



POLYMERS

Compact discs, hair spray, and soft-drink bottles. What's in your students' lockers or your next lab activity?

Students examine viscoelastic, mechanical, and absorptive properties of polymers. They design and test a nonelectrical humidity sensor made of a polymer film.

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

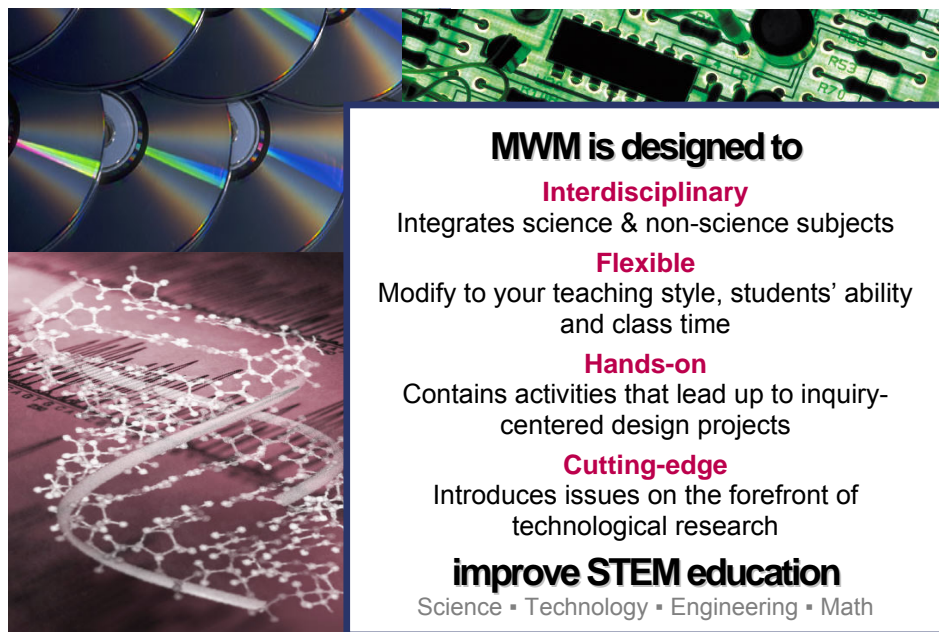
- Changing Polymer Pellets
- Hunting for Polymers
- Comparing the Viscosity of Liquids
- Testing the Strength of Different Polymer Films
- Measuring Water Absorption by Different Polymer Films

Design Project

- Designing a Humidity Sensor
- Designing a New Polymer 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

Materials World Modules

An Inquiry & Design Based STEM Education Program

Northwestern University ■ www.materialsworldmodules.org
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**Connects
to Your
Curriculum**

Chemistry

- Polymers and Monomers ■
- Properties of Matter ■ Molecular Structure ■ Reaction Mechanisms ■ Bonding ■ Polarity ■ Solutions ■ Diffusion

Biology & Life Sciences

- Proteins ■ Carbohydrates ■ Nucleic Acids ■ Plant structure and Function

Mathematics

- Measuring ■ Graphing (Making, Reading and Interpreting) ■ Computing ■ Percentages ■ Rates

Physics & Physical Sciences

- Forces ■ Loads and Stresses ■ Tensile Forces ■ Energy

Geology & Earth Science

- Soil ■ Water Cycle ■ Recycling Minerals

Technical Education

- Designing ■ Paints ■ Plastics ■ Automotives ■ Manufacturing Processes

Language Arts

- Writing a report ■ Public speaking