. Then we compare these systems to their analogous systems in our homes and, ultimately, in our watershed. We learn about water and waste water management systems, for example, and about systems dealing with energy, transportation, communication and regulation. By making life-sized “body maps” and designing houses, the students gain important information about themselves and about their world-at-large. This information culminates in a final group project which calls on the students to evaluate and describe the present quality of the watershed and to project their assessment into the near future when they will be the adults in charge.

As the WATERSHED year draws to a close, the students have seen their watershed as both a unique environment and as an important part of a larger whole. They more clearly understand the intricate relationships that tie us to our watersheds. They realize how their actions now and in the future directly affect the quality of life in whatever watershed they make their home. **They have learned to take responsibility for their learning and to apply that learning to the real world.**

Very much like the program itself, Watershed is being taught by an integrated team of teachers; Ms Frampton (Language Arts /Social Studies), Ms. Craig (Environmental Science specialist), Ms. Sebesan (Physical Science Specialist). The Watershed Team is also supported by Ms. Lambert (Dance), Ms. Sylvester (Music) and Mrs. Seaton (Art) through the year.

We are excited about the program and working with your child this year. We look forward to meeting you and sharing more about Watershed at the middle school open house.

Please feel free to contact at anytime during the year with any comments, concerns, ideas or offers for help.

We can be contacted at

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Sincerely,

Paula Peters- Frampton, Ashley Sebesan and Carol Craig

Your Watershed Team