



CONCRETE

Concrete vs. Cement. What makes them different?

Students learn how the components of concrete can be modified to alter its properties. They use their knowledge to make concrete roofing tiles that meet specific design and performance criteria.

By incorporating everyday materials into science lessons, the Materials World Modules (MWM) program at Northwestern University has found the solution to getting students excited about learning science while helping teachers meet national and state education standards.

The modules are easy to organize and inexpensive to run. They can be incorporated into any science class because of the breadth of subjects covered in the Activity and Design Project sections. Each module is a supplemental science unit that takes 1-3 weeks of class time (approximately 10 hours) to complete.

Module At-a-Glance:

Activities

- Hunting for Objects Made of Concrete
- Comparing Different Kinds of Cements
- Comparing Different Concrete Formations
- Testing Properties of Concrete
- Reinforcing Concrete

Design Project

- Designing a Concrete Roofing Tile
- Designing a New Concrete Product



MWM will give students an opportunity to understand the world around them in a way they have never experienced before. The modules promote an awareness of the roles science and technology play in society and guide students to take increased control of their work.



MWM is designed to

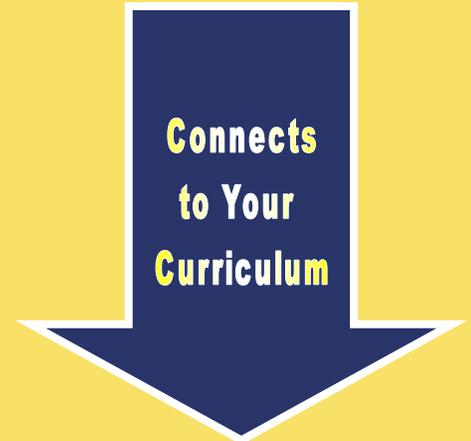
Interdisciplinary
Integrates science & non-science subjects

Flexible
Modify to your teaching style, students' ability and class time

Hands-on
Contains activities that lead up to inquiry-centered design projects

Cutting-edge
Introduces issues on the forefront of technological research

improve STEM education
Science • Technology • Engineering • Math



**Connects
to Your
Curriculum**

Chemistry

- Properties of Matter ■ Mixtures ■
- Chemical and Physical Changes ■
- Chemical Reactions ■ Bonding

Biology & Life Sciences

- Biological Materials ■
- Environmental Issues

Mathematics

- Measuring ■ Graphing (Making, Reading and Interpreting) ■ Computing
- Averages ■ Ratios

Physics & Physical Sciences

- Forces ■ Loads and Stresses
- Tensile and Compressive Forces ■
- Energy ■ Work ■ Electrical Conductivity

Geology & Earth Science

- Rocks and Minerals ■ Geochemical Cycles ■ Acid ■ Rain ■ Earthquakes

Technical Education

- Designing ■ Building Materials ■
- Composites ■ Construction ■ Technology

Language Arts

- Writing a report ■ Public speaking

Materials World Modules

An Inquiry & Design Based STEM Education Program

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