Science Societies

SSSA launches new K–12 educational resources

By Susan Chapman, Director of Member Services

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The SSSA K-12 Outreach Committee has been diligently developing and compiling resources for K-12 teachers/educators since 2005! (Photo taken before the COVID-19 pandemic.)

The SSSA K-12 Outreach Committee has been diligently developing and compiling resources for K-12 teachers/educators since 2005! Resources include two books (*Soil! Get the Inside Scoop* and *Know Soil Know Life*), two content-rich websites, webinars, a curriculum unit, and so much more.

"During my tenure on the K-12 Committee, I have observed that its members are passionate and committed to building resources for teachers, so that they can educate and inspire the next generation of students to protect and manage soils," says Briana Wyatt, SSSA K-12 Outreach Committee chair. "The committee members really go above and beyond to share their love of soils with K-12 teachers and students, both through the work that they do on the committee and in outreach efforts that they participate in outside of the committee."

Now, made possible through a contribution agreement with USDA-NRCS, a two-year project has focused on developing materials to enhance the teaching of soils in both formal and informal classrooms to affect positive outcomes regarding soils and the environment.

"SSSA has been thrilled to lead this project," says SSSA President April Ulery. "I often go to the **'Soils4Teachers' webpage** to find demonstration ideas to use in my outreach efforts and even in some of my classes. We're so fortunate to have such great partners

in the NRCS and in K-12 teachers everywhere. Anything we can do to help teachers keep youngsters engaged and learning is a good thing, and soil science provides so many practical and everyday opportunities to learn and grow."

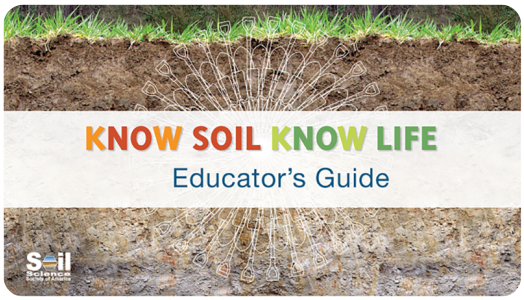
The project objectives were to:

- develop a ***Know Soil Know Life* Educator's Guide**
- develop a **"Soil Basics" poster for classrooms**
- develop a **soils-focused educational materials database**
- identify and fill gaps in content

"The cooperation between SSSA and NRCS has resulted in materials that will help educators inspire and train the next generation of soil scientists and society," says David Lindbo, USDA-NRCS. "This will allow for the profession to flourish and ensure society sees soils as a fundamental natural resource. For if we know soils, we know life, and if there was no soil, there would be no life."

Materials were developed with the assistance of a core group of K-12 science teachers through a development session at the National Science Teaching Association annual conference and feedback throughout the process.

Know Soil Know Life Educator's Guide



The Know Soil Know Life educator's guide enhances the usability of the book to more easily integrate all

information in the book/chapters/sections into classroom curriculum.

www.soils4teachers.org/kskl

This educator's guide enhances the usability of the book to more easily integrate all information in the book/chapters/sections into classroom curriculum. Components for each chapter include:

- Chapter overview
- Suggested teaching sequence and pacing guide
- Classroom PowerPoint
- Links to hands-on activities and readings to support chapter materials
- List of relevant Next Generation Science Standards (NGSS) addressed
- Assessments including chapter questions (login access required) and formative and summative assessments
- Links to additional optional resources

The guide does not replace the in-depth information in the book. Rather it enhances it! The lessons can also be used in a stand-alone fashion, and the hands-on labs and activities bring the text to life for students. The lessons can be taught in any order, or educators may select only the most pertinent chapters/activities for their classes.

All of the activities have been correlated to the current NGSS. While not needed to teach the lessons, educators may wish to purchase a desk copy of the book or a class set. Project development of the guide was provided by Educational Consultant Elizabeth Youngman and is hosted through the Science Education Resource Center (SERC), a grant-funded office at Carleton College, founded to improve education in the

earth sciences and beyond.

Soil Basics Poster

www.soils4teachers.org/posters

One of the goals of the committee has been to translate our Soil Basics info sheet into a poster. This new poster provides a tangible presence in classroom and gives an overview of soil—what it is (and isn't), why it's important, soil horizons, texture, soil triangle, formation, and processes. This unique poster is two-sided with Side A being designed for the middle-school grades while Side B is for the more advanced levels (typically high school).

The "Soil Basics" poster provides a tangible presence in classroom and gives an overview of soil.

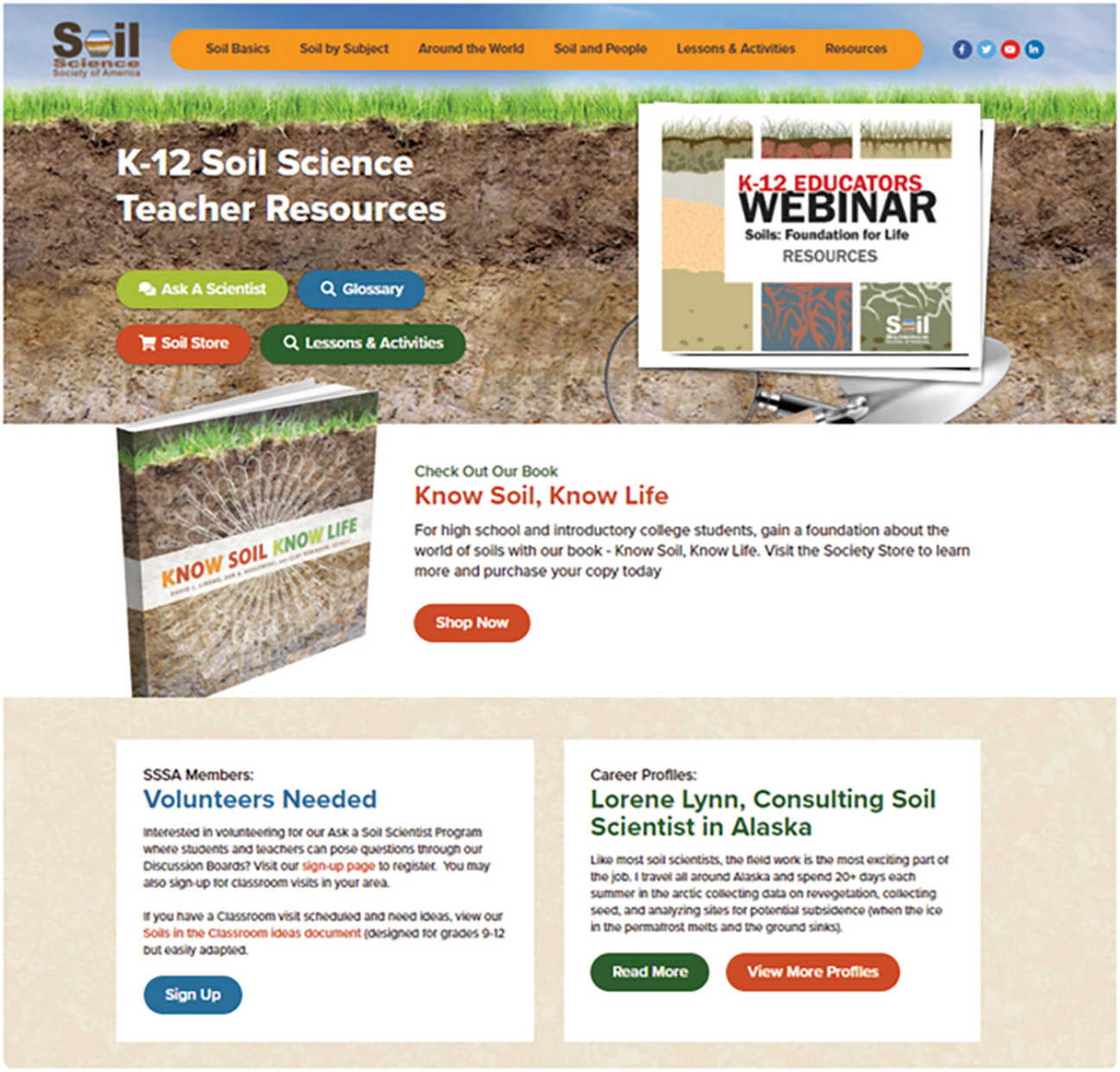
Educational Materials Database

www.soils4teachers.org/lessons-and-activities

Since the inception of the committee, we've been vetting and listing teaching resources, including activities, labs, demonstrations, and more on a lengthy webpage. Another goal of the committee has been to create a searchable database of these resources—both those developed by SSSA and external resources. The collaborative grant has given us the resources to develop this database, which can be searched by activity, current NGSS standards, grade level, and more. In addition, teachers can create binders to keep track of resources that fit within their class curriculum.

The database grew from 88 links to more than 250 resources, and submissions for lessons and activities are accepted and reviewed by the committee!

"The database will be a phenomenal asset for any teacher looking to add soil science instructional resources to their curricula," says Missy Holzer, K-12 Committee member and teacher. "The addition of the 'binder' will streamline their planning time since their personally curated resources will all be in one place."



*The primary K-12 outreach site, **www.soils4teachers.org**, is dedicated to providing ready resources for classrooms.*

Additional Activities of the Committee

Website Resources

www.soils4teachers.org

The primary K-12 outreach site is dedicated to providing ready resources for classrooms. The website has been redesigned with a new streamlined navigation and

modern design. Key components include a section on soil basics, soils by subject, land and people, and lessons/activities. We also have a website for kids at www.soils4kids.org.**Ask a Soil Scientist**

The **"Ask a Soil Scientist"** program, active since 2009, is designed for K-12 teachers and students to ask soils-based questions. It has been a popular feature for questions and requests for classroom visits. It's been updated and teachers and students are now able to receive answers via our Discussion Board system.

When a question is posted to the Discussion Board, enrolled members receive a notification email through the Daily Digest and jump in to answer. Members with three or more years of membership can sign up to participate in the Discussion Board and/or do classroom visits (which are virtual right now).

Interested in answering questions? Log in to your account and select the working group roster(s) for the "Ask a Soil Scientist" program (answering questions and/or classroom visits). Learn more at www.soils4teachers.org/ask.

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Other Activities

In addition, SSSA, with ASA, exhibits at the National Science Teaching Association annual conference, contributes to the American Geosciences Institute (AGI) Earth Science Week kit (which reaches 16,000), and recently developed a webinar that was hosted by the National Geoscience Teachers Association.

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Know Soil Know Life, written in 2012, for high school and introductory soils courses, provides a deeper dive into topics including:

- physical properties of soil,
- soil formation,
- biology,
- chemistry,
- classification/survey/interpretations,
- environmental science and soil conservation,
- soils and biomes,
- soils and society, and
- careers in soil science.

The book is available from the Society Store at $32 for members and $40 for non-members. Bulk rates are available. Visit **https://web.sciencesocieties.org** to learn more and purchase.

Citing Literature

Eric C. Brevik, Maja Krzic, Cristine Muggler, Damien Field, Jacqueline Hannam, Yoshi Uchida, Soil science education: A multinational look at current perspectives,

Natural Sciences Education, 10.1002/nse2.20077, **51**, 1, (2022).

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