

Chapter 1 : SEPUP: Science and Sustainability (S&S)

Science and Sustainability (S&S) is a full-year, integrated high school science course with a strong emphasis on hands-on investigations. The program is presented in four thematic units and includes an array of concepts and topics including physics, chemistry, biology and earth science.

Abstract "Science in Global Issues" SGI joins the already published, "Science and Sustainability," to become a two-year integrated science course for grades 9 and 10 incorporating an issues-oriented, guided-inquiry approach to learning. The course, to be available both as a full year course and as modules, focuses on the role of science in addressing the needs of modern society and the use of technology in advancing scientific knowledge. In collaboration with teachers and scientists, specific learning goals related to the science standards are developed. The assessment system, previously used in other SEPUP materials, serves as an indicator of learning, guides the development of activities, and is used as a basis for evaluation and research on how the instruction affects student learning and teacher practice. Students are introduced to and examine key science concepts in the context of personal and societal issues. A primary resource contains images of and data about countries around the world and links to existing simulations of processes. These issues vary from human effects on ecosystems to sustainable use of resources and energy. Through this curriculum, students learn scientific concepts as well as how to use scientific evidence to suggest solutions to problems. The complete SGI program includes nine units comprising one year of biology and a semester each of chemistry and physics. The learning goals for this sequence were based on the National Science Education Standards and other national and state standards. Before publication, the program was field-tested by teachers and their students in high school classrooms. Scientists with related research expertise reviewed each unit to ensure the science is accurate and issues are up-to-date. Field-test sites included urban, rural, and suburban schools with diverse student populations. Over teachers received professional development, taught one or more of the nine units in their classrooms, and provided extensive feedback to the project. This feedback was used to revise the units for publication. Evaluation of student learning during the field test indicates that the materials promote learning and are equally effective for males, females, and students from groups traditionally underrepresented in science and engineering fields. The project has helped high school students learn about science and how it relates to their lives. The nine units in SGI can be used as a complete integrated two-year science program Table 1 , as a sequence with a year each of biology and physical science Table 2 , or as a single year of either biology or physical science. This flexibility will allow schools and districts throughout the United States to adopt the program for use in their existing course sequences. The SGI program includes a student book with readings, laboratories, and hands-on activities that are highly engaging to students. An introductory unit on sustainability and four biology units were published in as Science and Global Issues: Publication of the physical science units is planned for late Living on Earth Biology:

Chapter 2 : SCALE UP: Professional Development, Aims, SEPUP

This activity, Activity "Population Estimation," is from SEPUP's Science and Sustainability course and can be used as an extension for Activity 14, "Investigating Population Growth Rates."

It not only covers many of the scientific concepts usually included in biology, chemistry, and physics classes, but also relates those concepts to issues of sustainability. Most likely, you have already explored many scientific concepts, but you may not be familiar with the term sustainability. Sustainability refers to the ability of populations of living organisms to continue, or sustain, a healthy existence in a healthy environment "forever. The scientific topics introduced in this course were chosen because they relate to sustainable development—that is, the use of environmental resources in a responsible way to ensure that they will continue to be available for use by future generations. During this course you will participate in a wide range of activities, including many hands-on labs, current and historical readings, role-plays, and debates. You will also make frequent use of the book *Material World*, which provides a pictorial view of life in dozens of countries around the world. These activities will help you become more confident, competent, and independent in the design, analysis, and communication of issue-oriented science activities. You will be challenged to connect the various components of the course as you analyze risks, assess trade-offs, and make decisions that are based on scientific data. Issues of science and sustainability impact your personal life, your local community, and the world as a whole. By considering some of these important issues in this course, you will gain the skills necessary for making decisions critical to your future and to the future of other living things on Earth. This course will present you with choices that might help solve some of these problems. After evaluating the scientific evidence, you will determine which options are appropriate for the problem in question. In some cases, you will even be given a chance to develop your own solutions for a problem. This course is divided into four parts: In Part 1 of Science and Sustainability, you will begin investigating a wide range of questions about life on Earth: Science and technology will continue to play an extraordinarily important role in our everyday lives. Part 1 of this course will introduce you to some fundamental scientific principles and processes. This information should help you better understand past scientific discoveries and their impact on society and the environment. It will also prepare you to evaluate the potential impact of future discoveries and inventions. Purpose Compare the possessions of families in four countries and consider which are essential for survival. Introduction Sustainability, at its most basic level, means continued survival. People in different parts of the world own and use different types of materials and energy. The book *Material World* contains photographs, statistics, and written descriptions that provide evidence of what life is like for average families in 30 countries around the world. The material goods that belong to an individual or a family serve many purposes. You will also consider how non-essential possessions affect the sustainability of a society. Prediction Work with your partner to come up with an estimate for the percentage of items found in a typical household that are essential for survival. Take a few moments to look through *Material World* and get a sense of the information it provides. Look at the locator map in Figure 1 and on pages in *Material World* to see where each of the following countries is located: Thailand, Iceland, Ethiopia, and Guatemala. Based only on information from the maps, rank these four countries in order from "easiest to survive in" to "most difficult to survive in. Now, look carefully at the photographs in *Material World* of the families from Thailand, Iceland, Ethiopia, and Guatemala. Make a data table similar to the one on the next page to record your observations. For each family, predict the purpose of one of the possessions you do not recognize. Typically, essential natural resources are not considered personal possessions, but are instead shared by all members of the community. Describe any evidence in *Material World* that might indicate whether or not each family has an adequate supply of clean air, water, and soil. Based on the information you now have, again rank the four countries in order from "easiest to survive in" to "most difficult to survive in. Procedure Table 1 Family Possessions cont.

Chapter 3 : Science and Sustainability 1st Edition Student Book

SEPUP's Science and Sustainability Developed by SEPUP's Sustainable development is a current and critical issue that requires keen analysis and informed decision-making.

The Student Book uses a variety of approaches to make science accessible for all students. This allows them to adjust activities when needed so that all students get the best chance to build their knowledge and appreciation of science. An electronic version is included with the Complete Materials Package. Material World Book Material World: Although not included in the materials package, a class set of at least one book per each pair of students is highly recommended. The author spent a week with each of 30 representative families from around the world. He photographed them at work and at play in order to compile this photographic essay of everyday life on earth. In at least one photo from every country, the family is shown with all their worldly possessions displayed around them. These images, together with the comprehensive demographic and other national statistical information about life in each country, provide information that is extremely useful for examining sustainability in the broad sense. Teachers tell us that it is easy to get students to pick up Material World, but hard to get them to put it down! Books Online Individual, classroom or district licenses can be purchased for access to our student books on-line. All pages were created using Adobe Acrobat Reader. The program audibly reads the text, allowing the student to follow the reading on the page. This helps all students increase their vocabulary. Editable Word documents for each set of Activity Assessment Questions which allows students to e-mail their finished work back to the teacher. Microsoft Word Tools provide strong support for diverse learners. The Spelling and Grammar Checker uses red and green underline squiggles representing spelling red and grammar green errors alerting students to potential errors. The thesaurus helps to refine writing as well as expose students to new vocabulary words. Students with poor spelling skills often have difficulty using a dictionary. This feature provides an instant definition for a highlighted word, eliminating the task of dictionary lookup. Students can also use the Thesaurus to find the synonyms of words. Materials packages include most of the items needed for the activities. They support multiple classes – typically up to five classes of 32 students total students – before consumables need to be replaced. Exclusive to SEPUP programs are the molded tray liners that keep everything in place and easy to locate – even in a hurry. Lab-Aids Science Lab Notebook The use of a science journal or notebook is strongly recommended for all science classes. Each of the LABLOG pages, has a 2-column design with GraphAnywhere, which allows data tables and graphs to be drawn in a fraction of the usual time, and plenty of room to record data, notes, and responses to questions. It is also three-hole punched to allow students to store the entire notebook, or individual completed pages, in their binder.

Chapter 4 : Science sustainability - - . 1

Science and Sustainability, Revised Edition. SEPUP CORE CURRICULUM: FULL YEAR OF STUDY. Help your high school students understand that science is not only a part of their everyday lives, but that the decisions they make play a role in their local communities.

Chapter 5 : Science Education for Public Understanding Program (SEPUP) | WestEd

SEPUP curriculum products focus on both core science content and the practices of science and engineering through a variety of learning activities. Issues span the disciplines as earth, life and physical sciences and interdisciplinary content relevant to global issues and sustainability.

Chapter 6 : Science in Global Issues: An Integrated High School Science Course - Barbara Nagle

1 SEPUP Correlation for Science and Sustainability to Maryland Science Standards Grade 12 Notes: Science and

Sustainability is the high school environmental science program from SEPUP and.

Chapter 7 : Science Education for Public Understanding Program

Activity Economy of Material Use: Section Material Resource Use and Sustainability Section Additional Information on the Production and Use of Metals Section You Can Bank On It

Chapter 8 : SGI: Student Activity Links

Science and Sustainability is a full year course in environmental or integrated science. It was developed by the Science Education for Public Understanding Program, at the Lawrence Hall of.

Chapter 9 : Science and Sustainability, Revised Edition

SEPUP program units support the development of core science content and the practices of science and engineering through a variety of hands -on learning activities. Issues related to global sustainability in the life sciences serve as themes for the core ideas in.