

Physical Assessment of Stream Water Quality

Introductory Activity: Emriver Simulator / Watershed Mapping

Field Activity: Tools Explanation, Outdoor Field Study

Description: As one component of water quality research, students observe, calculate and map physical characteristics of a stream edge (riparian) habitat. Quantitatively, using Vernier LabQuest scientific handhelds and stream flow sensors, students measure stream flow velocity and calculate average stream discharge. Qualitatively, students use observation skills to note specific physical stream characteristics. Including titles, legends, and symbols, students compile and analyze quantitative and qualitative information on a stream map, drawing conclusions about local stream water.

Objectives: By the end of the program, the students will be able to:

- Define the terms watershed, erosion, deposition, riparian, velocity, discharge, qualitative and quantitative
- Identify local watersheds by name and number
- Use scientific investigation tools and mathematics to collect physical water quality data
- Construct a model watershed
- Draw maps using titles, legends, and symbols
- Explain how the physical characteristics of and changes to a stream affect water quality
- Examine their role and formulate ways they can aid in maintaining healthy water
- Recognize the overall health and water quality of a stream is based on physical, chemical and biological assessment

Indiana Academic Standards for Science:

Fourth: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1, 2.3, 2.4, 2.5, 2.7, 3.3, 3.5, 4.7, 6.1, 6.2

Fifth: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.4, 2.5, 2.7, 2.8, 5.1, 5.2, 5.6, 5.7, 5.8, 5.10, 6.1, 6.2

Sixth: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.1, 2.2, 2.3, 2.8, 3.8, 4.8, 5.2, 5.4

Seventh: 1.1, 1.2, 1.3, 1.4, 1.7, 1.8, 1.9, 2.3, 2.6, 2.8, 3.13, 4.14, 5.2, 5.3, 5.4, 7.1

Eighth: 1.1, 1.2, 1.3, 1.8, 2.1, 2.2, 2.4, 2.5, 2.7, 2.9, 3.6, 5.1, 5.8, 5.9, 7.1, 7.2, 7.3, 7.7

High School: Env.1.4, Env.1.6, Env.1.10, Env.1.29, Env.1.34, ES.1.10, ES.1.25, ES.1.26, B.1.37, B.1.40, B.1.41, B.1.45

Indiana Academic Standards for Mathematics:

Fourth: 1.1, 1.2, 1.3, 1.9, 2.5, 2.6, 7.1, 7.3, 7.4, 7.5, 7.6, 7.8, 7.9

Fifth: 1.2, 2.1, 2.5, 7.1, 7.3, 7.4, 7.5, 7.7, 7.8

Sixth: 2.1, 2.2, 2.3, 5.1, 5.6, 6.3, 7.1, 7.4, 7.5, 7.6, 7.9, 7.10

Seventh: 2.1, 3.3, 5.1, 5.3, 7.1, 7.4, 7.6, 7.7, 7.10, 7.11

Eighth: 2.1, 3.7, 5.1, 5.2, 7.1, 7.4, 7.6, 7.7, 7.10, 7.11

Excellence in Environmental Education – Guidelines for Learning (Pre K – 12):

Fourth Grade	Fifth – Eighth Grade	Ninth Grade
Strand 1 A, C, D, E, F, G	Strand 1 A, C, D, E	Strand 1 B, C, E, G
Strand 2.1 A, B	Strand 2.4 A, B, D	Strand 2.4 A, B, D
Strand 2.3 A	Strand 3.1 C	Strand 3.1 C
Strand 2.4 A, D	Strand 4 D	Strand 4 D
Strand 3.1 C		
Strand 4 D		

Please note specific learning objectives and academic standards will vary based on timeframe, location, availability of resources, and tailored content of programming.