

**2017-2018 State of Florida
Instructional Materials Adoption
Publisher Questionnaire (Form IM8)**

Bid #: 3360

Submission Title: *Issues and Physical Science, Second Edition*

Grade Level: 8

Course Title: M/J Physical Science

Course code #: 2003010

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Publisher: Lab-Aids

Author: SEPUP Development Group

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Authors & Credentials: List full name of author(s), with major or senior author listed first. Briefly provide credentials for each author.

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For full bio and credential descriptions please go to: www.sepuplhs.org/about.html

Students: Describe the type(s) of students for which this submission is intended.

Strategies are geared to middle school students' learning styles. These include a combination of individual work, cooperative group work, and a wide variety of classroom activities. SEPUP has tested *Issues and Physical Science* extensively with students in classrooms across the United States to ensure that the material is challenging but appropriate for middle school students. The variety of activities accommodates students who have different learning styles and stimulates all students to improve their laboratory, research, reading, writing, and presentation skills.

1. LIST THE FLORIDA DISTRICTS IN WHICH THIS PROGRAM HAS BEEN PILOTED IN THE LAST EIGHTEEN MONTHS.

None of the SEPUP Middle School programs have been piloted in Florida within the last 18 months. Hillsborough County and Santa Rosa County have been exploring the program among the Administration and the Instructional Leaders but it has not been used in classrooms as a pilot.

2. HOW ARE YOUR DIGITAL MATERIALS SEARCHABLE BY FLORIDA STATE STANDARDS (SECTION 1006.33(1)(E), FLORIDA STATUTES)?

The IM7 includes references for each course standard with several links to show evidence of alignment. By default, the *Teacher's Edition* is used with the link placed at the *start* of the activity to provide context for the reviewer. Links to the *Student Book* and *Teacher Resources* are also occasionally referenced, and noted in the IM7, where appropriate.

3. IDENTIFY AND DESCRIBE THE COMPONENTS OF THE MAJOR TOOL.

Educational Approach:

The Science Education for Public Understanding Program (SEPUP) is based at the Lawrence Hall of Science at the University of California, Berkeley, and designs issue-oriented curricula for secondary science classrooms. The curriculum materials present standards-based science content in the context of personal and societal issues. These issues range from personal medical issues, such as whether to be tested for a genetic disease, to societal issues, such as the sustainable use of resources.

SEPUP curricula are based on a guided inquiry approach and promote the use of scientific principles, processes, and evidence in public decision making. SEPUP programs are extensively tested in local and national centers to ensure they are effective with diverse groups of students in a variety of settings. The development of all SEPUP programs has been supported by grants from the National Science Foundation, and is based on extensive research on effective teaching and learning.

All SEPUP materials are developed using an iterative process, which involves development, piloting, and field-testing phases. Data and feedback are collected during local piloting and national field-testing, including work in Pinellas county, Florida (for IAES). These data are used to inform the revisions to the program. The core components of SEPUP curriculum materials have remained the same since the inception of the program. These include:

- An instructional model
- Inquiry-based instructional strategies
- Spiraling of important concepts and skills
- Issue-oriented science
- Strategies geared to students' learning styles
- Balance of individual and cooperative learning
- Assessment system

Change the Equation (CTEq), a nationally known business-education partnership, has a rigorous, multi-step process for recognizing and evaluating excellence in STEM programs today. Their reviewers

have recognized SEPUP as one of the nation's most effective STEM learning programs, giving them an "accomplished" rating in the CTEq STEMWorks database, the highest possible rating. Furthermore, the SEPUP materials received an accomplished rating in both the Evaluation and Underrepresented Groups categories (<http://changetheequation.org/>).

SEPUP began developing science instructional materials with funding from the National Science Foundation (NSF) in 1987. Twenty years of research and evaluation show that SEPUP programs:

- increased students' interest in science and perception of its relevance to their lives.
- lead to meaningful gains in student performance.
- improved students' content knowledge and ability to engage in scientific practices.

In addition, research indicates that SEPUP materials can be used as a powerful professional development tool. The SEPUP approach enhances the role of teachers as facilitators of student learning and as educational leaders within their communities as they share in the development, implementation, and assessment of issue-oriented science materials and programs.

Major Tool

SEPUP's *Issues and Physical Science, Second Edition* consists of three integrated components:

- **Student book** (online or in print version) that seamlessly integrates investigations, labs, and readings into the context of the unit issue storyline
- **Equipment** to carry out each embedded activity for 5 classes of 32 student (in groups of four, pairs, or individuals)
- *My Lab-Aids* online **teacher bookshelf** portals, including detailed Teacher's Edition and Teacher Resource materials

These individual components combine to form a complete learning system.

Student Book (available in both digital and print versions)

The Student Book guides students in their investigations and contains related readings. The activities in each unit address students' learning styles through a variety of approaches. Activity types are: *Investigation, Laboratory, Modeling, Project, View and Reflect, Computer Simulation, Problem Solving, Reading, Role Play, and Talking it Over*. The last three of these are text-dependent activities presented in very different ways.

Student Book Format

While the approach varies, the format for each activity remains consistent and includes:

- **Introduction** - set the stage for the activity and provides meaningful context
- **Challenge Question** - focuses the purpose of the activity
- **Material List** - what is needed and how it should be distributed
- **Safety information** - highlighted in the student book
- **Procedure** - provides step-by-step activity directions and supports the majority of students in performing activities with minimal teacher assistance so that teachers may observe and listen to

groups and be available for individualized assistance. As a unit progresses these steps become more open-ended.

- **Analysis Questions** - probe students' understanding of the content and encourage further group interaction to help deepen student understanding.

Direct experience or “hands on” is a deliberate and designed feature of the SEPUP materials. The SEPUP founding director, Dr. Herbert D Thier, helped develop the “learning cycle” concept in his early work with elementary science reform at the Science Curriculum Improvement Study. The SEPUP instructional design correlates well with the “5E” model developed by Dr. Rodger Bybee at BSCS in Colorado and other similar approaches.

The structure of activities has students usually “doing” first so they begin to develop their own understandings of phenomena and then read about it to make connections and expand their understanding. For example:

- Erosion and Deposition, IAES Activity 28 has students use a river model to investigate how flowing water creates common landforms and then they read about weathering, erosion, and deposition in Activity 29
- Evolution, IALS Activity 95 has students model the effect of environment and predation in the process of natural selection, Activity 96 has students simulate the effect of natural selection on an imaginary species, then Activity 97 is a reading about mutations and how they provide the genetic variation necessary for natural selection.

Students continually engage in labs and investigations that require them to collect empirical evidence to make sense of core ideas. This evidence is often required when answering an analysis question to help support or refute a claim.

SEPUP units follow the 4-2-1 model of grouping. Students often work in groups of 4 on a concept and then share results as pairs and reflect as individuals. The teacher resource guides include supplements to foster collaboration and product group work with students.

Equipment

The equipment kits provides the specialty items students and teachers need for the experiences that are central to the program. The kits supply enough materials for five class periods with 32 students each. For Procedure Steps involving groups of four students, eight sets of the required materials are included; 16 sets when students are asked to work in pairs.

The print materials and kit equipment for *Issues and Physical Science* were initially field-tested over a two-year period by more than 50 teachers and nearly 5,000 students from urban, suburban, and rural schools across the United States. SEPUP applied feedback from teachers and administrators, SEPUP staff's observations during field-testing, scientific review comments, and students' performances on assessment tasks and day-to-day work to guide revisions of the course.

Materials are organized in plastic molded trays within drawers with individual compartments for each item or group of items. This set-up supports the 4-2-1 cooperative group model and it helps manage

materials so teachers know right away if something is missing. Drawer labels match material lists in the Teacher Edition for easy preparation of the day's activity. These drawers are organized on sturdy, rolling carts for easy access, storage and mobility, if needed. Materials are of high quality and durable often lasting districts years without replacements. Consumable materials are kept to a minimum and average \$3.28/student for *Issues and Physical Science* refills after the first year.

Teacher Bookshelf online portal

The Complete Equipment Package includes 7-year teacher online access to *Teacher's Edition*, *Teacher Resources*, *Student Book*, relevant student sheets and visual aids, editable PowerPoints, ExamView, and additional web content.

The *Teacher's Edition* takes teachers through each activity in the *Student Book* and shows the development of concepts within the big picture of the units and the course. It helps set up equipment from the kits, organize the classroom, conduct activities, and manage practical details - all of which enhance the students' learning environment.

The *Teacher's Edition* format is divided into several sections:

- **Activity Overview** - information on the estimated instructional time
- **Key Content and Key Process Skills** - lists essential key concepts and skills developed in the activity
- **Materials** - matches the Student Book format and assists with distribution
- **Advanced Preparation** - planning/organization needed before teaching
- **Safety** - detailed notes on safety
- **Teaching Summary** - outlines the teacher's role in conducting the activity
- **Background Information** - specifically for the teacher, this provides a conceptual framework and preparation for questions that may arise in class.
- **Teaching Suggestions** - a detailed section with specific suggestions on how to accomplish the goals of the activity. This may include discussion prompts, student responses, activity instructions and notes, and embedded assessment opportunities.
- **Sample Responses to Analysis Questions** - for questions recommended for embedded assessment, sample exemplar responses are provided
- **Visual-aids and Student Sheets** - blackline masters are included for print or projection

The *Teacher Resources* provides background and suggestions to increase the overall effectiveness of implementing the program across all levels of learners. Many teachers refer to the *Teacher Resources* as their ongoing Professional Development tool.

Sections of the *Teacher Resources* include:

- Course Essentials
- SEPUP's Approach to Teaching and Learning
- Differentiation Strategies for Diverse Learners
- Literacy Strategies for Supporting Reading Comprehension and for Enhancing Students' Writing
- Comprehensive instruction on the SEPUP Assessment System

In addition to the *Teacher's Edition*, *Teacher Resources*, and *Student Book*, the online **Teacher Bookshelf** also includes:

- LABsent sheets and videos for absent students
- Editable PowerPoints for each lesson
- ExamView item banks for each course unit
- Spanish text and Student sheets
- Supplemental Resources, including support for parent-teacher communication, trade books and videos to support literacy connections in the life, earth, and physical sciences

4. IDENTIFY AND DESCRIBE THE ANCILLARY MATERIALS.

Student Notebook

The use of a science journal or notebook in SEPUP is strongly recommended. The notebook not only models the way scientists work, but it helps to develop and reinforce students' science learning and literacy skills. Keeping a science notebook helps students track data, record questions as they arise, and build science-writing skills. As a literacy tool, science notebooks allow for student reflection and facilitate student discourse. **All *Issues and Physical Science* activities are set up to encourage the use of science notebooks and are directly referenced in the Student Book.**

The *Lab-Aids Science Lab Notebook* is 160 three-hole punched pages which allow students to store it in their binder. It has a 2 column design and plenty of room for notes, reflections, and responses to Analysis Questions. Graph Anywhere allows data tables and graphs to be added easily using the unique line guides. The Science Lab Notebook was designed with "Best Practices" in mind. Use of the Lab-Aids notebook is not necessary, though many teachers prefer it. A generic notebook will work to meet the program needs.

Student Bookshelf

The online **Student Bookshelf** includes 7-year online access to:

- Full student book access on any connected device
- LABsent sheets and videos for absent students
- Spanish text and Student sheets
- Supplemental Resources

Most schools use a class set of the printed *Student Book* in each classroom and provide online access to students for access anytime in or out of the classroom.

5. IDENTIFY WHICH INDUSTRY STANDARD PROTOCOLS ARE UTILIZED FOR INTEROPERABILITY?

Our curriculum is available online to users whether the district has an established Learning Management System (LMS) or not. At this time, the components of our system cannot be transferred to a district's existing LMS.

6. HOW MUCH INSTRUCTIONAL TIME IS NEEDED FOR THE SUCCESSFUL IMPLEMENTATION OF THIS PROGRAM?

Issues and Physical Science is a full-year course comprised of seven units. Each unit ranges in instructional time between 3 and 6 weeks. Classroom trials in field-testing show that instruction varies based on the instructor and students but it can be averaged to 134 instructional periods of 40-45 minutes each.

7. WHAT PROFESSIONAL DEVELOPMENT IS AVAILABLE?

While all SEPUP programs are written for "off the shelf" use, we consistently see schools are able to accelerate the implementation process through professional development. This is an in-depth dive into our pedagogical approach through experiential use of the program's components and supports. *We recommend 6-8 days of onsite PD per grade level, with content delivered in summer and in-year workshops. This should be coordinated with Jeff England, the Lab-Aids Science Curriculum Specialist for Florida, at the time of purchase.*

All our certified trainers are current or former classroom teachers who have taught this material and are experienced and effective presenters.

The following content is provided in all workshops:

Course Design

SEPUP uses environmental and societal issues to provide a context for learning science by connecting science concepts to students' everyday lives. This is matched to an inquiry-based approach, since we believe science is an active process. Teachers will learn to use the four important elements of a SEPUP program: student book (print or digital), teacher's guide, equipment kits, and digital tools/website support.

Support for Literacy, Inquiry, and Differentiated Instruction

SEPUP's course design uses issues in science to connect and motivate all students, and is based on a learning cycle model that supports the 5E approach. There are six distinct activity types to support inquiry teaching and learning. Support for reading, writing, and oral presentation, and working with diverse learners, including GAT, ELL, and students with special needs, is provided in introductory and follow up workshops.

Classroom Management

Included are day-to-day topics such as getting started with *SEPUP 6-8*, using the equipment kit, management of student laboratory activities, lab safety, monitoring group work, using technology, and using post-activity discussions to make connects to science content.

Assessment

Using the SEPUP formative assessment system, students complete embedded tasks, producing student work. This can be scored using rubrics developed for nine major areas, including *Content*

Understanding, Designing Investigations, Using Evidence, Analyzing Data, Communicating, Scientific Information, Group Interaction, and more. Teachers will examine support for assessment and will discuss and moderate samples of actual student work.

Instructional Technology

SEPUP's digital materials are accessed through an online bookshelf for students and teachers. SEPUP also supports these materials with external web content, simulations, PowerPoints, and more as well as a suite of Examview tools. Workshops support efficient access and use of these tools. Additionally, short training videos are available for selected activities from each SEPUP unit and are referenced during PD workshops so that users may review them throughout the year.

For long-term sustainability of the SEPUP program we work with districts to develop internal leadership through the SEPUP Summer Academy, Train the Trainer seminars and support for area-based collaborative cohorts. This model has sustained earlier and current editions of the SEPUP program in large districts like Chicago Public, Portland Public, Buffalo Public, and Stamford Public (CT) for more than eight years.

8. WHAT HARDWARE/EQUIPMENT IS REQUIRED?

The SEPUP Middle School program can be implemented in a few ways or as a combination. The Student Book, Teacher's Edition and Teacher Resources are available in both print as a book or accessed online through a student or teacher bookshelf (compatible on any platform). The accompanying science equipment used in the course is part of the Complete Equipment Package and includes nearly all needed supplies.

Should districts choose to access SEPUP exclusively online (no print books) they will need:

- Internet access for both teachers and students
- At least 1 computer/tablet per group of four students every day
- Occasional individual student access to a computer/tablet
- A method to project visual aids (document camera/projector)
- Blank Science lab notebook for each student (either physical or online)

Should districts choose to access SEPUP exclusively through print they will need:

- Internet access teachers (to access ancillary resources)
- Occasional individual access to a computer/tablet
- A method to project or copy and distribute visual aids (document camera/projector)
- Blank Science lab notebook for each student (either physical or online)

Most districts choose a combination of the two with print books for student use in the classroom and online access for students and teachers.

For the science equipment, the Complete Equipment Package does not include items that are typically found in a classroom or would be impractical to include (perishables, live specimens, or overly large items).

For a complete list of materials not included in the *Issues and Physical Science Complete Material Package*, please reference: lab-aids.com/scienceadoption

9. WHAT LICENSING POLICIES AND/OR AGREEMENTS APPLY?

Licensing for digital instructional materials are granted on a per person basis for a set duration. Digital instructional materials cannot be modified nor distributed beyond license grantees.

10. WHAT STATES HAVE ADOPTED THE SUBMISSION?

SEPUP's *Issues and Physical Science* is used widely across the US but has been officially adopted in these adoption states: OR, TX, NC, GA, and IN where it was the highest ranked MS program from the adoption.

11. WHAT OPEN EDUCATIONAL RESOURCES RELATED TO THIS BID DO YOU MAKE AVAILABLE?

SEPUP makes all simulations and additional resources for Issues and Earth Science available publicly on their site: sepuplhs.org

Additionally, Lab-Aids provides professional development videos for select activities in each unit as well as videos supporting inquiry-based science programming: [Professional Development videos](#)

12. ALTHOUGH NOT CALLED FOR IN THE STATE ADOPTION, DO YOU HAVE ADVANCED PLACEMENT (AP) OR ACCELERATED PROGRAM INSTRUCTIONAL MATERIALS AVAILABLE FOR THE COURSE(S) BID FOR ADOPTION?

No

13. WHAT, IF ANY, FOREIGN LANGUAGE TRANSLATIONS DO YOU HAVE AVAILABLE?

The *Issues and Physical Science Student Book* and Student Sheets are available on the Teacher and Student online bookshelves in Spanish by default and at no additional cost.